Effective Multilateral Regulation of Industrial Activity: Institutions for Policing and Adjusting Binding and Nonbinding Legal Commitments

by

David Gardiner Victor

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Signature of Author:

Department of Political Science
October 3, 1997

Certified by:

Eugene B. Skolnikoff
Professor of Political Science
Thesis Supervisor

Accepted by:

Barry R. Posen
Professor of Political Science
Chairman, Graduate Program Committee
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ABSTRACT

This thesis investigates three factors that influence the effectiveness of international environmental and consumer regulation: the legal type of regulatory instrument (binding or nonbinding), mechanisms that review implementation, and responses to implementation failures. These factors are examined in three regulatory regimes. (1) The nonbinding system to require prior informed consent (PIC) when exporting hazardous chemicals and pesticides, established by the UNEP Amended London Guidelines and FAO Code of Conduct on the Distribution and Use of Pesticides. (2) Harmonization of national food standards through the binding and nonbinding international standards of the Codex Alimentarius Commission. Codex standards are enforceable by WTO dispute panels under the Agreement on the Application of Sanitary and Phytosanitary Measures and Agreement on Technical Barriers to Trade. (3) Implementation failures handled through the Noncompliance Procedure of the binding Montreal Protocol on Substances that Deplete the Ozone Layer.

When binding commitments have been used, parties have focused on their ability to comply. Binding law thus often codifies existing behavior and plans, especially when uncertainties are high and ability to ensure compliance with more demanding commitments is low. The result is high compliance even when binding commitments don't influence behavior. In contrast, ambitious nonbinding instruments have been marked by low compliance but can be conducive to "learning by doing"—regulation that evolves with practice.

More demanding commitments have yielded increased demand for verification that parties are implementing their commitments. This study shows that the functions of reviewing implementation are typically performed by a wide array of actors and institutions, including many not formally charged with the task. The decentralized approach has distributed functions according to capacity and explains why observed formal levels of review and verification are often low, even when review is extensive in practice.

The study confirms that most responses to implementation failures entail "management," such as compensation, dialogue, and diplomatic pressure. However, stronger "enforcement" responses, such as trade sanctions, have been available and used effectively. Moreover, the application of enforcement techniques has demonstrated that implementation failures will be met with responses, which has increased the effectiveness of softer management techniques.

Thesis Supervisor: Eugene B. Skolnikoff
Title: Professor of Political Science
for my parents
Preface

I have been blessed to have had a wonderful thesis committee. Gene Skolnikoff, a prince as a thesis advisor, has been patient and generous with time and ideas. Together we have worked on the issues raised in this thesis since 1990. He introduced me to the ever-enthusiastic Abe Chayes from whom I first learned about law and compliance. In 1991 and 1992, with negotiations on the global warming treaty under way, the three of us ran some conferences on how to make more effective use of a treaty's interim period--the time, often years, between signature of a treaty and its formal entry into force. While we sold these ideas, known as "prompt start," to the climate negotiators, I gained my first practical exposure to the work of international institutions. This thesis is an attempt to examine how those institutions aid regulation of complex activities, especially when information on compliance is poor and the incentives to cheat are rising. Policy applications such as to global warming are in mind. Ken Oye has pushed me to organize and streamline my thoughts and arguments, and he has critically helped me to place my work in the field of political science. His comments have forced me to give close attention to a wide range of variables, beyond law and institutions, that influence behavior. Much work remains to sharpen the argument and evidence, but Ken has vitally helped me separate forest from a tangle of trees.

Several institutions have generously supported my research since 1991 and thus contributed to this thesis. The Rockefeller Foundation and the Northeast Regional Center for Global Environmental Change (NIGEC, U.S. Department of Energy) funded my participation in the "prompt start" workshops and related background research. A grant for a summer's research in 1991 from the Advanced Studies Program at the National Center for Atmospheric Research allowed me to explore several possible thesis topics. One was the "verification of international environmental agreements." Based on that research, I co-authored a review paper on verification with Jesse Ausubel, a friend and sage advisor since we first met in 1989. In many ways, this thesis is an extension of our joint thinking about verification. MIT's Center for International Studies offered a congenial work environment and several grants within the research portfolio on "Energy and the Environment," funded by the government of Japan. Harvard's Center for International Affairs supported me for the academic year 1992-1993, during which I did background research for this thesis. At Harvard seminars I learned much from Bob Keohane about how to implement research in the social sciences. I hope that the selection of cases and variables and the other scientific methods employed here properly reflect what I learned. In 1993 I moved to the International Institute for Applied Systems Analysis (IIASA) in Laxenburg, Austria, to run (with Gene Skolnikoff) a multinational research project on implementation of international environmental agreements. Three years at IIASA redirected my thesis to include the topics of nonbinding instruments and mechanisms for enforcing violations of international commitments. My work at IIASA on the effectiveness of nonbinding agreements touched a raw nerve with advocates of strict regulation, which helped convince me to probe more systematically whether, and under what conditions, nonbinding legal instruments could be more effective than binding ones. This thesis offers some answers. Administrative duties at IIASA occupied all of my professional time, and more, which made it difficult to finish this thesis. However, much of the empirical material in this thesis is based on my research at IIASA; I am most grateful for the
support of the Institute and its 17 member countries.

I have completed this work in the months since leaving IIASA. While moving back and forth between Laxenburg and MIT, many family members offered quiet places to stay and work, and warm company and support.

Finally, I am grateful to my parents whose support can't be measured. I dedicate this work to them, and I suspect they will delighted that it is done. Certainly I am.
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Executive Summary

This thesis examines three issues related to the design of international regimes that regulate industrial behavior. First, it examines how the choice of legal instrument—binding treaty or nonbinding agreement— influences the effectiveness of regulatory regimes. The type of legal instrument is one of the few aspects of regime design that policy makers can control; yet the influence of that choice has been largely ignored in political science research on international regimes and cooperation. Many studies by international lawyers have discussed the range of available legal instruments—from binding "hard law" to many shades of "soft law"—but few legal studies have traced how the choice of legal instruments affects outcomes. Moreover, in many areas of international cooperation such as protection of the natural environment, the practice of international regulatory law has relegated nonbinding instruments to the periphery because of a widely held belief that binding instruments are more effective.

Contrary to conventional wisdom, this study suggests that nonbinding instruments can be more effective than legally binding instruments, especially when the goals of cooperation are unclear and regulated behavior is highly complex and poorly understood. For such types of problems, instruments and institutions can make regulation more effective by increasing the supply of useful information; nonbinding instruments, because they are easily adjusted and do not require strict legal compliance, allow for learning through experimentation.

Second, the thesis examines the institutions that monitor and review implementation of regulatory agreements. While the importance of such institutional activities is well-known in principle, very little research has examined how they are performed in practice. As expected, the thesis demonstrates that much of the effectiveness of regulatory regimes can be explained by the performance of these functions of monitoring and review—where these functions are performed, regulatory agreements can be effective; where they are not, the adaptability and influence of regulatory agreements is low. Moreover, the studies in this thesis suggest that the need for these functions has been systematically overshadowed by other higher-profile activities such as the negotiation of new legal instruments; the consequence is an ample supply of legal instruments that often fall far short of their potential influence.

Third, the thesis examines how the parties to regulatory agreements respond to cases of poor implementation. While much of the thesis concerns how regulatory agreements can be adjusted in light of new information, at times those agreements are also confronted with implementation failures. After detection, what can be done to respond? One view—that of Chayes and Chayes—is that unlike domestic enforcement of regulations, no strong sanctions are available in the international system; moreover, most sources of implementation failures are not willful violations but rather stem from problems such as low administrative capacity and vague laws. In their view, the best responses are technical assistance, negotiation and clarification. In contrast, Downs et al. have argued that not all violations can be merely managed—absent strong
penalties, failures to comply with regulatory commitments will abound. High observed levels of compliance, they suggest, may merely reflect that incentives to defect from regulatory commitments are low; sanctions may not be available, but they will be needed to enforce compliance if cooperation deepens and incentives to defect rise.

This thesis offers support for both the "management" and "enforcement" theories. As Chayes and Chayes counsel, the most common response to noncompliance is management. Various inducements--"carrots"--are offered to help parties comply. In many cases, noncompliance is simply ignored altogether. However, the studies in this thesis also show that, as an ultimate recourse, international institutions can mobilize sanctions in response to poor implementation. Moreover, the effectiveness of management-oriented approaches rises substantially when sanctions are available and used. As in the enforcement of laws at the national level, demonstrating that harmful penalties can be applied (in extreme cases) exerts a deterrent that makes the more ordinary tools for handling noncompliance more useful.

In addition to those three main findings, the research here shows that it is crucial to distinguish between formal compliance with international commitments and the actual influence of those commitments on behavior. The case studies show that legally binding commitments are marked by very high compliance; typically, however, high compliance merely reflects that countries adopt only binding commitments that they are sure can be met. Industrialized countries, for example, have used deviations in Codex standards to tune their binding international commitments to national practice, not the reverse. Compliance has been high, but the influence of Codex standards on behavior is generally low. Moreover, prior to incorporation into WTO, the lack of any implementation review in Codex has meant that Codex members incurred no penalty for cynical compliance and thus the regime, as a whole, has largely failed to harmonize standards.

In contrast, the PIC case suggests that one way nonbinding instruments are effective is through their tolerance of poor compliance. When regulatory problems are uncertain, nonbinding instruments allow learning and experimentation without the stigma or other costs of noncompliance. Reviews of implementation and meaningful participation of groups with countervailing interests help reduce the risks that industry will merely capture such regulatory regimes. PIC has been successful because both those factors--implementation review and participation of groups with countervailing interests--were present. Codex has not, and it thus remains largely a club of industry enthusiasts. It has not produced more regulatory capture because industry interests are not unified.

Nonetheless, compliance is an important concept. Formal compliance was a necessary condition to trigger international institutions to handle the most serious cases of implementation failure handled in this thesis--Russia's failure to implement fully the Montreal Protocol and the EU's ban on bovine growth hormones, which contravened Codex standards. Since legal institutions require noncompliance to act, ironically more noncompliance could make international institutions more effective.
EMPIRICAL RESEARCH

These three research questions have been explored with three empirical case studies:

1. The system for ensuring that importers give prior informed consent (PIC) before receiving shipments of hazardous chemicals and pesticides. Increasingly, importers are located in developing countries, where the capacity to regulate such hazards is often low, while most exports come from highly industrialized countries. Three dozen chemicals and pesticides are now in the PIC system, which was established under the FAO Code of Conduct on the Distribution and Use of Pesticides (1989) and the UNEP Amended London Guidelines (1989).

2. Efforts to reduce technical barriers to trade by harmonizing food safety standards through the Codex Alimentarius Commission. From 1962 to the present, Codex has adopted nearly three thousand standards for pesticide residues, major food commodities, and several other trade-related aspects of food safety. The Codex system has been incorporated into the World Trade Organization's (WTO) Agreements on the Application of Sanitary and Phytosanitary Measures (SPS) and Technical Barriers to Trade (TBT), and thus if a nation adopts import standards that are more strict than Codex, the case can be enforced through WTO's system of binding dispute panels.

3. The handling of noncompliance problems in the Montreal Protocol through the Protocol's novel Non-Compliance Procedure (NCP), including the recent problems of Russian noncompliance and the persistent failure of many countries to supply data as required under the Protocol.

Together, these studies provide variance in the variables of interest in this study. One regime is entirely nonbinding (PIC); one employs a mixture of both forms of legal instruments (Codex); and one is binding (Montreal Protocol). The cases include examples of extensive review and enforcement (Montreal Protocol), a case where review has been virtually nonexistent (Codex), and many shades in-between.

Each of these three regimes allows for quasi-controlled comparisons within and across the case studies, thus multiplying the utility of the data. For example, the PIC system regulates pesticides and chemicals with partially separate procedures and institutions, with dramatically different outcomes. The Codex system allows countries to lodge specific deviations when they accept Codex commodity standards; by comparing the deviations with domestic law it is possible to trace whether countries change national regulations in response to international harmonization efforts. In both PIC and Codex it is possible to isolate the influence of major nonstate actors—industry and public interest groups—by comparing outcomes on issues where particular interest groups were mobilized with other issues where they such groups remained dormant. Comparison of Codex before and after incorporation into the WTO illustrates the effect of having available strong enforcement tools. The Montreal Protocol's NCP has employed a range of enforcement techniques—from management to sanctions—for each of the major noncompliance problems that it has addressed, thus making it possible to compare the ease of mobilizing and the efficacy of using different techniques.
This study confronts the common problem of limited empirical information—it relies mainly on only three case studies. The use of quasi-controlled comparisons allow those cases to be stretched much further, but the study remains limited. Thus the conclusion of the thesis also reviews evidence from research carried out elsewhere on three other regimes where binding and nonbinding commitments have been used in tandem—efforts to regulate \( \text{NO}_x \) emissions (a precursor to acid rain) in Europe, regulation of non-point pollution in the North Sea, and regulation of land-based pollution in the Baltic Sea. Evidence from those regimes confirm and extend the major findings of the thesis and suggest a new and more effective form of multilateral industrial regulation consisting of three elements: (1) the use of nonbinding instruments to elicit useful regulatory information and to set the pace and direction for regulation; (2) the parallel use of binding instruments that serve as a "backstop" that assures compliance with particular regulatory commitments; and (3) extensive implementation review.
Introduction and Overview

Chapter 1
Introduction

The effects of industrial activity often cross political borders. Industrial activities in one country can cause effluents that affect environmental quality in other countries. Differences in national regulations on industrial activity—such as to protect consumers and the environment—can affect access to markets and international trade. Nations have responded to these transboundary issues by adopting international commitments and creating international institutions that coordinate, promote and constrain national regulation of industrial behavior. For decades, political scientists and lawyers have studied the formation and operation of international commitments and institutions. However, much less attention has been focused on whether and how these international activities actually achieve their intended influence on industrial behavior. This thesis addresses that neglected topic—whether multilateral regulatory regimes are effective. Through three case studies it focuses on three questions that are particularly important for theory and policy.

First, it explores how the type of legal instrument—binding or nonbinding— influences the effectiveness of multilateral efforts to regulate industrial activities.¹ It explores how the type of collective action problem and interests of the parties engaged in cooperation affects the range of legal instruments to which national governments will give their consent. And it examines how policy choices within that range can influence the effectiveness of cooperation. This thesis tests the hypothesis, drawn from conventional theory about the role of law, that legally binding instruments are more effective than nonbinding instruments. This study shows that the hypothesis is false under many common conditions; often the opposite is evident. Nonbinding approaches can be more effective when the goals of regulation are uncertain and the behavior to be controlled is complex and poorly understood. For such problems, public regulators at both the international and national levels lack useful information about the industrial activities and externalities to be regulated, and thus regulators find it difficult to codify and implement regulations. This study shows that when regulators choose an approach based on nonbinding legal instruments that the result is often active participation by industry and thus greater access to useful industrial information. In contrast, the use of binding instruments often yields active efforts by industry to restrict the scope of regulation and curtail the supply of information because binding status makes firms especially preoccupied with ensuring that they can comply with whatever rules are adopted. It may be easier to compel governments and firms to comply with a binding agreement, but this study shows that when the goal of regulation is to address uncertain and complex problems, in practice the need for useful information can be greater than the need to limit defection by compelling deviants to comply.

¹The dichotomy "binding or nonbinding" is used to simplify exposition. In reality, the legal status is a continuum. However, as argued by many other scholars and confirmed in this thesis, a sharp legal and political distinction exists between commitments that are binding under national law (and thus also binding under some national constitutional systems) and those that are not binding. 

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Second, this study examines the institutions that elicit and review information on how regulatory commitments are implemented. It explores the hypothesis that regulatory agreements will be most effective when extensive information feedbacks are in place that make it easier to assess the adequacy of existing commitments and adjust commitments in light of new information. Studies have confirmed that adaptive institutions lead to more effective management of complex problems within nations and societies. Such an approach, which some scholars term "treaty maintenance," also appears to be crucial to effective international cooperation. However, few studies have examined in detail how adaptive regulatory approaches are actually put into practice at the international level and how the need for and design of adaptive management depends on the type of problem that is the subject of regulatory efforts. This thesis helps to fill part of the gap. It examines how the functions of implementation review—the gathering of information on how existing commitments are implemented and the assessment of whether existing commitments need adjustment—are actually performed in international regimes. It shows that typically there are many institutions that perform important roles in implementation review. Centralized formal procedures for implementation review, which have been the subject of most empirical analysis to date, are only part of the overall SIR. Thus implementation review can be extensive even when no formal procedure exists for that purpose. Often institutions and other actors that perform politically sensitive functions have no formal legal mandate to do so. The study shows that implementation review is a vital prerequisite to identifying and handling serious implementation problems (below), and it is crucial to a process of "learning by doing" that makes more effective regimes for managing uncertain and complex problems—exactly those for which nonbinding agreements can be most effective.

Third, the thesis examines a particularly controversial aspect of implementation review: what, if anything, can international institutions do in response to violations of regulatory commitments (noncompliance)? Two contrasting views lead to two opposite hypotheses. In one

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To simplify exposition the discussion here uses "noncompliance" and "poor implementation" and "implementation failure" interchangeably and dichotomously to mean to incomplete honoring of international obligations (commitments). However, the author is mindful that the concepts are complex: Those complexities and a more careful terminology are elaborated in this thesis. In brief,
view, international law and institutions are powerless to enforce international commitments and most violations are the consequence of ambiguous laws and low administrative capacity, rather than willful acts. This view leads to the hypothesis that the most effective responses to violations are "management" strategies—technical assistance, negotiation, and other soft techniques to entice a party back into compliance.4 In the contrasting view, willful violations are possible and simple management will not resolve all compliance problems.5 Advocates of this contrasting view hypothesize that tough "enforcement" techniques, such as financial penalties or trade sanctions, will be needed to alter incentives and produce compliance, especially when parties have a strong incentive to violate regulatory commitments. This study shows that neither hypothesis is false. Most noncompliance problems are addressed with management techniques, which are often influential. But in some instances the incentives to defect are high and noncompliance willful; for those, simple management is ineffective—tougher measures, such as sanctions, are needed and increasingly used.

This study suggests that the management and enforcement approaches can work best when combined—the effectiveness of management tools can rise substantially when enforcement techniques are available and used. As in the enforcement of laws at the national level, demonstrating that harmful penalties can be applied (in extreme cases) can exert a deterrent force that increases the effectiveness of more ordinary management responses to implementation failures. Once demonstrated as credible, enforcement tools may rarely be needed, which partially explains why enforcement is rarely observed. However, application of enforcement techniques is also rare at the international level because they are difficult (but not impossible) to mobilize in

formal "noncompliance" with a standard is important because it serves as a trigger for institutional responses, such as under noncompliance procedures, that can help a party to change its behavior and cause it to comply. However, compliance depends on the standards adopted; when those standards are binding, they are often purposely designed to require few changes in behavior and thus compliance is preordained to be high. Compliance can be high even when no implementation is required; thus the studies examine not only compliance but they also trace whether and how international commitments actually influence industrial behavior. These concepts are not dichotomous. Implementation and its impact on behavior is a continuum. Moreover, often parties implement and comply with some commitments and not others, and thus the concepts of implementation, compliance and effectiveness are specific to particular commitments. Thus the case studies, for example, examine not only the legal regime broadly but specific types and examples of commitments. All of these complexities are elaborated in the chapters that follow, but here the terms are used simply and in a dichotomous fashion to highlight the main approaches and findings.


the international system where no supreme authority exists. This fact partially explains why few international regulatory agreements are sufficiently demanding to yield the strong incentives to defect that would lead to willful violations and the need for enforcement.

Enforcement is also rare because international law and institutions have focused on binding regulatory commitments. This thesis confirms that compliance with such commitments is very high, principally because binding commitments have required few or relatively low-cost changes in behavior. However, institutions for responding to poor implementation are triggered only by formal "noncompliance" with those commitments. Because compliance is typically high, enforcement actions are rarely triggered. Moreover, the international regulatory commitments examined in this study have required the greatest behavioral changes in countries where there has been strong domestic public pressure (focused by public interest groups) to deal with the regulatory problems at hand; in those situations, the need for international enforcement tools has been small, even when required behavioral changes are costly, because national governments face other (domestic political) costs if they don't comply. The case studies in this thesis show that these features are changing--some regulatory agreements are becoming more demanding, which is resulting in more numerous willful violations and more extensive mechanisms for responding to such implementation failures, including greater enforcement efforts.

The influence of these three aspects of institutional design--the choice of legal instrument, implementation review, and techniques for responding to noncompliance--are explored with three case studies of three regulatory regimes that have employed a range of legal instruments, implementation review procedures, and responses to implementation failures:

- the system for prior informed consent (PIC) for trade in hazardous chemicals and pesticides. The PIC system was created through two nonbinding instruments--the UNEP Amended London Guidelines for the Exchange of Information on Chemicals in International Trade (1989) and the FAO Code of Conduct on the Distribution and Use of Pesticides (1989). Formal implementation review of these nonbinding agreements is minimal, but in practice the FAO/UNEP Joint Group of Experts on Prior Informed Consent (JMPIC), industry associations and public interest groups have played central roles in reviewing implementation of existing commitments and identifying needed adjustments. Many field projects and seminars have improved the ability of governments in developing countries to implement the PIC system and thus improve their regulation of hazardous chemicals and pesticides. Compliance has been perfect in part because the main industry associations, which account for 90% of trade in the most important substances on the PIC list, have ensured that their members comply.

- the food safety standards of the Codex Alimentarius Commission, which consist of both binding and nonbinding instruments. Implementation review is nonexistent although standards are occasionally adjusted, especially when the needs of the food industry change. Enforcement has been also nonexistent until the late 1980s when it became widely accepted that the Codex standards would be incorporated into the World Trade Organization's (WTO) agreement on sanitary and
phytosanitary (SPS) barriers to trade, thus allowing some enforcement through the WTO's binding dispute settlement procedures. (Formally, incorporation into the WTO occurred in 1994 when the WTO was created as an extension of the General Agreement on Tariffs and Trade.)

- the Montreal Protocol on Substances that Deplete the Ozone Layer, which employs binding instruments. The study here focuses on the Protocol's system of national reports and novel Non-Compliance Procedure (NCP), which allow for extensive implementation review. The study examines every case of noncompliance handled by the Protocol's Implementation Committee and NCP. Those include relatively minor failures to report data, and the failure of many countries undergoing transition to a market-based economy (notably Russia) to comply with the Protocol's regulatory commitments.

This study evaluates the "effectiveness" of these regimes—that is, the extent to which the regime has caused changes the behavior of the regulatory targets, such as pesticide exporters, governments that set food safety standards, and producers of ozone-depleting substances. The analysis focuses on how the three aspects of institutional design have contributed to effectiveness, while remaining mindful of the many other factors in addition to institutional design that also influence the behavior of targets. It judges effectiveness as the extent to which these international agreements and institutions cause changes in industrial behavior that contribute to the objectives of the regime. This approach reflects that international agreements and institutions are created to achieve certain objectives, and the means they employ is to alter behavior. Effectiveness is not equated with "solving" the problem that gave rise to the regime, nor with changing behavior in the most cost-effective manner; where possible and appropriate, the case studies examine those other measures as well. This approach to defining effectiveness is consistent with that used in most other studies of international regulatory law and institutions.\(^6\)

These three regulatory regimes are similar in several ways. Each aims to regulate industrial actors in many different countries—what is termed here multilateral industrial regulation. Each is intended to influence the behavior of actors that number in the thousands or more, often with national governments acting as an intermediary between international standards and national implementation. Unlike cases where the number of actors is small, where tacit and informal agreements can often be effective, regulation of many parties (i.e., multilateral regulation) typically requires some form of codified, often centralized, standards. In addition to large numbers of actors, problems of multilateral industrial regulation are often marked by low

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\(^6\)The theory and implementation of these concepts has been particularly advanced in the area of international environmental regulation. For a review of different definitions and their implications see, e.g., Oran R. Young, 1994, *International Governance* (Ithaca: Cornell University Press), chapter 6.
transparency and high uncertainty. In the conclusion it will be argued that these characteristics are increasingly common of the problems on the international agenda, and thus the results from this study have wide application to other problems, such as in harmonization of labor standards, reduction of other non-tariff barriers to trade, and regulation of many environmental problems such as the loss of global biological diversity and greenhouse warming.

While there are many similarities, these three cases also display many differences. Some differences are obviously essential to any comparative study—the selected cases include a range of binding and nonbinding legal instruments, SIRs, and responses to noncompliance. However, the cases also differ in other ways, which creates the risk that conclusions will be unique to these cases because it could be difficult to isolate the influence of the particular factors of interest and thus difficult to generalize results from these cases to others. This problem, which is common to all research on complex social phenomena, has been reduced in four ways. First, the selection of three cases was made with the three main research questions (and related hypotheses) in mind. Together, the cases provide variance for each of the three dimensions in this study. One regime is entirely nonbinding (PIC); one employs a mixture of both forms of legal instruments (Codex); and one is binding (Montreal Protocol). The cases include examples of extensive review of compliance and numerous responses to noncompliance (Montreal Protocol), extensive implementation review but little attention to formal compliance (PIC), and a case where implementation review and responses to implementation failures have been minimal (Codex). In one case, there have been extensive efforts to improve implementation but no institutions for responding to noncompliance (PIC). In one case the formal provisions for responding to noncompliance have remained constant but, in practice, have become more active over time as the instances of noncompliance grew in number and the parties increasingly accepted the role of implementation review as crucial to the overall effectiveness of the regime (Montreal Protocol). In another case the range of available techniques for responding to noncompliance has changed (Codex, before and after incorporation into the WTO).

Second, this study includes a schematic model of all of the major factors (independent variables) that affect the behavior of targets (dependent variable). Each case study is written with the full range of variables and causal relationships in mind, although analytical attention is focused on only three. This approach has made it easier to accurately isolate the three main factors that are the focus of this thesis from the many other factors at work. These other factors, which will also be called "control variables", are discussed in greater detail below.

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7In other terms, the transaction costs to resolving such problems purely through bargaining between actors are high. Thus remedies such as those suggested by Coase do not apply. Coase, R.H., 1960, "The Problem of Social Cost," Journal of Law and Economics 3, 1-44. For the same reasons, such problems are not conducive to regulatory strategies that evolve and are maintained purely through reciprocity; thus the strategy proposed by Axelrod does not apply. Axelrod, R.M., 1984, The Evolution of Cooperation (New York: Basic Books); see also: Keohane, R.O., 1986, "Reciprocity in International Relations," International Organization 40, 1-27.
Third, each of the cases has been parsed into several "episodes" that allow for additional comparisons within and across the case studies, thus multiplying the utility of the data. In each episode, only one or a few of the independent variables varies while others remain largely constant, which allows for quasi-controlled comparisons. Some episodes are defined by a change in a one or a few variables at a particular moment in time. Examples include incorporation of the Codex system into the WTO, which overnight gave all Codex standards binding status and coupled Codex to the WTO's strict enforcement mechanism. The WTO enforcement mechanism has been used one time to apply Codex standards—the European Union's ban on imports of beef produced with bovine growth hormones (BGH), which contravene's Codex standards that allow use of BGH. Other discrete episodes comprise a particular component of a regime that is like other components in all aspects except for one or a few critical variables. For example, the PIC system regulates pesticides and chemicals with partially separate procedures and institutions. Those differences mean that some reviews of implementation are possible for pesticides that are included in the PIC scheme, while implementation review of chemicals is more difficult. Other "episodes" are drawn from the experience of the Montreal Protocol's Implementation Committee, which manages the Protocol's Non-Compliance Procedure. The Committee has handled two types of implementation problems—failure of developing countries to report data, and failure of countries undergoing transition to a market-based economy to comply with the Protocol's regulatory commitments—which have entailed markedly different costs and benefits for the targets. By dividing the different responses to these two types of noncompliance into separate episodes it has been easier to isolate the conditions under which particular responses are effective.

In total, the three case studies are parsed into 11 such episodes, which are summarized in table 1.1. Also summarized in that table are the main regulatory objectives in each episode, scores for the three main independent variables, and changes in the dependent variable (effectiveness). Each of the case studies is written as a story, but analytical attention is focused on the factors at work in each of these episodes.

[ table 1.1 about here ]

Fourth, the conclusion of the thesis also briefly reviews evidence from research carried out elsewhere on three other regimes where binding and nonbinding commitments have been used in tandem—efforts to regulate emissions of nitrogen oxides (NOx), a precursor to acid rain, in Europe; regulation of land-based pollution that flows into the North Sea; and regulation of land-based pollution flowing into the Baltic Sea. Evidence from those regimes confirm and extend the major findings of the thesis and suggest a new and more effective form of multilateral industrial regulation consisting of three elements: (1) the use of nonbinding instruments to elicit useful regulatory information and to set the pace and direction for regulation; (2) the parallel use of binding instruments that serve as a "backstop" that helps to assure compliance with particular regulatory commitments; and (3) extensive implementation review. That new model appears especially appropriate at the early stages of cooperation when uncertainties are high and the need for "learning by doing" is great. Early efforts to elicit and review information can also help to
Table 1.1
Summary of 11 major "episodes" within the three regime case-studies presented in this thesis

<table>
<thead>
<tr>
<th>Episode (number and description)</th>
<th>Regulatory Objectives (&quot;target(s)&quot; in boldface)</th>
<th>Independent variables that correspond with the three questions examined in this study</th>
<th>Change in Dependent Variable (i.e., changes in behavior of &quot;target&quot; caused by one or more of the main independent variables)</th>
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<tbody>
<tr>
<td>1. Export notification systems</td>
<td>Exporting countries should notify importers of shipments of hazardous chemicals and pesticides (Export notification pre-dates PIC; PIC system (below) was added to it.)</td>
<td>Nonbinding: No formal review in international agreements (i.e., 1984 OECD recommendations and 1967 UNEP London Guidelines), but industry associations and domestic legislation in exporting nations required compliance</td>
<td>Probably very small—many countries had export notification in place when OECD recommendations (1984) and UNEP London Guidelines (1987) were adopted, and thus marginal influence of the international agreements was very low.</td>
</tr>
<tr>
<td>2. Industrial Chemicals (voluntary PIC)</td>
<td>a. Elicit information from importing governments on whether imports of chemicals and pesticides on PIC list are desired; b. Exporting governments should require exporting firms to obey wishes of importing governments</td>
<td>a. Secretariat scrutinizes whether importing governments (DNAs) provide requested information on import responses; b. No data collected nor formal scrutiny of whether exporters conform with wishes of importers</td>
<td>a. Few industrial chemicals included in PIC; response rate from DNAs for chemicals is lower than for pesticides. b. Exporters probably comply with PIC requirements for the few industrial chemicals that are included in PIC.</td>
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<tr>
<td>3. Pesticides (voluntary PIC)</td>
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<tr>
<td>4. Conversion of voluntary PIC to binding instrument</td>
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<td></td>
<td>Binding: Still being negotiated and thus unclear (probably same as nonbinding PIC system)</td>
<td>Unclear—probably same as nonbinding PIC system (i.e., for chemicals no management or enforcement; for pesticides, management but no enforcement)</td>
<td>a. Many pesticides included in PIC; response rate from DNAs for pesticides is higher than for chemicals. b. Exporters probably comply with PIC requirements for all pesticides that are included in PIC.</td>
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<td></td>
<td></td>
<td></td>
<td>a. Unclear, but so far the main influence on governments has been very close scrutiny of the exact legal requirements being considered under a binding convention; b. Unclear—firms are wary of binding rules that could reduce their flexibility; previous voluntary activities by firms to implement PIC are expiring and not being renewed.</td>
</tr>
<tr>
<td>Episode (number and description)</td>
<td>Regulatory Objectives (&quot;target(s)&quot; in boldface)</td>
<td>Independent variables that correspond with the three questions examined in this study</td>
<td>Change in Dependent Variable (i.e., changes in behavior of &quot;target&quot; caused by one or more of the main independent variables)</td>
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<tr>
<td>5. Standards &quot;accepted&quot; by governments</td>
<td>Governments should harmonize national food safety standards in line with Codex standards so that, in turn, food producers &amp; traders will conform with world standards</td>
<td>Binding</td>
<td>None</td>
</tr>
<tr>
<td>6. Standards that are not &quot;accepted&quot; by governments</td>
<td>&quot; &quot;</td>
<td>&quot; &quot;</td>
<td>&quot; &quot;</td>
</tr>
<tr>
<td>7. All Codex standards (regardless of &quot;acceptance&quot;) after adoption of WTO agreements on SPS and TBT</td>
<td>&quot; &quot;</td>
<td>Binding</td>
<td>Incentives for individual governments to review compliance by trading partners and bring cases to WTO dispute settlement body; Potential review by WTO Trade Policy Review Mechanism</td>
</tr>
<tr>
<td>Episode</td>
<td>Regulatory Objectives (&quot;target(s)&quot; in boldface)</td>
<td>Independent variables that correspond with the three questions examined in this study</td>
<td>Change in Dependent Variable (i.e., changes in behavior of &quot;target&quot; caused by one or more of the main independent variables)</td>
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<td></td>
<td>Change in Dependent Variable (i.e., changes in behavior of &quot;target&quot; caused by one or more of the main independent variables)</td>
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<tr>
<td>8. Failure of developing countries to report data</td>
<td>Governments should report data</td>
<td>Binding</td>
<td>Regular review by Implementation Committee, Secretariat, and Meeting of the Parties</td>
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<tr>
<td>9. Continued failure of developing countries to report data after receiving assistance</td>
<td>Governments should report data</td>
<td>Enforcement: Withdrawal of assistance</td>
<td></td>
</tr>
<tr>
<td>10. Failure of Belarus, Bulgaria, Poland, Russia and Ukraine (BBPRU) to phase out ODS</td>
<td>Governments should pass laws that regulate firms and individuals that produce and consume ozone depleting substances (ODS)</td>
<td>Management: Implementation Committee clarifies exact obligations of Protocol and attempts to persuade BBPRU nations to comply.</td>
<td></td>
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<tr>
<td>11. Continued failure of BBPRU nations, especially Russia, to comply; Invocation of Noncompliance Procedure</td>
<td>Management: Financial assistance from Global Environment Facility (GEF); Enforcement: Withdrawal of GEF assistance if Russia does not make progress, and threats to impose trade sanctions against Russia's (legal) ODS recycling facilities</td>
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</tr>
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</table>

**Note:**
"Management" refers to handling poor implementation through diplomatic channels and pressure, capacity-building and other financial incentives. "Enforcement" refers to the use of punitive measures, such as trade sanctions, other penalties, and withdrawal of financial incentives.
build the institutional capacity needed to identify implementation failures and employ management and enforcement techniques in response. The ability to respond to implementation problems is especially important to sustaining cooperation as commitments become more demanding and incentives to defect rise.

In addition to focusing on three specific issues related to research and policy on international law, this thesis yields some broader implications for the process and viability of international cooperation. The cases considered in this thesis underscore that it remains very difficult to mobilize strong "enforcement" responses to implementation failures. For many countries in many regimes the fear of being exposed has been an effective deterrent against poor implementation. But that technique has worked mainly in those countries where nonstate actors have been active at the domestic level and thus governments fear the political costs of failing to meet international commitments. Where regulation is intended to yield social benefits, those nonstate actors are typically public interest groups, such as environmental nongovernmental organizations (NGOs). When implementation is highly complex, often such NGOs don't engage in the costly activities such as monitoring and technical research that are needed to anticipate implementation failures. Moreover, such "watchdogs" do not always favor implementation, as in the case of consumer organizations that believe BGH is unsafe at any level and have urged the EU not to implement Codex BGH standards.\(^8\) In instances where such internal national pressures are insufficient to yield implementation then external responses are needed. One such international deterrent and response to noncompliance has been to cut off the benefits that flow from the regime.\(^9\) However, that technique works only when benefits can be easily controlled—in practice, mainly when the regime provides transfers and other "carrots" such as technical assistance. Trade sanctions, an often discussed enforcement technique, have been threatened in the Montreal Protocol (against Russia) and in the Codex system (through the WTO against the EU for violating Codex standards on BGH), but in neither case have sanctions been easy to mobilize or have they had swift influence. More generally, strong responses to poor implementation involve linking performance to other costs and benefits valued by the target. Examples of coupling include the linkage of Russian behavior to funding from the Global Environment Facility (GEF), which is compensating Russia for part of the cost of complying with the Protocol. In the Codex BGH case, the coupling has been with benefits under the WTO. In short, the cases demonstrate that "enforcement" of international commitments is not

\(^8\)Consumer groups are not the only force that favors bans on BGH imports—small European farmers, which can't use BGH effectively on a small scale and already face overproduction of beef, have also favored continuation of the EU ban as a means of limiting exports, which could not be banned through conventional tariffs. Such coalitions, evident in this and other cases, are explored in more detail in the case studies.

\(^9\)Similarly, benefits can be restricted from parties that don't implement regulatory commitments while remaining outside a legal regime. The case study on the Montreal Protocol--chapter 5—shows how such an mechanism to penalize nonparticipants has been put into practice.
impossible, but it does often require a means of coupling performance to other benefits that a country receives in the international system.¹⁰

Advocates of the managerial approach argue that the links between issues are pervasive in the international system. Noncompliance is unintentional and enforcement is not needed because states intend to comply with their international commitments--compliance keeps them in good standing in the international system, from which they draw many broader benefits.¹¹ In other words, all of international cooperation is linked in a grand collaboration game. This thesis suggests some alternative views. One is that observed high levels of compliance do not necessarily indicate an automatic propensity to alter behavior towards compliance. Rather, regulatory commitments are often modest by design and thus compliance is preordained. Nonintentional failures to comply are numerous. But willful noncompliance also exists and becomes more abundant as cooperation deepens, which is evident as parties have had to implement ever-stringent regulatory commitments under the Montreal Protocol and as members of the WTO have tried to tame non-tariff barriers to trade through uniform application of the standards of the Codex Alimentarius Commission. This thesis argues that the existence of numerous potential linkages has not solved the difficulties of mobilizing strong responses when narrow incentives strongly favor noncompliance.¹² Management is observed as the most abundant response because enforcement is often not available. But that evidence does not support

¹⁰For more on the types of linkages employed under different circumstances, and the difficulty of coupling (especially when many stakeholders and issues are involved and information is incomplete), see: Oye, K.A., 1992, Economic Discrimination and Political Exchange: World Political Economy in the 1930s and 1980s (Princeton: Princeton University Press).

¹¹See Chayes and Chayes, 1995, op. cit. and discussion of Henkin, 1968, infra. Chayes and Chayes do not argue that compliance is necessarily very high or nearly perfect, which is the argument of Henkin (see especially the 1979 edition of Henkin's book, infra). This general line of argument applies only to states that want to sustain good membership--"sovereignty" in the Chayeses definition--in the international system. Where and how to draw the line between those states that are "in" and "out" is complicated, and under no definition is the line clear one. Some analysts conceive of the international system broadly to include all but rogue states. Others view national characteristics--for example, the existence of the rule of law, private property, and other principles of "liberal" government--as defining the zone of states to which these broader arguments about the propensity to comply are applicable. See Slaughter, A.M., 1995, "International Law in a World of Liberal States," European Journal of International Law, 6, 503-538.

¹²The author does not argue that these broader links are irrelevant. If they were then parties would, e.g., simply leave the Codex Alimentarius Commission and the WTO when decisions do not favor their interests. They don't because, overall, they benefit from the system. However, this thesis argues that within that broad context it remains important to identify and respond to specific instances of noncompliance, which clearly exist. The question at hand is what causes such cases of poor implementation, and which responses are available and effective.
the conclusion that international collaboration can proceed without sometimes tough penalties.

The rest of this introductory chapter elaborates the rationale and design of this study in greater detail. The first section reviews the major branches of theory and policy on which this thesis depends and to which it contributes. The second section lays out the general model of factors and causal relationships that affect behavior. It describes the three major independent variables—type of legal instrument, implementation review, and responses to noncompliance. It also describes other factors, such as material interests and the nature of the regulatory problem at hand, which also influence industrial behavior and must be accounted for. A third section describes the three regimes and case studies in greater detail and why they are substantively as well as methodologically important for this study. A fourth section uses a series of tables to cross-tabulate the scores for the three main independent variables and some of the critical other "control variables" with the scores for the dependent variable for the 11 episodes. That exercise helps to summarize how the case studies, and quasi-controlled comparisons within each case study, contribute to testing the main hypotheses in this study.

The Relevance of this Study to Theory and Practice

The choice of legal instrument and the maintenance of regulatory commitments lie at the intersection of three fields of research: (1) regime theory and international cooperation, (2) the maintenance of international agreements, and (3) international law.

Regime Theory and International Cooperation

All three of the cases in this thesis concern the operation of "regimes" for international governance. In the last decade, regime analysis has shifted from formation and negotiation of these social institutions to their practical effects. This study, which focuses on the operation and influence of regimes, thus contributes to the growing literature on the "effectiveness" of international regimes.


15Many, but not all, studies on the effectiveness of regimes concern environmental regimes--international environmental concerns rose high on public agenda in the late 1980s, which was about the same time that regime analysis was earning widespread application in graduate schools. For
In principle, the concept of a regime is especially conducive to research on how the choice of legal instruments—binding or nonbinding—influences behavior. Regimes are identified by the existence of principles and norms that shape expectations in a given issue-area; principles and norms lead to specific rules and decision-making procedures. The regime concept does not require that a particular type of legal instrument be used to codify principles, norms, rules and decision-making procedures, nor even that there be any legal codification whatsoever.\textsuperscript{16}

In practice, studies in the burgeoning field of regime research have focused on binding regulatory instruments. This situation reflects a bias in the cases of regimes that are available and have been selected for study—virtually all have, at their core, a binding treaty. This extensive supply of binding instruments means that few regimes even allow the analyst to isolate the influence of nonbinding instruments. The regime to regulate trade in hazardous chemicals and pesticides, which includes the PIC system, is one of the very few instances of a regime built entirely on nonbinding instruments; yet until the present study there has been no systematic analysis of that regime's formation and operation. The situation also reflects that in cases where nonbinding instruments have been used, such as Codex, North Sea, Baltic Sea, and NO\textsubscript{x} regulation, studies from the regime perspective have given little attention to the process of legal codification.

Virtually all of the studies that have examined in detail how international governance structures (regimes) actually influence behavior on the ground have been conducted by political scientists, most of whom appear uninterested in how "details" of legal and institutional design influence outcomes. (In contrast, much of the research on national-level social institutions, such as legislatures and voting procedures, has given central attention to the influence of institutional

\textsuperscript{16}For definitions of regimes see Krasner, ed., 1983, op cit..
design.) Rather, much of research on regimes has been oriented to refute the "realist" paradigm—that international regimes, institutions and international law don't themselves influence behavior. Only recently have researchers focused principally on how regimes matter. Some legal scholars have examined institutional design (see next section), but few go beyond an assessment of how international law and institutions cause changes in national laws and institutions, such as through the national legislative and administrative rulemaking processes. Such research rarely traces the final links between national legal and institutional responses and actual behavior, which are crucial for assessing the full chain of actions by which international law and institutions influence national behavior. Some practitioners have written studies of international governance structures that they helped to craft and manage. In the field of environmental governance, the practice of international diplomacy is oriented to supply binding treaties, almost regardless of conditions; thus diplomatic studies either do not focus on why the form of legal instrument was chosen or repeat the wisdom that binding instruments are best. In other fields, such as international finance, the presumption is exactly the opposite—nonbinding instruments are widely employed by governments—but few studies compare across the fields while attempting to control for differences in the type of underlying problem.

Some studies have focused on regimes that operate mainly with nonbinding legal instruments, as in the field of human rights and in monetary policy and trade. In each, the legal form of commitments has entered the story, but the analytical focus has been on the formation and effectiveness of the regime as a whole, rather than how the legal form of commitments has influenced outcomes. However, such studies have made it clear that nonbinding agreements are employed in cases where all or most parties seek the flexibility of agreements that can adjusted without extensive scrutiny and review. Moreover, nonbinding instruments are employed in areas of cooperation, such as human rights, where wide acceptance is necessary for the legal instrument to have influence as a "declaration" of new legal principles. All else equal, the use of a binding instrument would yield lower participation because such declaratory functions, especially in human rights, are aimed precisely at constraining government autonomy. In those areas of cooperation, binding instruments earn consent mainly when they codify what is already agreed and practiced. These attributes of nonbinding instruments—avoidance of rigorous scrutiny, flexibility, and wide participation—are widely accepted, but the remaining tasks for studies such as this thesis is to specify how, under what conditions, those attributes influence the effectiveness of efforts to regulate industrial behavior.

**Informal and Tacit Cooperation**

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Research on informal regimes might be relevant to the study of nonbinding agreements because no international agreement can be binding without formal recognition, review and acceptance by its parties. Lipson has shown that some agreements are feasible (and effective) only when they are informal. For example, agreements may be morally reprehensible or politically infeasible if publicly known--such as Hitler's pact to award Stalin the Baltic States in exchange for Soviet neutrality. Lipson uses the term "informal" loosely to mean all agreements that are not reviewed and binding, but in doing so his analysis is weakened because the single term "informal" does not distinguish the many types of informal agreements and the different ways that they can influence outcomes. (Legal scholarship, as argued below, makes a similar mistake with the term "soft law.") Lipson's broad concept of "informal" does not conform with the practice of international law-making and thus is not easily used to analyze real international agreements. Finally, Lipson argues that the relative influence of informal regimes has been understated because the influence of binding law has been overestimated. He offers the familiar dismissal of binding law as a fiction because there is no enforcement authority; yet, as will be shown in this study, many devices for enforcing international obligations do exist. It will be argued in the present study that international binding law has been overstated not because it is difficult to enforce (which is true) but because binding law often leads to trivial commitments that don't need enforcement.

Closely related to analysis of informal norms are studies that have examined tacit cooperation—that is, cooperative behavior that emerges from observing the behavior of others and responding with appropriate (and observable) behavior, rather than by negotiating formal accords. In the most famous example, from Axelrod, tacit cooperation can emerge from tit-for-tat reciprocity—a party responds to cooperative behavior with behavior that is cooperative and to noncooperative behavior with the same defection. Cooperation can deepen when the parties cooperate and evaporates when one defects. Such tacit cooperation may be the only choice when formal approaches are not available—for example, when they are illegal (e.g., cartels) or impossible (e.g., on the battlefield). Even when the negotiation of a formal agreement is

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19This statement is true for all the types of agreements addressed in this thesis, but it is not strictly true for all agreements. Agreements between non-liberal states could, in principle, be binding under international law yet still informal and perhaps secretive. In such states, the review and ratification process could be cloaked in secrecy yet still, in the eyes of international law, legitimate. Whether that gives any additional weight to the agreement is debatable, however. In contrast, in liberal states the review process occurs through democratic institutions; treaty commitments are typically published in public registers. Thus it would be impossible for a secretive agreement to be binding upon a liberal state under international law. (For more on liberal states, see ref. ?.) In private and domestic law, many secret agreements are binding and can be enforced through domestic courts and administrative procedures; the binding status serving as a backstop.


possible, tacit cooperation may be more effective because it focuses on the purpose of cooperation—changing behavior—rather than relying on formal approaches that might not be effective, such as international agreements that can’t be enforced.\footnote{22}

Some studies have examined the influence of informal regimes and regime elements that have not been codified into legal instruments. For example, Goldstein and Ruggie have examined the influence of widely accepted principles (including ideas) that have affected the design and influence of international institutions.\footnote{23} The power of such principles might be considered a form of nonbinding institution—they are influential because they exist and are shared, not because they are codified into ratified agreements. Typically, formal and binding status have followed, not caused, the acceptance and influence of these institutions.

While important, the literature on informal norms, tacit cooperation and the diffusion of ideas are not directly relevant to the problems of multilateral industrial regulation for three reasons. First, the problem at hand is not whether agreements should be informal but rather what type of formalism—binding or nonbinding—is most effective under what conditions. Second, studies such as Goldstein’s and Ruggie’s have shown that widely accepted ideas (or, by another term, “customary international law”) have been influential in offering a broad guide to behavior only when they are pervasive in society. But the problems addressed in this study concern the need to regulate the details of industrial behavior, such as the methods of applying pesticides. Broad norms offer little guidance; some codification into specific (binding or nonbinding) rules is necessary. Moreover, informal norms require time to evolve, diffuse and be selected; in contrast, the problems addressed here arrive on the public agenda and require regulatory responses often within only a few years. Third, tacit cooperation depends heavily on some form of reciprocity for enforcement. In turn, reciprocity requires that behavior can be observed and that the losers from defection be able, tacitly, to impose some cost—punishment—on those who defect. When behavior is highly multilateral and when complexity and uncertainty make it difficult to determine compliance from defection, purely tacit cooperation is unlikely to emerge.

Nonetheless, this study will make two empirical contributions to the literature on informal norms and tacit cooperation. First, it will show that even in these cases of complex regulation, limited tacit cooperation can evolve. As expected, the emergence of such cooperation occurs when the number of parties is small and behavior is relatively easy to observe. For example, European and American efforts to regulate hazardous chemicals in the late 1970s and early 1980s were tacitly coordinated. In that case, transnational alliances of industrial producers and


exporters helped create the tacit coordination; threats to exclude products if cooperation unraveled imposed a cost on governments and firms that failed to coordinate. However, tacit cooperation was isolated to a few areas where cooperation was easiest and most observable; the ability to retaliate was limited. Moreover, such cooperation did not deepen without formal codification (by OECD) of the most complex standards (i.e., those least likely to evolve tacitly). As the policy makers turned their attention to global regulation, no tacit cooperation emerged in part because the number of actors was so high and no single actor could exert a reciprocal response to punish those that didn't cooperate; in those cases, which are a hallmark of multilateral industrial regulation, formal agreements have been necessary.

Second, these studies show that formal agreements to regulate international industrial behavior are typically added to a growing web of existing regulations at the international and national levels. Rather than produce "treaty congestion", as many legal scholars and practitioners have feared,24 in practice there has been extensive informal coordination by government officials and other (especially industry) stakeholders. Those effective coordinating efforts have been "quasi-tacit": they have been informal and focused on behavior rather than the letter of the law; active coordinating efforts have emerged only when behavior indicates that there is a problem of coordination. Formal institutions and legal instruments have played a major role in stabilizing and coordinating tacit cooperation.25

Mainly, however, this study contributes to research on the effectiveness of international regimes by showing how choices made during the legal codification of regime elements affect the ability of regimes to influence behavior. That topic fits squarely within the concept of a regime and could easily be investigated by those who study the influence of regimes. However, to date the scholarship on the effectiveness of regimes has not examined the influence of the legal form of commitments.

Maintenance of International Cooperation

Research on the operation and influence of regimes has necessarily required investigation of the operation and influence of international agreements. In turn, researchers have focused not only on how agreements are reached but also how they are "maintained"—that is, how they are


25This is similar to the finding in the industrial organization literature on the formation of cartels, which notes that some form of formal rules—even regulation—helps to stabilize the process of cooperation that allows tacit cartels to form. That basic insight can be traced to Stigler, G. J., 1971, "The Theory of Economic Regulation," Bell Journal of Economics and Management Science 2, 3-21.
verified, adjusted in light of experience, and how implementation problems are addressed. This study contributes to that literature, which has three strands.

A first strand of the literature concerns how implementation of and compliance with international commitments is monitored, reviewed and verified. These functions, which are performed by national governments, private actors and international institutions, can be compactly termed under a single concept—"implementation review". Studies have examined how implementation review is performed in all major fields of international cooperation—arms control, trade, human rights, labor standards, and environmental protection. Yet few

26The literature on arms control verification is huge. On the logic, need and practice of verification see, e.g., Schelling, T.C., Halperin, M.H., 1-62/1985, Strategy and Arms Control (Washington: Pergamon-Brassey's); and see examples of arms control verification and responses to noncompliance in Chayes and Chayes, 1995, op. cit.. In arms control, in part because much more is at stake (i.e., survival) and in part because the benefits of defection are more immediate than in many economic and most environmental agreements, verification has been a central issue in the creation of most post-war regimes.

27e.g., Hudec, R.E. 1993, Enforcing International Trade Law: The Evolution of the Modern GATT Legal System (Salem: Butterworth Legal Publishers). Until the adoption of the Trade Policy Review Mechanism in the late 1980s, The GATT had no formal mechanism for monitoring and verification—only the Dispute Panel System, Hudec's focus, which handles implementation problems (disputes) identified by GATT members.

28Jack Donnelly, 1986, "International Human Rights: A Regime Analysis," International Organization 40, 599-642. Donnelly uses the type of review as one indicator of regime type, which ranges along a four-part continuum: declaratory, promotional, implementation, enforcement. Regimes further down the continuum have more extensive review activities—monitoring, submission of reports on noncompliance, various actions in response to alleged noncompliance (e.g., hearings, trials). Many other studies have examined how those review procedures actually work.


studies have focused on implementation review of nonbinding instruments. Moreover, most studies have focused on the role of formal provisions for implementation review, such as requirements to report data and the operation of institutions that are officially charged with reviewing implementation. The studies in this thesis show that often the most important functions of implementation review are performed by actors and institutions not formally dedicated to the task. The evidence supports what has been shown elsewhere—that it is crucial to examine the broader system for implementation review (SIR) that evolves in a particular regime rather than merely the formal provisions for implementation review.31

A second strand has focused on how international regulatory institutions assess information. Much of that research is based on the premise that complex regulatory problems require special expertise and thus has focused on the role of scientists and other experts in assessing risks, proposing and evaluating policy options.32 This study supports the conclusion that experts can play a crucial role in proposing and evaluating policy options. Moreover, the study on the PIC system suggests that the influence of experts may be especially high when commitments are nonbinding; the nonbinding status allows less extensive governmental review of major decisions and thus also results in governments conferring greater authority on experts. Contrary to deconstructionist claims that all science is culturally and politically determined, the nonbinding and informal modes of international cooperation have allowed remarkably objective expert assessments—that is, assessments based on whether claims are supported by evidence and whether particular policy options further the stated goals of international cooperation. Certainly the cases in this thesis provide illustrations of politicized science—for example, science became politicized (and ultimately peripheral) to the highly political cases of bovine growth hormone and bovine somatotropins for which the Codex Alimentarius Commission has debated standards,


although objective scientific advice was available to the Codex Alimentarius Commission. However, outcomes were not determined by science because the conflicts principally were not scientific. Nonetheless, all sides of these debates in the Codex Alimentarius Commission adopted the rhetoric of science by attempting to marshall evidence. Science appeared highly politicized because proponents of political positions adopted scientific facades; a wide range of views appeared to be based on "science" even when the scientific community was practically unified in its assessment.

Third, and most important, there is a growing debate in the literature on how to respond to poor implementation of international commitments, including noncompliance. For decades, analysts of bilateral arms control accords have considered the problem neatly described by the title of Fred Charles Iklé's article: "After Detection, What?" But that issue has generally not been a focus in analysis of multilateral regimes related to industrial regulation. The only partial exception is the GATT/WTO system of dispute panels, which has been invoked only erratically in response to the large supply of violations. Only with the incorporation of stricter guidelines and powers has that system become more active and responsive.

Many studies have examined the use and effectiveness of economic sanctions. Like any other tool of statecraft, sanctions could also be used in response to violations of international agreements. In practice, broad foreign policy goals appear to determine when sanctions are employed. Sanctions are not used principally to enforce international commitments, and few studies have examined sanctions employed in that capacity.

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36Exceptions are mainly focused on the United States, whose large market and quasi-hegemonic status allow it to use sanctions with some influence, while other states can't. See, for example, studies on "301" and "Super 301" sanctions employed by the United States in retaliation against unfair trading practices by other countries: Bayard, T.O. and Elliott, K.A., 1994, Reciprocity and retaliation in U.S. trade policy (Washington: Institute for International Economics); Sykes, A.O. 1990. "'Mandatory' retaliation for breach of trade agreements: some thoughts on the strategic design of Section 301," Boston University International Law Journal 8, 301-324. The availability of such domestic remedies for trade problems partially explains why multilateral (e.g., GATT) mechanisms
This study concentrates on the availability and use of multilateral responses to noncompliance—that is, responses applied either by multilateral institutions, or those applied by states but organized or facilitated by multilateral institutions. As noted, this thesis tests two alternative views of the types of responses available, their need, and effectiveness. By one view—from Chayes and Chayes—poor implementation is not a willful violation of treaty requirements but rather the result of low capacity, ambiguous obligations, or circumstances beyond a country's control. For Chayes and Chayes, noncompliance is a problem to be managed, through discussions, pressure and assistance. Sanctions, which they show are rarely available, would fail to address the root causes of noncompliance and thus would not be effective.37 Downs et al. have countered that as cooperation deepens, incentives for willful violations of international agreements will rise, and so will the need to employ tough enforcement of international obligations, including sanctions.38

These two views correspond with the deep institutionalist-realist divide between analysis of international affairs. The divide dates at least to the formation and failure of the League of Nations, and the dominance of Realist thinking in the period since. The former view is typical of the view that institutions can have considerable influence on behavior, such as by setting standards for acceptable behavior and empowering actors who favor implementation and compliance. Greater institutional enmeshment gives stakeholders a greater interest in preserving institutional order and thus makes them more willing to comply and less able to deviate from institutional strictures. In contrast with that institutionalist view, the realist view emphasizes that states make rational calculations of costs and benefits, based on which they decide whether to comply. The thesis offers support for both views. It finds that most problems of noncompliance are at least partially not the result of willful violation, and most are handled in the management mode. However, the effectiveness of management efforts has been much higher when tougher instruments of enforcement, including forms of sanctions, are available and used. Further, some


violations have been willful, such as Russia's persistent noncompliance with the Montreal Protocol and the European Union's ban on imports of BGH-grown beef, contrary to the standards of the Codex Alimentarius Commission. But the types of sanctions available have reflected the weak status of international law—the easiest "sanctions" to mobilize entail removing existing carrots, such as funding and trade privileges. Moreover, as realists have long argued, such instruments are disproportionately in the hands of powerful states.

International Law

All three of the questions addressed in this study have been analyzed at length in research on international law. Indeed, these questions concern the essence of what is international law and how the law achieves its purpose—to create a regulated society by influencing behavior. The questions in this study concern the content and codification of international law, how laws are adjusted, and what is done when laws are not obeyed.

International law has two main sources: custom, or principles that are widely accepted and observed, and agreements, which are the codified products of negotiations between states represented by national governments. This study does not address customary law; in each of the three areas addressed in the study such customary principles have not existed and thus played essentially no role. Because customary law typically consists of only broad principles it is not relevant to the detailed regulation of specific industrial practices that are considered in this study. More detailed customary legal principles could evolve through tacit and informal cooperation, which lawyers would term customary law. However, as argued above, those means of cooperation are capable of yielding detailed regulation only under conditions (low numbers of parties, low uncertainty, highly observable behavior, and reciprocity) that do not apply to this study. Moreover, whether customary law has any influence on behavior is debatable.

39The author is mindful that exact determination of "willful" is problematic. A party that is truly committed to comply can take many steps to ensure that even "unplanned" events don't yield noncompliance.

40Some may claim that in the area of trade in hazardous chemicals and pesticides that there is a duty, under customary international law, not to ship hazardous substances that have been banned in the domestic market and/or not to ship hazards without providing ample evidence of the hazards involved to allow the importer to exercise informed consent. However, in neither case are such principles widely accepted nor have they governed behavior. By a stretch of legal reasoning, it could be argued that prior informed consent is now, in 1997, a principle of customary law; but that argument would be valid, if at all, only because PIC has been incorporated into both major regimes on hazardous trade—the Basel Convention and the chemicals and pesticides PIC regime.

This study addresses international agreements. International law has long focused on treaties between states—negotiated agreements that are reviewed and ratified by national governments. Legal studies have distinguished many functions: treaties that create "contractual law" which governs an exchange between parties; treaties that create "constitutional law" of basic principles that govern permanent interactions between states, even in wartime; and treaties that create "legislative law" that codify basic rules and common standards to govern the normal relations of states. As is clear in the common use of terminology—"contract," "constitutions," and "legislation"—much thinking on the role of treaties as a source of international law has developed by analogy with domestic law. That approach has had the benefit of ready-made typology, but it has also brought many well-known (yet remarkably persistent) perils to international legal research. The analogy with domestic law is dangerous in part because there are few mechanisms to enforce decisions and laws at the international level, nor is there a legislature, nor is there a coherent international "society" with a (written or unwritten) constitution.

The first question of this study—how the legal status of laws influences behavior—can be found in legal research back at least to the 1960s when the concept of "soft law" came into use by lawyers to describe the wide array of international agreements that were not treaties. Not being treaties, soft law agreements were not necessarily extensively reviewed even by the executive branches of governments, and they were not ratified by national parliaments and thus not binding under international law. For lawyers, the distinction between binding and nonbinding instruments may have been particularly important because the myriad instruments in the "soft law" category were not supported by the "hard law" apparatus of treaties. For example, in many legal systems, binding international law could be applied by national courts.

Custom in International Law (Ithaca: Cornell Univ. Press).

For these and other distinctions, see, e.g., Arnold D. McNair, 1930, "The Functions and Differing Legal Character of Treaties," The British Year Book of International Law vol. 11, pp. 100-118.

However, some bodies exist to arbitrate private and public international contracts and to set standards. Such bodies are often narrowly focused and require advanced agreement between parties; they are not generally established institutions. Obviously these general statements do not apply to the European Union (EU), where such a society is being formed. However, none of the cases considered in this thesis is restricted to cooperation among EU members. Some scholars argue that shared principles of governance, which are elements of an "international society" are emerging. Thus the prospects for international law should not be dismissed. However, there remains a substantial difference between international and national law and thus analogy between the two remains hazardous. International law can nonetheless have influence on behavior, as does national law; how that occurs is a central topic of this thesis. For more on international society and law, see: Bull, Hedley and Watson, Adam, eds., 1984, The Expansion of International Society (New York: Oxford University Press); see also Slaughter, 1995, op cit. (ref. 11).
This soft law category of agreements was defined by what it is not—hard law—which has led to plastic usage of the term "soft law". Today it seems to mean softness in one or both of two ways: (1) soft in content, such as vague or nonspecific obligations; and (2) soft in authority, lacking the (supposed) binding status of ratified binding law which allows for deviations to be penalized.\textsuperscript{44} This study focuses on this second attribute of soft law—its nonbinding status. The plasticity of "soft law" has made the term unhelpful because it conflates both attributes; this study will show that softness in meaning and in authority do not go hand-in-hand. In some cases, they are inversely correlated—the commitments in the PIC regime and some of the nonbinding texts of the Codex Alimentarius Commission are more specific because they are nonbinding. While many criticisms of soft law are not justified, one critique is certainly sound—the term has become so expansive that it is becoming useless. Thus throughout this study, the term "nonbinding agreement" will be used.\textsuperscript{45}

This study will compare the relative influence of binding agreements and nonbinding agreements. The author is unaware of any study that systematically compares the two forms of agreement and elaborates hypotheses concerning the causal pathways that govern which form will be more influential and why. Table 1.2 provides one such summary. (As noted above in ref. ?, "binding" and "nonbinding" are not dichotomous, although it is useful and appropriate to discuss them in that way.) More research and analysis are needed to elaborate the causal pathways suggested in the table; this study is start on that research program.

[Table 1.2 about here]

The main differences between binding and nonbinding agreements is in the degree of review required. Binding commitments require ratification, which is an often extensive process of review by national governments. Extensive review leads to delays, but it may also lead countries to take binding commitments more seriously. Nonbinding agreements do not require such review and thus are sometimes termed "executive agreements" because they do not require legislative consent. In practice, some nonbinding agreements are subjected to some review in

\textsuperscript{44}This distinction is based partially on Michael Resiman, 1988, "A Hard Look at Soft Law," \textit{Proceedings of the American Society of International Law}, vol 82, pp. 373-377. Resiman distinguishes three types of softness: (1) content, (2) authority, such as whether the body making a declaration has competence in that field to make such declarations, and (3) "control intention," meaning enforcement. Here I do not enter into the many dimensions of soft law and thus keep the discussion simple. In some senses, Resiman's second category has elements of the first and third—the content of declarations made by individuals and groups operating outside their field of competence is ambiguous, as is their authority to give those declarations force.

\textsuperscript{45}Moreover, for clarity, this review of relevant legal literature will use the term "nonbinding agreement," where appropriate, even when the literature discusses the phenomenon in terms of "soft law."
<table>
<thead>
<tr>
<th>Means of Influence</th>
<th>Binding Instruments</th>
<th>Nonbinding Instruments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Status in international law</td>
<td>Formally part of international law and thus must be obeyed.</td>
<td>Ambiguous status in international law, do not require compliance</td>
</tr>
<tr>
<td>2. Ability to mobilize international enforcement</td>
<td>Because of formal international legal status, possibly easier to mobilize international instruments (e.g., diplomatic pressure, funding and sanctions) in response to cases of noncompliance</td>
<td>Weak status in international law may make it difficult to mobilize international instruments to respond to poor compliance</td>
</tr>
<tr>
<td>3. Status in national law</td>
<td>Domestic courts might be used to enforce international legal obligations, either directly in some countries (where international legal obligations may even take priority over national law when the two conflict) or indirectly through national implementing legislation</td>
<td>No direct application in domestic courts; indirect application if nonbinding instruments are translated into domestic law through implementing legislation.</td>
</tr>
<tr>
<td>4. National Review</td>
<td>Because of more formal international legal status and possibly more formal national legal status, binding instruments undergo more extensive national review. More extensive review leads to greater national cohesion behind the instrument, leading to greater compliance.</td>
<td>Less formal international status may lead to less extensive national review. In turn, limited review may lead to limited national cohesion and less compliance.</td>
</tr>
<tr>
<td>5. Speed of negotiation</td>
<td>Time-consuming to negotiate and adjust, and thus might perpetually lag behind new evidence and political opportunities</td>
<td>Lack of extensive national review allows for rapid adjustment.</td>
</tr>
</tbody>
</table>
some countries. Moreover, review occurs if nonbinding agreements require parliamentary or other actions to pass laws and adopt programs to fulfill the agreement. Because a binding agreement must survive such scrutiny, its existence may signal support from throughout the governmental apparatus; in contrast, a nonbinding agreement may only reflect the interests of the governmental agent at the time the deal was adopted. In some legal systems, binding agreements automatically have the force of domestic law, and thus they can be enforced through the courts. In some, binding international commitments are superior to national law.

These characteristics of the two forms of agreements may lead policy makers to vary the type of agreement they pursue, depending "problem type" that is the subject of efforts to cooperate. Nonbinding agreements have been applied in a wide range of problem types. That range includes purely symbolic efforts such as reaching "agreement" when in fact no substantive agreement is possible. In those situations, the failure of a nonbinding agreement to be effective is simply a reflection of the fact that no agreement is possible. But the range also includes serious attempts to cooperate and regulate behavior when agreement is possible. In those situations, policy makers may face a choice about the legal form of the agreement that they use to codify their agreements. Whether that choice influences outcomes is the subject of this thesis. However, accurate conclusions about which types of agreements are effective under different conditions requires accounting for "problem type," which is done in this study.

This study gives special attention to the use of nonbinding agreements because they are more novel. All else equal, legal scholarship still views binding instruments as the central and most effective instruments of international law and thus the principal subjects of analysis. Indeed, although lawyers invented the distinctions between binding and nonbinding instruments, legal studies have focused on only four narrow uses for nonbinding instruments. First, the most relevant research on nonbinding agreements for industrial regulation has concerned the rapid entry-into-force and ease of adjustment that characterize nonbinding agreements. Studies have shown that nonbinding agreements are the only practical option for codifying highly technical standards, such as those produced by the International Organization for Standardization (ISO) and the Codex Alimentarius Commission. Similar arguments are used in favor of nonbinding technical annexes to core (binding) agreements. Second, as noted above, nonbinding agreements are the only alternative when agreements must be secret--binding commitments require ratification and thus require publicity, and if agreements are secret because they are "illegal" or

46For example, the U.S. Congress passed the Case Act in the 1970s precisely to require the Executive to give Congress an opportunity to review nonbinding agreements that otherwise would not be subjected to Congressional scrutiny.

"immoral" they probably nonetheless would not earn binding status in international law. Legal systems typically void agreements that violate widely accepted—e.g., constitutional—norms. Third, legal studies have argued that nonbinding agreements are also the only practical alternative when states will not consent to a clear, binding agreement—soft law should not be criticized on those grounds, advocates claim, because no agreement may be possible if a binding instrument is pursued. Since the collapse of the gold standard in 1971 all major currency exchange arrangements have been primarily nonbinding, including the exchange provisions of the IMF as well as financial accords such as the Louvre and Plaza agreements. Fourth, nonbinding agreements may be useful to signal aspirations, and thus set the agenda for more detailed, substantive and perhaps also binding instruments. The 1975 Helsinki Declaration, which called for further East-West cooperation is an often-cited example, leading to many benefits including the binding 1979 Long Range Transboundary Air Pollution (LRTAP) Convention and its subsequent binding protocols and related nonbinding commitments. This thesis will extend the last two lines of research by elaborating the arguments on when the need to signal goals and intentions through nonbinding agreements can enhance cooperation and also by showing that nonbinding agreements can be influential even when it would be possible to employ a binding agreement.

Existing legal research on nonbinding agreements has two shortcomings. First, although a few studies have analyzed the use of nonbinding agreements, the mainstream view maintains that, all else equal, a legal instrument which is ratified by national governments—i.e., legally binding—is the most effective form of international law. Some even lament the eclipse of a "golden age" in international law, marked by extensive use of demanding and binding legal instruments, by the current era where nonbinding agreements, declarations and other forms of "soft law" proliferate. In short, the importance and relevance of nonbinding agreements is still contested in the legal literature. That controversy can be resolved only by looking closely and carefully at the practical effects of different types of standards on behavior, which is rarely done in the legal literature. Moreover, one must examine the relationship between instrument choice and other attributes of international commitments, such as scope and stringency. The second


49The most often cited study on such arrangements is: Joseph Gold, 1983, "Strengthening the Soft International Law of Exchange Arrangements," American Journal of International Law 77, 443-489. Since publication of that study the Louvre and Plaza accords, as well as nonbinding agreements on trade quotas (e.g. the US-Japan semiconductor agreements) have extended this trend.


inadequacy of existing legal research on nonbinding agreements is that it generally has not controlled for other factors that might affect the choice of instrument and whether a particular type of instrument influences behavior.

The present study aims to address both of these shortcomings. Although focused on legal instruments and institutions, it accounts for many other factors that influence behavior, such as "problem type" and the interests of stakeholders. Moreover, the studies examine not only legal status of the international regulatory commitments but also other dimensions such as their specificity and stringency. The study underscores that choices in these different dimensions are interrelated. Thus each dimension must be distinguished but analyzed together—international regulatory agreements typically consist of an integrated package of commitments that have many attributes and purposes, as well as institutions for reviewing and adjusting those commitments.

These two shortcomings are responsible for the main critiques of legal and institutional scholarship—that law and institutions are merely masks for other driving forces. Notably, legal research has been vulnerable to the critique—most notably from "realists" in international relations—that the adoption of and compliance with international law is largely a matter of interests, not evidence that law matters. Countries comply with international law only when it is in their interest to do so. In this view, compliance may be high because international commitments require minimal or no change in behavior. Similarly, realists note that compliance may be high when (powerful) parties undertake to enforce international law themselves. International law can be influential when it is a tool of simple "coordination"—when it is in the interest of all parties to comply with common rules (e.g., pilots of all nationalities fly to the right when faced with an oncoming aircraft). Not all parties may agree at the outset on their preferred standard—thus, realists argue, the powerful states prevail—but once adopted such simple coordination standards are self-enforcing. That is potentially an important role for international law, but advocates of international law argue that law and institutions are useful in a wider array of circumstances, including when the terms of cooperation are not self-enforcing.

Because this study examines the other factors that are at work, it contributes an assessment of the influence of law and institutions that is more robust against the realist critique. Nonetheless, the study will offer considerable support for the realist perspective. In the Codex case, compliance with commitments has been high only when commitments have required no change in behavior. But the realist perspective does not explain all of the variance. In the PIC and Montreal Protocol cases, the incentives to deviate from international legal commitments are stronger, yet national governments and firms have nonetheless largely implemented such commitments. The explanation for such behavior lies in how the commitments and institutions have interacted with interests. In the PIC case, the industry had concluded that some form of regulation was inevitable and that the future of the chemical industry, after Bhopal and other

52This view is expressed most recently in the Downs et al.(1996, op. cit.) critique of the Chayes and Chayes "management" approach to compliance—see above.
salient accidents, required the impression that industry was a good environmental steward. A nonbinding instrument, it concluded, would be more effective than a binding approach. In the Montreal Protocol, most industrialized countries have complied because they face strong domestic pressure to do so. Where pressure is weaker—such as in developing countries, which must comply with requirements to report data, and in Russia and other transition countries which must comply with commitments both to report data and to phase out (by 1996) most ozone-depleting substances—international incentives have been necessary to induce compliance. Changes in behavior, resulting in compliance, would not have occurred without international institutions engaged in extensive reviews and delivering rewards and penalties according to performance. Therefore, as realists argue, incentives have been paramount. But institutions have played a significant role in creating incentives that favor behavioral change—in some cases the institutions themselves have had incentives directly under their control, and in other cases they have focused incentives applied by other institutions and national governments.

The second question of this thesis—on how institutions can facilitate the supervision and adaptation of agreements—has also been the subject of extensive legal research. Lawyers have long recognized that regulatory law must be adaptive to new information and needs. Especially abundant has been legal research on how changing scientific information creates a need for

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adaptive agreements.\textsuperscript{54} Several studies have thus given attention to monitoring, periodic assessment, adjustment of commitments and responses to poor implementation.\textsuperscript{55} So far, no study has combined detailed attention to the adaptive management process with attention to how the type of legal agreement affects the ability of the parties to adjust the commitments in that agreement in response to new information.\textsuperscript{56} Another weakness of this research, as noted in the earlier critical review of research on nonbinding instruments generally, is that little attention has been given to controlling for other factors such as interests and problem type. Moreover, few studies have traced the impact of these adaptive commitments and institutions on behavior.

These failures of existing legal research on adaptive agreements has left many questions unanswered, which in turn has reduced the ability to generalize results and to apply them to policy. For example, scholars agree that nonbinding instruments are more flexible because they lack formal review and ratification; that flexibility may make them more adaptable, but the adaptability of nonbinding instruments could be unrealized if such instruments are principally used only in situations where no agreement is possible. In contrast, if binding agreements tend to be employed only in cases where interests are compatible and agreements are marked by high compliance then implementation review—which often takes the form of reviewing compliance rather than the full range of relevant policies—may also be hobbled by lack of material. Thus it could be very difficult to assess whether implementation review can contribute to adaptive


\textsuperscript{55} In addition to citations in previous note, see also Sand, P.H., 1995, "Institution-building to Assist Compliance With International Environmental Law: Perspectives," \textit{Zeitschrift für ausländisches öffentliches Recht und Völkerrecht} (Heidelberg Journal of International Law) 56, 774-795.

\textsuperscript{56} All studies that focus on adaptation have obviously argued that adaptive instruments are needed, but in practice attention to the range of instruments has been narrow because the range of instruments (binding or nonbinding) applied in each field of law is generally narrow. In the field of environmental law, for example, the vast majority of attention has been devoted to the flexibility of the "framework/protocol" model, leading some analysts to conclude that it is the best model although few other types of models have been examined. See, e.g., Gehring, 1994, \textit{op. cit.}. A partial exception to this statement are two studies that make some comparisons between the adaptability of different binding and nonbinding instruments: Contini and Sand, 1972, \textit{op. cit.}; and, Sand, P.H. 1990, \textit{Lessons Learned in Global Environmental Governance} (Washington, World Resources Institute).
agreements. Similarly, in binding agreements the mechanisms that are tasked with adjusting commitments may focus only on adjustments that, like the original agreement, are easy to comply with. In such cases, implementation review may seem irrelevant or constrained, but that observation does not mean that implementation review will be ineffective in other cases. This thesis will attempt to control, more precisely, the conditions under which implementation review is observed and influential and thus allow more robust general conclusions.

The third question addressed in this thesis—on responses to noncompliance—is also one that has long been implicit in research on the law, although many legal studies give it only passing attention. International law allows abrogation of legal commitments if other parties to the commitment fail to comply. Such reciprocity is also codified and elaborated in the GATT/WTO system and many regional trade agreements; in arms control, "breakout" clauses are intended to allow reciprocity both to deter violations and to allow parties to avoid commitments if others don't comply. Trade, superpower arms control, and other intrinsically bilateral activities are relatively easy to monitor and well-suited to enforcement through specific reciprocity, such as withholding of benefits and retaliation. In multilateral settings where benefits of cooperation are collective rather than specific and no individual state can target retaliation against a particular defector, simple reciprocity as a response to noncompliance is less feasible and effective. That problem is widely recognized and partially explains the enthusiasm among legal scholars for multilateral mechanisms, such as the Montreal Protocol's Noncompliance Procedure (addressed in this study) and the GATT/WTO Trade Policy Review Mechanism (not yet the subject of any in-depth analysis). Legal scholarship is the source of the "managerial" hypothesis that is tested in this thesis; those scholars contend that multilateral institutions, such as noncompliance procedures that work through problems rather than apportion blame, are a crucial component of the managerial approach. That view is not shared by all legal scholars—some, for example, have raised fears that such mechanisms will undermine traditional concepts such as state responsibility for treaty compliance, which are the supposed backbone of effective international law.

Part of the reason that enforcement has not been an epicenter of legal research is the assumption that compliance with legal commitments is high because the law matters. The most often cited statement on compliance with international legal commitments is Henkin's maxim: most countries comply with most of their international obligations nearly all of the time.

57Such areas are also well-suited to tacit and informal agreements because transaction costs are low. On reciprocity, enforcement and bilateral cooperation see: Axelrod, 1984, op. cit.; Keohane, 1986, op. cit.; Oye, 1992, op. cit.


59Henkin, L., 1968/1979, How Nations Behave: Law and Foreign Policy, two editions (New York: Praeger). In the first edition (1968) Henkin's claim that compliance was high was implicit; the second edition is the source of the stronger statement—almost all nations comply with almost all
Henkin was not an idealist—he argued that the influence of international law (compliance) would remain high only so long as the great powers saw a common interest in international society and the status quo. While Henkin demonstrated the law's influence in several cases, the empirical basis for systematic application of his claims remains limited. Moreover, Henkin and those who quote from him to support the assertion that the law has automatic influence have rarely distinguished types of violations. Henkin himself did not distinguish types and goals of law and did not address complex regulatory laws, such as those that govern the activities of private corporations, at all. He focused only on binding treaties. Henkin's contention that compliance is high has been confirmed by empirical studies. But Henkin did not systematically trace the influence of law on behavior; nor did his analysis include attention to the full range of other factors that might affect behavior. Thus he could not refute the realist critique that compliance was high because commitments merely codify existing behavior. Henkin argued that compliance was observed mainly out of respect for the law, violations were few, and those violations that did exist did not show that the law had no influence on behavior. Thus enforcement measures were rarely, if ever, needed. Like Chayes and Chayes today, Henkin also argued that strict measures such as sanctions would not be needed: "The preoccupation with sanctions ... [is] largely misplaced. The threat of such sanctions is not the principal inducement to observe international obligations." These broad arguments gave only passing attention to the causal mechanisms at work. Only with the Chayes and Chayes hypothesis—that violations of commitments are mostly unintentional—has debate over the sources and responses to noncompliance reopened. As noted earlier, this study is designed to contribute to that debate.

Model and Variables

This study attempts to isolate how several factors—the legal form of international commitments, the review of implementation, and response to implementation failures—influence the behavior of industrial firms. However, many other factors also influence the behavior of firms, notably the interests of the firms themselves. Thus special attention must be given to defining the full range of factors (independent variables) and the causal pathways by which these factors influence industrial behavior. Failure to do so could easily lead to erroneous conclusions about which factors have caused changes in industrial behavior.

Figure 1.1 shows a schematic of the main variables and their causal relationships. Varied interests within countries put many issues on the agenda for international action (bottom half of principles of international law almost all of the time.

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Some of those issues are selected for action—a process that is not investigated in detail in this study—which in turn leads to international negotiations and to the creation of international agreements and institutions (top half of the figure). Those institutions are designed to influence behavior (the dependent variable). This study focuses on the operation of those institutions after they have been created—that is, the "maintenance" of international cooperation. But as shown in figure 1.1, the same factors that created the international agenda and gave rise to international agreements and institutions also have direct influences on behavior. The purpose of this stylistic figures is not to show all possible causal relationships but to highlight the most important processes, which are described in more detail in the rest of this section. Figure 1.1 is an organizing device that makes it easier to isolate the influence of international institutions (the subject of this study) from other factors that influence behavior.

[figure 1.1 about here]

**The Dependent Variable: Behavior of Industrial Firms that are the targets of international regulation**

Each of the regimes studied in this thesis is oriented to regulate the behavior of certain targets—the individuals and organizations that would cause unwanted externalities if they were not regulated. The targets vary according to the goals of particular commitments. In some instances, the targets are clearly and narrowly defined when commitments are adopted—for example, manufacturers of chlorofluorocarbons (CFCs) that deplete the stratospheric ozone layer. In most cases particular targets become clear only over time. When the PIC system was adopted the chemical and pesticide industry knew that it was one target of these regulatory efforts. But the specific firms with interests became clear only as the PIC list was developed.

In all three of the cases examined in this thesis the ultimate targets are industrial enterprises. It is assumed that international commitments and institutions affect the interests of targets and thus alter their behavior. The case studies trace how international commitments and institutions yield this impact on interests and behavior—that is, whether and how institutions and commitments are effective.

The path from international institutions and commitments to the target's door can often be long and complex. International law formally applies only to states. The national review and ratification process, which is required of binding treaties, is formally and explicitly intended to ensure that, by giving consent, the state also incorporates international commitments into national law. Thus, virtually all agreements that are analyzed in this thesis are formally directed at the

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62 An exception is "universal" law, which applies to people and states. Thus, "universal" principles of human rights apply under international law even to states that have not formally ratified a legal instrument that requires them to honor such rights.
Schematic view of relationship between major independent variables (boxes with broken and solid light lines) and the dependent variable (box with heavy line). This study focuses on three variables associated with international agreements and institutions (boxes with solid light lines). The case studies are mindful of and attempt to "control" for other important independent variables (boxes with broken light lines).

**Implementation Review**
- information gathering;
- assessment of needed adjustments to regulatory commitments;
- assessments of national performance.

**Response to implementation failure**
- positive incentives ("management");
- sanctions and penalties ("enforcement")

**Regulatory Commitments**
- Binding;
- Non-binding;
- Other attributes (specificity, stringency)

**Behavior of targets**

**Regulatory Agenda**

**Interests of regulatory targets** (e.g., chemical manufacturers)

**Interests of public interest groups** (e.g., consumer, development and environmental NGOs)

**Problem type**
- incentives to change behavior;
- clarity of goals & means
behavior of states, but typically the state is only an intermediary. For example, the standards of the Codex Alimentarius Commission are intended, initially, to influence the content of food safety standards adopted by governments. In turn, it is imagined that food producers and exporters will alter their behavior—and thus produce and trade according to national standards that are increasingly harmonized. The role of the state is highly formalized in binding agreements through the ratification process, but the state plays a similar central intermediary role in nonbinding agreements. The state is the principal means of social regulation and the principal agent for negotiating international agreements, binding or nonbinding. Often international agreements rely heavily on the apparatus of the state—to report data, pass and implement laws, regulate trade, etc. When state agents negotiate agreements they tend to focus on actions that they know and can control best—their own.

Figure 1.1 does not show these many pathways from international commitments to the target, which are often complex. Although the state is typically central, not all pathways lead through national governments. In the PIC case, for example, international commitments are intended to influence governments which then regulate chemical and pesticide producers and traders that operate from within their territories. In practice, PIC standards have also been voluntarily adopted by industry associations which then help to ensure that their members are aware of (and comply with) the PIC system. The intermediary is the global industry association, not only governments.

**Independent Variables Related to Major Hypotheses**

The behavior of regulatory targets is obviously influenced by many factors. Here each of the main independent variables is described in some detail, beginning with the three factors related to the three hypotheses investigated in this thesis. These variables and causal relationships are shown in solid boxes and heavy arrows on figure 1.1. The next section examines other independent variables, shown in dashed boxes and with light arrows, that also affect behavior and thus must be addressed—ideally controlled for—in this study.

**Regulatory commitments**

Each case study analyzes one or more international agreement, each of which consists of varied commitments. Regulatory commitments, which are at the center of this inquiry, prescribe or proscribe changes in behavior. Other commitments, which are often termed "programmatic" or "procedural" commitments, require parties to supply data, contribute to monitoring programs, and otherwise contribute to the functioning of the international regulatory program.

This thesis investigates how one attribute of those commitments—the legal status—may determine their influence on industrial behavior. It adopts the convention in international law and
broadly distinguishes two types of commitments: legally binding, and nonbinding. The properties of these two types of agreements are described above in the review of the relevant legal literature and in table 1.2.

Implementation Review

The second independent variable of interest is termed "implementation review." That process consists of three functions: (1) gathering of information about how existing commitments are being implemented; (2) assessment of needed adjustments to international commitments; and (3) assessments of whether a particular target's performance is adequate. The last function can identify implementation problems, leading to responses (below). Those three functions of implementation review reflect the three main strands of literature on regime maintenance, reviewed above.

Responses to Implementation Failure

The third variable of interest is "response to implementation failure." This study investigates how particular responses affect the interests of regulatory targets, which in turn influences behavior. In particular, the study investigates the relative effectiveness of managerial and enforcement responses.

Together, the process of implementation review and the mechanisms for responding to identified cases of implementation failure constitute a "system for implementation review (SIR)." This study shows that the institutions that perform these functions can be highly dispersed, unlike the integrated national systems that monitor and influence social regulations. Nonetheless these dispersed institutions function as a single system. Dispersion helps to match the capacity to respond to implementation problems—which is dispersed in the international system—with the elements of the SIR in each issue-area that identify implementation failures.

\footnote{Some observers also call nonbinding commitments "voluntary." However, in a strict sense, all international commitments are voluntary because all require some form of consent before they have influence. Although widely used, the terms "binding" and "nonbinding" are misleading conveniences drawn from domestic law. While the use of domestic law analogies is certainly misleading, the model of domestic law is not fully inappropriate. While states can compel their subjects to change their behavior, studies of industrial regulation have shown that in practice the standards that determine compliance with domestic standards is often negotiated and thus partially reflects consent of the regulatory targets. Increasingly, voluntary agreements are being used even at the national level, often with great influence. The line between international and national practice, at least in liberal states, is increasingly blurred.}
Other Major Independent Variables

This study also identifies and, where possible, controls for other factors that may affect behavior. Failure to do so could easily lead to spurious conclusions—for example, that international regulatory commitments had influenced the behavior of targets when, in fact, targets complied with commitments because it was simply in their interest to do so. In those cases, the observed behavior and levels of compliance should not be attributed to the influence of international commitments and institutions such as SIRs.

Interests of regulatory targets

The most important independent variable to consider is the interests of the regulatory targets themselves. As shown in figure 1.1, many factors influence these interests; in turn, interests influence many other variables, including behavior (the dependent variable).

Given the large number of causal relationships, it is rarely possible to perfectly control for the interests of the targets. However, at minimum, each study identifies the interests of the main participants and explores whether and how those interests dictate the outcomes. In some situations the case studies are able to "control" for interests. For example, in the PIC case it will be shown that the interests of chemical and pesticide exporters are similar, but differences in procedures for implementation review in those two areas partially explain why efforts to control chemicals have had little influence on behavior while pesticides regulation has been more effective. This convenient experiment is separated into two episodes (see table 1.1).

Interests of public interest groups

Industry is not the only actor whose interests affect outcomes. In particular where industrial activities cause social externalities—such as environmental pollution, workplace hazards, or risks to food security—many other actors are also stakeholders. In figure 1.1 these are described not merely as interests but rather as interest groups because in practice organized groups such as environmental NGOs are the main actors. Efforts to influence outcomes requires power and resources, including the ability to speak on behalf of many voters and interested parties; such influence is typically only available to groups.64

64Regulatory targets also organize into groups—industry associations. In some cases, industry associations help pool resources for actions that benefit the industry as a whole (e.g., the pesticide industry association, which has funded projects that have helped to implement PIC). In other cases, they principally present common industry positions, which enhance industry’s voice (e.g., the International Dairy Federation’s voice at Codex meetings). "Public interest" groups, such as environmental and consumer organizations, provide similar functions. Often they are most evident
Public interest groups attempt to influence industrial behavior in many ways; for simplicity, the model used in this study envisions two main channels of influence. First, public interest groups may attempt to influence the "agenda" for international regulatory action. Once on the agenda, issues lead to international agreements and other regulatory activity that corresponds with the interests of these groups. Although this study does not examine the agenda formation and selection process in detail, the author notes that "the agenda" may play a special role in the means by which these groups influence outcomes. For example, they may have a special interest in keeping a long list of "unsolved" items on the agenda—then their members, whose dues and contributions support many public interest groups, will not be supportive if the agenda is short and crisis does not loom.\(^{65}\) However, like other interest groups, public interest groups also lobby directly once items on the agenda are selected for regulatory action. Because international regulation is a game at many levels, such efforts to influence outcomes include lobbying of national governments and mobilizing public pressure through campaigns, which in turn influence negotiating positions and the influence the content of international regulatory commitments. Actions may also include lobbying directly at international negotiating fora, which in some situations (often when issues are minor) can have influence. This myriad of causal pathways by which public interest groups can influence outcomes is not shown in figure 1.1—rather, the principal pathway shown is through creation of the international agenda.

Second, public interest groups also often seek direct influence on the interests of the regulatory targets. Direct actions against firms, such as consumer boycotts and other public protests may influence the interests of firms and behavior. Such actions need not occur in the same sector or country as the target group's behavior. For example, fear of consumer or regulatory retaliation against the industry for any example of mismanagement led chemical and pesticide firms to favor the PIC system.

Exactly what is the "public interest" can be contentious and is discussed in each case study. Some are broad-based and truly widespread—the diffuse interests that would not be adequately represented and protected in societies with pluralist government.\(^{66}\) Others are

\(^{65}\)For additional insight into the tendency of public interest groups to create the perception that the problems they were created to solve are numerous, exaggerated and unsolved see, e.g., Edelman, M., 1971, Politics as Symbolic Action: Mass Arousal and Quiescence (New York: Academic Press).

\(^{66}\)However, one line of argument suggests that such collective action groups are unlikely to form precisely because interests are diffuse and transaction costs of organization are high. For the classic argument see Olson, M., 1965, The Logic of Collective Action: Public Goods and the Theory of Groups (Cambridge: Harvard University Press). Many studies of public interest groups have
narrower and may overlap with private interests. Often, "public interest" groups view their mission (and raise funding to pursue) explicitly as advocates of interests that would otherwise not have a voice and which conform with their normative views (e.g., protection of the environment and worker safety). In global regulation, the "public interest" could be found in any corner of the globe. The problem of defining public interest extends beyond the current study. It also opens many problems in private and public decision-making, such as how to mobilize resources and guarantee some protection for minority and/or diffuse public interests, which are topics that some public choice literature has addressed. The goal in this study is to describe and assess outcomes, and thus no effort is made to identify what is the "true" public interest, such as by engaging in benefit/cost analysis. (Indeed, in none of these cases studies is the scientific assessment literature sufficiently advanced to allow for benefit/cost analysis.)

**Problem type**

Each problem on the agenda has certain characteristics that influence the prospects for effective cooperation. This study examines two dimensions of these characteristics--the "problem type."

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shown that Olson's elegant and dismal prediction is not fully evident in practice because entrepreneurs are aware of the obstacles--thus they exaggerate risks to make diffuse stakeholders more willing to contribute to collective actions, and often new issues are taken up by existing organizations and thus the transaction costs of organizing collective action on a new issue are greatly reduced. For example, organizations that have been active in PIC include many of the major multinational multi-issue environmental groups (e.g., Friends of the Earth, World Wide Fund for Nature, Greenpeace). Moreover, existing groups can organize themselves, relatively easily, into meta-groups as needed to address particular issues. For example, in both the PIC and Codex cases the most influential public interest groups are actually international alliances of national groups formed specifically so that many national groups with common interests can influence international policy. In PIC, that alliance is the Pesticides Action Network. In Codex the alliance is International Organization of Consumers Unions (IOCU), now called Consumers International (CI). For more on the tactics and strategy of reducing transaction costs and sustaining membership see one of the excellent analytical studies on the economics of public interest group organization, e.g.: Downing, P.B. and Brady, G.L., 1981, "The Role of Citizen Interest Groups in Environmental Policy Formation," in: M.J. White, ed., Nonprofit Firms in a Three Sector Economy (Washington: Urban Institute); Mitchell, R.C., 1979, "National Environmental Lobbies and the Apparent Illogic of Collective Action," in: C.S., Russell, ed., Collective Decision Making: Applications from Public Choice Theory (Baltimore, Johns Hopkins Press for Resources for the Future). For an application to industry associations see: Marsh, D., 1976, "On Joining Interest Groups: An Empirical Consideration of the Work of Mancur Olson Jr.," British Journal of Political Science, 6, 257-271.
The concept is based on Arild Underdal's research on fisheries regulation and on game theory. But the analysis here extends it to include uncertainty, which the case studies show often influences the range of possible agreement on commitments and institutions and the ways that those commitments and institutions later influence behavior.

The first dimension of "problem type" is the strategic situation. The content of international agreements is influenced not only by the interests of stakeholders individually (see above) but also collectively and interactively. In some situations--also termed "deadlock"--there may be no overlap in interests and thus substantive agreement is not possible. At the other extreme--"harmony"--interests overlap extensively and agreement is easy. Incentives to defect are small or nonexistent, and thus monitoring and enforcement of agreements is not necessary. More interesting are the cases in the middle, which can be broadly divided into two categories. One category consists of "coordination" games in which the parties all have an incentive to coordinate their behavior and, once standards are agreed, incentives to defect from those standards are low. However, preferred standards may vary considerably, and reaching agreement can be difficult. The other category are "collaboration" games where reaching agreement can be difficult not only because interests are incompatible but also because they are interdependent--the preferred agreement of one party depends on what it expects the other to do. Typical cases include regulatory commitments that yield common benefits but cause narrow national costs, such as to economic competitiveness. If all parties are sure that competitors will implement costly measures then all may favor adoption of costly standards. Once adopted, the collective interest favors full implementation but any individual party may have a strong incentive to defect and "free ride." Such is the logic of collaboration that institutions or other mechanisms are needed to monitor implementation, detect, deter and respond to noncompliance, and to assure all parties that all others are implementing their commitments.68

Second, the author extends the concept of "problem type" to include uncertainty of knowledge about interests. Such uncertainty can have many causes, including:

- incomplete knowledge about how international commitments could affect national interests and interest groups;


incomplete knowledge about the ability to translate demanding international commitments into changes in industrial behavioral at the national level;

- incomplete knowledge about whether national actions will yield compliance with international commitments;

- inability to monitor and assess perfectly whether parties have implemented their commitments or are on track to do so; and

- lack of agreement or poor understanding of the ultimate regulatory goals.

When uncertainties are high, it may be difficult to design international commitments that yield desirable changes in behavior. And because regulatory targets may not know what behavioral changes will be expected of them, they may be wary of consenting to international commitments, especially if there are strong penalties for noncompliance. If parties can't perfectly implement international commitments then there may be many "nonintentional" cases of implementation failure. Similarly, poor ability to monitor implementation may yield many "false alarms." If the strategic situation is "harmony" then these uncertainties may not matter. But they could crucially determine the prospects for cooperation if the issue is one of "collaboration"—where the ability to monitor and handle noncompliance is a prerequisite to initiating and sustaining cooperation. In such cases, uncertainties may dictate the type of agreements possible and the need for institutions that anticipate and handle noncompliance. High uncertainties may also require institutions that gather information about the problem at hand and attempt to reduce uncertainties.

The concept of problem type is important because it partially determines what types of agreements are possible and the institutions (if any) that are needed for those agreements to influence behavior. Table 1.3 summarizes the implications of these two aspects of the problem type for the three main independent variables that are examined in this study. Vertically, the cells range from those where agreement is easy and incentives to defect are low ("harmony") to those where agreement is difficult or impossible and incentives to defect are high ("deadlock"). Horizontally, the extreme cases of low and high uncertainty are shown. Each cell contains the range of values that we should expect to observe for those independent variables. Within that range, policy makers make specific choices. This thesis will examine whether the expected range is evident—and thus whether the strategic situation and uncertainty affect outcomes as suggested above—and also how policy choices can alter the outcomes. The two dimensions of problem type are continuous; however, for simplicity the table shows results for only four different ideal problem types and two extreme levels of uncertainty—very low (all parties know their interests) and very high (interests are not known and thus the strategic game is also not known).

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69 However, the author is mindful of the argument by Young, who has suggested that ambiguity about goals and means might actually improve bargaining because it forces participants to search for common solutions without strong reference to their own particular costs and benefits. While that may be true, it assumes that all participants are motivated to adopt some form of regulation—in practice, often regulatory targets do not favor regulation. Young, O.R., 1989, "The Politics of International Regime Formation: Managing National Resources and the Environment," *International Organization* 43, 349-375.
Thus figure 1.1 shows that "problem type" can influence the type of regulatory commitments adopted and also the preferences for implementation review.\textsuperscript{70} That influence is evident in the case studies as well. The Montreal Protocol's Non-Compliance Procedure was adopted because some countries feared that others would free ride. Such fears of noncompliance and free-riding also partially explain why the leading states, notably the U.S., pushed for inclusion of \textit{Codex Alimentarius} standards in the WTO which gave them access to institutions for extensive oversight and mechanisms for responding to noncompliance that were part of the WTO.

[table 1.3 about here]

Problem type is, itself, also influenced by the regulatory commitments that are adopted. Once adopted, the commitments define the terms of cooperation. If commitments require no change in behavior then harmony may exist--agreement not to cooperate. Those cases are found, e.g., when international commitments codify what countries have already done.\textsuperscript{71} If commitments require extensive and complicated changes in behavior that parties are uncertain of their ability to implement then agreement might be impossible, even though the parties might be able to agree on more modest and straightforward commitments. Similarly, if the game is collaboration then complex and demanding commitments might be agreeable only if the commitments are linked with extensive capacity to review implementation and respond to noncompliance, which is often true after only years of cooperation and active efforts to build up institutions. In other terms, a space or zone of possible problem types is defined by the range of possible international commitments and available institutions. Problem type is a function of the goals of cooperation, the regulatory commitments envisioned, and the operation of regulatory institutions. Thus figure 1.1 shows arrows in both directions between problem type and regulatory commitments and the institutions for implementation review.

\textbf{Summary on the Model}

This is a model of the main factors that may affect how the targets of international regulation behave. The ultimate aim is to explain how regulatory institutions--in particular, commitments, implementation review, and responses to poor implementation--change the interests of regulatory firms and thus change behavior. But in order to investigate cause and effect, the model must

\textsuperscript{70}Problem type also affects the sources of noncompliance which, in turn, affects the selection of mechanisms for responding to noncompliance. However, for simplicity figure 1.1 does not distinguish the sources of noncompliance problems from responses.

\textsuperscript{71}The author is mindful that codifying what exists into law may nonetheless influence behavior, such as by limiting backsliding. That role for law is examined in more detail in the conclusion.
Table 1.3:
Expected relationships between problem type and the three independent variables examined in this thesis (type of legal instrument, implementation review, and the sources and responses to poor implementation) and the dependent variable (change in behavior in accordance with international commitments).

The Table shows the expected consequences of four different "strategic" situations and two levels of uncertainty. Low uncertainty denotes cases where parties realize the goals and means of the agreement and are aware of their interests. Very high uncertainty denotes cases where parties are unaware of goals, means and interests and thus do not know what game they are playing. The three independent variables and dependent variable examined in this thesis are indicated in italics. The values shown for the first and second independent variables—type of commitment (binding or nonbinding), and implementation review—is the range of feasible values at the time that the international agreement and institution are first established. For clarity, where appropriate explanatory comments are added in brackets. The third independent variable—responses to low implementation—is divided into two components that correspond with the two key issues in the "managerialist" vs. "enforcement" debate to which this thesis contributes: the source of implementation problems (intentional and/or unintentional violations) and the type of responses. (For simplicity, the term "defection" is used to indicate poor implementation or noncompliance; see also ref. 3.) Values shown for these two components is the range of feasible mechanisms that parties would be willing to adopt when designing an agreement and the types of responses applied when parties to an existing agreement are faced with defection. This is especially important when an existing agreement is faced with a "deadlock" episode within a larger regime—such the EU failure to meet Codex standards for Bovine Growth Hormones or Russia's failure to comply with the Montreal Protocol. In both cases, the parties (at least initially) gave their consent to the larger regime but then later found that their interests were strongly incompatible with the regime. The cells show range of feasible values above the baseline—for every regulatory issue on the international agenda it is assumed that at minimum it is possible to reach a shallow and vague agreement (binding and/or nonbinding) with no implementation review, and no mechanism for responding to defection. In an effort to illustrate to summarize the main propositions that are examined in this thesis, also shown is expected level of implementation and behavioral change if the commitments and institutional design adopted are those which are likely to be most effective. The "very high" column is an extreme case; uncertainties are so high that parties have little idea of what game they are playing. Thus only one cell is indicated.
<table>
<thead>
<tr>
<th>Strategic &quot;game&quot;</th>
<th>Low Uncertainty (means, goals and interests are clear)</th>
<th>Very High Uncertainty (means, goals, interests are unclear)</th>
</tr>
</thead>
</table>
| Harmony        | *Instrument*: binding or nonbinding (agreement is self-enforcing and thus choice of instrument may not matter).  
*Implementation review*: not needed unless commitments will require adjustment (agreement is self-enforcing)  
*Source of defection*: unintentional (once agreement is established, rational interest of all parties is to comply)  
*Responses to defection*: management (strong incentives are not needed because the interest of parties is to comply).  
*Behavior*: implementation of international commitments | *(game is unclear because uncertainty is high)*  
*Instrument*: shallow and vague binding agreement; substantial nonbinding agreement possible if parties want to begin cooperation  
*Implementation review*: none, but institutions to gather information and reduce uncertainties will be created if parties want to begin "learning by doing"  
*Source of defection*: unintentional and intentional.  
*Responses to defection*: management or enforcement (type of response will depend on source of defection)  
*Behavior*: implementation of commitments if parties are confident that others are doing the same. |
| Coordination   | *Instrument*: binding or nonbinding (agreement is self-enforcing and thus choice of instrument may not matter).  
*Implementation review*: not needed unless commitments will require adjustment (agreement is self-enforcing)  
*Source of defection*: unintentional (once agreement is established, rational interest of all parties is to comply)  
*Responses to defection*: management (strong incentives are not needed because the interest of parties is to comply).  
*Behavior*: implementation of international commitments | |
| Collaboration  | *Instrument*: binding or nonbinding (agreement will include substantial commitments if mechanisms for reviewing and responding to noncompliance are available).  
*Implementation review*: potentially extensive mechanisms needed  
*Source of defection*: unintentional and intentional (parties have incentives to violate, but unintentional violations are also possible).  
*Responses to defection*: management and enforcement (type of response will depend on source of defection)  
*Behavior*: implementation of commitments if parties are confident that others are doing the same. | |
| Deadlock       | *Instrument*: no agreement, binding commitments empty of content or symbolic nonbinding agreement (no overlap of interests and thus no agreement possible, but symbolic commitments could be adopted if there are no penalties to noncompliance)  
*Implementation review*: none  
*Source of defection*: intentional (from the outset parties do not intend to implement commitments; if confronted with a "deadlock" situation within a larger agreement that they intend to honor they may nonetheless intentionally not comply in this particular situation)  
*Responses to defection*: enforcement  
*Behavior*: no implementation of international commitments without additional incentives (coercion, compensation, etc.) | |
include other factors that also influence the interests of regulatory targets and thus also influence their behavior. Figure 1.1 summarizes the main factors (independent variables) and the pathways by which they might influence the behavior of targets (dependent variable).

Conspicuously absent from figure 1.1 are the interests of nations or governments. This study avoids the labeling of interests in national terms; instead, where possible, efforts have been made to identify the underlying interests of stakeholders, which are typically non-state actors. The importance of this approach is especially evident in the liberal industrialized nations where many different interest groups vie for influence and thus it is often impossible to identify a single "national interest". However, it will be shown that often the interests of "developing countries" can be identified, especially when they concern the common need to build regulatory capacity. When unified, the position of developing countries often has a large influence on the content of international agreements. The case studies show that the same unified views are evident for "industrialized countries" only in cases of pure coordination, such as the adoption of common laboratory standards for assessing chemical hazards. Liberal democracies--those most porous to a wide range of nonstate interests--are the least susceptible to an identifiable, single national interest.

Case Studies

With the model in figure 1.1 in mind, three case studies concerning three independent international regimes have been analyzed. Each of the studies has been selected to meet two criteria:

- Most important, each case should include a range of experiences in the variables of interest in this study, in particular: the legal form of regulatory commitments, the mechanisms for reviewing and adjusting those commitments, and the behavior of industrial targets.
- The cases should be sufficiently new that, apart from their contribution to the theoretical analysis in this study that they make a contribution to the growing number of case studies on international regulation.

Below, the case studies, and why they satisfy these criteria, are briefly presented.

Prior Informed Consent (PIC) for Trade in Hazardous Chemicals and Pesticides

PIC is a voluntary scheme jointly managed by the Food and Agriculture Organization (FAO) and the United Nations Environment Programme (UNEP). FAO manages pesticides; UNEP manages chemicals. At present nearly three dozen substances--mostly pesticides--are included in the scheme; the list has grown rapidly until 1996, when most efforts to implement PIC have stalled as participants have turned their attention to converting the voluntary system into a legally binding Convention. At this writing (late 1997) the Convention was still under negotiation but on track for completion by middle 1998. Industry participation is extensive, in part because
industry has feared more onerous regulations would be imposed if the voluntary scheme failed.

The PIC case is a critical one because it is one of the few examples of an operational system for regulating environmental hazards. Other regimes have attempted to regulate trade in hazards, notably the Basel Convention on hazardous waste of 1989. But that case has not much illustrated the difficulty regulatory problems because the most challenging issues—regulating trade between North and South—were largely eliminated when many developing countries banned all imports of such wastes. (Indeed, until that ban the Basel Convention included a short-lived PIC scheme.) Not only has the Basel case proved to be a poor example of complex regulation, it is also extensively studied. Additional empirical analysis would add little. In contrast, no study has ever examined the operation and effectiveness of the PIC scheme for regulating chemicals and pesticides. Several papers have surveyed the political and legal origins of the system. A handful of papers from policy advocates have offered arguments about the effectiveness of the existing PIC system—mostly to argue that voluntary PIC is inadequate and should be strengthened through conversion to a binding instrument—but none has tied those arguments to extensive evidence from PIC's operation. That is the purpose of the present study, which is the only independent analysis of the operation of the joint FAO/UNEP PIC system.

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73 The most prominent action was taken by African nations. Convention on the Ban of the Import into Africa and the Control of Transboundary Movements and Management of Hazardous Wastes Within Africa, Bamako, 1991. That action has been echoed by import bans in other developing countries and by a ban on exports of such wastes from the EU to developing countries. The contracting parties to the Basel Convention have also adopted a decision that bans trade in hazardous wastes from industrialized to developing countries.


Although the PIC scheme is a single regime, several features allow the case to be divided into several episodes, for which some quasi-controlled comparisons are possible. Notably, most countries and international organizations regulate pesticides and chemicals through separate procedures and institutions. Moreover, the international organizations responsible for chemicals and pesticides also vary—FAO has mainly worked on pesticides and provides the institutions that make expert assessments of pesticide hazards. UNEP is mainly responsible for managing and assessing chemical hazards. The outcomes in these two areas—pesticides and chemicals—have been markedly different. Another feature of the case that allows for quasi-controlled comparisons is that some countries (e.g., Canada, Switzerland) are implementing PIC with voluntary national rules; others (notably the EU) use legally binding regulations.

*Codex Alimentarius* and Harmonization of Food Safety Standards

Established in 1962 to implement the Joint FAO/WHO Food Standards Programme, the mission of the *Codex Alimentarius* Commission is to harmonize and simplify international food standards. Its products include several hundred commodity standards and more than 2000 standards for safe residues of pesticides and veterinary drugs—together they are published in the *Codex Alimentarius*. *Codex* standards are binding on countries that "accept" them, and nonbinding for those that don't. In addition, the Commission has adopted dozens of nonbinding advisory documents such as codes of conduct. Standards are elaborated through a complex process that ensures wide consultation and, usually, consensus. In part because the standards are highly technical, industry participation and influence has been high while consumer public interest groups have practically no voice on most issues.

While the Commission has been very successful at setting standards, formal "acceptance" of those standards has been low.\(^76\) In the industrialized countries, the impact of *Codex* has been low. In developing countries, where prior regulatory systems were often nonexistent, implementation of *Codex* standards has been much higher. In both types of countries, the impact of *Codex* rules has been rising because attention to non-tariff barriers to trade, including food safety standards, has been rising. Since 1988 it has been clear that *Codex* standards would be adopted as part of the new GATT/WTO agreement on technical barriers to trade (TBT), notably

\(^76\) "Acceptance" is important for two reasons. First, from a legal perspective once a standard is accepted by a *Codex* member it is binding upon that member. In practice, *Codex* members do not formally accept standards that they do not intend to implement—thus the meaning of "binding" is ambiguous at best. (Austria, for example, has accepted only one *Codex* standard—that concerning bee honey; but the influence of *Codex* standards on Austrian food standards is much higher.) Nonetheless, official *Codex* standards and statistics—which are the only systematic source of data that is available for evaluating the influence of *Codex*, and thus heavily used here—tabulate only whether standards have been accepted, not whether they have been put into practice but not formally accepted. Second, it is possible that formally accepted standards have greater influence.
those concerning allowable national sanitary and phytosanitary (SPS) regulations. Thus although the Commission's standards remain voluntary, in practice Codex standards are now also being applied through binding measures (which include a system of enforcement—the WTO panels).

As with the PIC case, the Codex system is a critical case. It is the longest standing organization, with the widest range of activities related to environmental nontariff barriers to trade. Thus it offers a long history for analysis of efforts to harmonize national differences. Moreover, Codex is the most prominent and active of the international bodies charged with harmonizing standards under TBT/SPS, which is the first major foray of the world trading system into harmonization of the types of environmental standards that pose non-tariff barriers to trade. The Codex system has been the subject of previous independent studies, but the last major study was completed in the middle 1970s when virtually none of these issues related to regulatory harmonization were on the agenda of the GATT and other free trade agreements.\(^77\) Already one WTO case—on the EU's ban on beef produced with bovine growth hormones (BGH), which contravene's Codex standards—has been handled by the WTO's dispute panel system. That case thus offers a crucial first glimpse at how the shift to binding status has altered the effectiveness of the Codex standards. Moreover, the study will show that binding status has altered the whole process of setting standards, resulting in much greater scrutiny of Codex activities. Whereas previously Codex standards were largely irrelevant to behavior, especially in industrialized countries, and thus ignored; today they are potentially more relevant, which is requiring an overhaul of the Codex regulatory system.

The Montreal Protocol's Noncompliance Procedure

The Montreal Protocol is one of the most studied international regulatory regimes. More studies are unlikely to reveal much, except in one area: the Protocol's novel Non-Compliance Procedure. It is one of the few examples of a formal procedure dedicated to handling implementation problems in an international regulatory regime. It is thus a critical case for examining how some aspects of the maintenance of international agreements might be addressed.

The Non-Compliance Procedure (NCP) was adopted in 1989 and began operation in 1989. While it existed in the backwaters of the Montreal Protocol for its first years, since 1993 it has handled a growing array of implementation failures, ranging from the failure by many countries to report data, as required under the Montreal Protocol, to the egregious failures of Russian industry to eliminate production of ozone-depleting substances. How these cases have been handled allow for a test of which instruments, under what conditions, are best suited to handling problems of noncompliance.

\(^77\) Again the exception is the European Community, which actually established the forerunner to the global Codex system in the 1950s. Again, that exception offers little insight that can be generalized to the problems of harmonization at a global level.
The NCP is not the only example of compliance review, but it is the most relevant for studying multilateral industrial regulation. Others include the International Labour Organization's Review procedures, which have been studied extensively and, in practice, ILO review rarely goes behind assessments of whether laws on the books in countries conform with ILO standards. Other examples include the systems for reviewing compliance with human rights regimes, the system of infractions reports of the Convention on International Trade in Endangered Species, and the compliance review procedures in several other wildlife regimes, all of which address mainly the failures of governments to regulate their own actions rather than the actions of private actors that operate within national borders.

Dispute resolution systems could also offer a means of reviewing compliance, but they operate only under special conditions that do not necessarily apply to multilateral industrial regulation. Namely, they require that a party have an incentive and standing to bring a dispute. Often the benefits of multilateral cooperation are spread amongst many parties, and thus no single party has a strong incentive to act, alone, in response to another's noncompliance. Except where costs and benefits are reciprocal—as in trade but not in most environmental issues—lack of reciprocity makes it difficult for one party to retaliate against another's noncompliance, thus serving as a means of enforcement. In light of these weak incentives, it is not surprising that although dispute resolution procedures are commonplace in multilateral environmental agreements, in practice they are rarely used. In the field of multilateral environmental law, no dispute resolution procedure has ever been invoked. In the GATT/WTO the dispute resolution mechanism has been active precisely because, in practice, trade is a bilateral activity and the benefits and costs of compliance are felt directly in that bilateral exchange. Noncompliance that does not yield strong bilateral incentives is pursued less vigorously through the GATT/WTO system.

Thus multilateral mechanisms for addressing noncompliance could play an important role in multilateral cooperation. Given the rarity of such mechanisms, the Montreal Protocol experience is important to analyze.

Scores on Dependent and Independent Variables

To summarize, this study examines how three variables—the legal status of international regulatory commitments, the process of implementation review, and the response to implementation failure—influence behavior. In addition, the study must account for how several other variables also influence behavior.

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Because the causal model is complicated, potentially every variable is related to all others. In this section, the author briefly focuses on relationships between a handful of key variables. These relationships are summarized in cross-tabulations presented in tables 1.4 to 1.9. Each table summarizes the "scores" for each variable for a sample of the 11 episodes (table 1.1). Six bivariate relationships are highlighted in tables 1.4 to 1.9 because each has been identified above as potentially crucial to the story of how international institutions influence industrial behavior:

- tables 1.4 - 1.6 The relationship between the three main independent variables in this study and the dependent variable;
- tables 1.7 - 1.9 The relationship between "problem type" and the dependent variable (table 1.7), type of regulatory commitment (table 1.8), and responses to implementation failure (table 1.9).

These tabulations show two important facts regarding the selection of cases in this study.

[tables 1.4 - 1.9 about here]

First, regarding the cross-tabulation between the three main independent variables—which correspond with the three hypotheses examined in this study—and the dependent variable, all of the cells are filled. Thus it is plausible to expect that the selection of cases has not introduced bias that makes it impossible to investigate the full range of covariance between each of these independent variables and the dependent variable. Table 1.4 shows that the selection covers both binding and nonbinding commitments that have been both effective and ineffective. Table 1.5 shows that the cases and episodes display a wide range of implementation review experiences, with a wide range of outcomes. And, crucially, table 1.6 shows that responses to implementation have been numerous and varied; contrary to the expectation that tough ("enforcement") responses would not be available, in fact they have been used in several instances. Not all cells are filled, however—there are no examples where enforcement has been applied and the influence of regulatory commitments has been low. Most likely that reflects both that enforcement responses are not mobilized unless regulatory commitments are important (and thus likely to be effective) and that enforcement, when applied, is influential. Of course, these correlations do not prove any causality; the purpose of the case studies is to trace the causal relationships in more detail.

Second, regarding the relationship between "problem type" and several crucial variables, tables 1.7 - 1.9 show that all cells are filled. That result is important because it suggests that there is no systematic relationship between problem type and the range of phenomena investigated in this study. One of the most important failings of the existing (especially legal)

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80 In the cross-tabulations in tables 1.7 to 1.9, "problem type" is defined only with only one aspect of the full definition used above—the strategic "game," in particular the incentives to defect from the international commitments. Including other aspects of the strategic game as well as uncertainty is not implemented in tables 1.7 to 1.9 because that would produce a three- or four-dimensional table.
Table 1.4

Relationship between Legal Status (an independent variable) and change in behavior of targets (dependent variable), selected episodes

Influence of International Institutions on behavior (dependent variable)

<table>
<thead>
<tr>
<th>High Influence</th>
<th>Low Influence</th>
</tr>
</thead>
<tbody>
<tr>
<td>PIC for chemicals (episode #2) and pesticides (episode #3)</td>
<td>Export Notification Regime, e.g., London Guidelines (episode #1)</td>
</tr>
<tr>
<td>Codex Standards not &quot;accepted&quot; by developing countries (episode #6)</td>
<td>Codex Standards not &quot;accepted&quot; by OECD nations (episode #6)</td>
</tr>
<tr>
<td><strong>Voluntary (nonbinding)</strong></td>
<td><strong>Ratified (binding)</strong></td>
</tr>
<tr>
<td>Codex standard on bovine growth hormones (episode #7)</td>
<td>Codex standards &quot;accepted&quot; by OECD nations (episode #5)</td>
</tr>
<tr>
<td>Montreal Protocol data reporting by developing countries with MLF funding (episode #8) and with threats to withdraw funding (episode #9)</td>
<td>Montreal Protocol data reporting by developing countries without MLF funding (episode #8)</td>
</tr>
<tr>
<td>Montreal Protocol on Russia after invocation of Noncompliance Procedure (episode #11)</td>
<td>Montreal Protocol on Russia before invocation of Noncompliance Procedure (episode #10)</td>
</tr>
</tbody>
</table>
Table 1.5

Relationship between Implementation Review (an independent variable) and change in behavior of targets (dependent variable), selected episodes

<table>
<thead>
<tr>
<th>Influence of International Institutions on behavior (dependent variable)</th>
<th>High Influence</th>
<th>Low Influence</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>Codex Standards in developing countries (episodes #5 and #6)</td>
<td>Export Notification Regime, e.g., London Guidelines (episode #1)</td>
</tr>
<tr>
<td>Minimal Implementation Review (independent variable)</td>
<td>Codex standards on bovine growth hormones (episode #7)</td>
<td>Codex standards &quot;accepted&quot; by OECD nations (episode #5)</td>
</tr>
<tr>
<td>Extensive</td>
<td>Montreal Protocol data reporting by developing countries (episodes #8 and #9)</td>
<td>Montreal Protocol data reporting by developing countries without MLF funding (episode #8)</td>
</tr>
<tr>
<td></td>
<td>Montreal Protocol on Russia after invocation of Noncompliance Procedure (episode #11)</td>
<td>Montreal Protocol on Russia before invocation of Noncompliance Procedure (episode #10)</td>
</tr>
</tbody>
</table>
Table 1.6
Relationship between Response to Implementation Failure (an independent variable) and change in behavior of targets (dependent variable), selected episodes

<table>
<thead>
<tr>
<th>Response to Implementation Failure (independent variable)</th>
<th>High Influence</th>
<th>Low Influence</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>Voluntary PIC for chemicals and pesticides (episodes #2 and #3)</td>
<td>Export Notification Regime, e.g., London Guidelines (episode #1)</td>
</tr>
<tr>
<td></td>
<td>Codex standards in developing countries (episodes #5 and #6)</td>
<td>Codex standards in OECD nations (episode #5)</td>
</tr>
<tr>
<td>Management</td>
<td>Montreal Protocol data reporting by developing countries (episode #8)</td>
<td>Montreal Protocol on Russia before invocation of Noncompliance Procedure (episode #10)</td>
</tr>
<tr>
<td>Enforcement</td>
<td>Codex standard on bovine growth hormones (episode #7)</td>
<td>no episodes</td>
</tr>
<tr>
<td></td>
<td>Montreal Protocol data reporting by developing countries—continued noncompliance after receiving financial assistance that continue to (episode #9)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Montreal Protocol on Russia after invocation of Noncompliance Procedure (episode #11)</td>
<td></td>
</tr>
</tbody>
</table>
Table 1.7

Relationship between Problem Type (an independent variable that is "controlled" in this study) and change in behavior of targets (dependent variable), selected episodes

Influence of International Institutions on behavior (dependent variable)

<table>
<thead>
<tr>
<th>High Influence</th>
<th>Low Influence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voluntary PIC for chemicals and pesticides (episodes #2 and #3)</td>
<td>Export Notification Regime, e.g., <em>London Guidelines</em> (episode #1)</td>
</tr>
<tr>
<td>Codex standards in developing countries (episodes #5 and #6)</td>
<td>Codex standards in OECD nations (episode #5)</td>
</tr>
<tr>
<td>Montreal Protocol data reporting by developing countries after receiving MLF funding (episode #8)</td>
<td>Montreal Protocol data reporting by developing countries that received MLF funding but still did not report (episode #8)</td>
</tr>
<tr>
<td>Montreal Protocol in Russia after invocation of Noncompliance Procedure (episode #11)</td>
<td>Montreal Protocol in Russia before invocation of Noncompliance Procedure (episode #10)</td>
</tr>
<tr>
<td>Codex Standards on bovine growth hormones (episode #7)</td>
<td><em>Codex</em> standards not accepted by nations, prior to incorporation of Codex into WTO (episode #6)</td>
</tr>
</tbody>
</table>
Table 1.8

Relationship between Problem Type (an independent variable that is "controlled" in this study) and choice of legal instrument (an independent variable), selected episodes

<table>
<thead>
<tr>
<th>Problem Type (<em>controlled</em> independent variable)</th>
<th>Nonbinding</th>
<th>Binding</th>
</tr>
</thead>
<tbody>
<tr>
<td>Defection risk low: Change in behavior is easy and/or in target's direct interests</td>
<td>Export Notification Regime, e.g., <em>London Guidelines</em> (episode #1)</td>
<td>Most Codex standards after incorporation into WTO (episode #7)</td>
</tr>
<tr>
<td></td>
<td>Voluntary PIC system (episodes #2 and #3)</td>
<td>Montreal Protocol data reporting by developing countries that receive MLF funding (episode #8)</td>
</tr>
<tr>
<td></td>
<td><em>Codex standards that are not &quot;accepted&quot;</em> (episode #6)</td>
<td>Montreal Protocol compliance by Poland, and by Belarus and Ukraine after receiving GEF funding (episode #10).</td>
</tr>
<tr>
<td>Defection risk high: Change in behavior is against target's direct interests</td>
<td><em>Codex standards that are not &quot;accepted,&quot; prior to incorporation of Codex into WTO</em> (episode #5)</td>
<td><em>Codex Standards on bovine growth hormones</em> (episode #7)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Montreal Protocol in Russia after invocation of Noncompliance Procedure (episode #11)</td>
</tr>
</tbody>
</table>
Table 1.9

Relationship between "Problem Type"
(an independent variable that is "controlled" in this study) and
Responses to Implementation Failure: (an independent variable),
selected episodes

<table>
<thead>
<tr>
<th>Problem Type</th>
<th>None</th>
<th>None, and/or Management</th>
<th>None, Management and/or Enforcement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Defection risk low:</td>
<td>Export Notification Regime, e.g., London Guidelines (episode #1)</td>
<td>Compliance by importers in the voluntary PIC system, which included importer training programs (episodes #2 and #3)</td>
<td>Most Codex standards after incorporation into WTO (episode #7)</td>
</tr>
<tr>
<td>Change in behavior is easy and/or in target's direct interests</td>
<td>Compliance by exporters under voluntary PIC for chemicals and pesticides (episodes #2 and #3)</td>
<td>Montreal Protocol data reporting by developing countries that received MLF funding but still did not report (episode #8)</td>
<td>Montreal Protocol data reporting by developing countries that received MLF funding but still did not report (episode #8)</td>
</tr>
<tr>
<td>Codex standards that are &quot;accepted&quot; (episode #6)</td>
<td>Montreal Protocol in Russia before invocation of Noncompliance Procedure (episode #10)</td>
<td>Codex Standards on bovine growth hormones (episode #7)</td>
<td>Montreal Protocol in Russia after invocation of Noncompliance Procedure (episode #11)</td>
</tr>
<tr>
<td>Defection risk high:</td>
<td>Codex standards that are not &quot;accepted,&quot; prior to incorporation of Codex into WTO (episode #5)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
literature is that problem type has not been controlled, and thus the ability to generalize conclusions from the studies to other problem types is limited. These cross-tabulations suggest that a wide range of problem types are considered in this thesis and thus, in principle, it is possible to draw conclusions that are robust under a wide range of conditions.

Conclusion

This study aims to answer three questions that concern how the design and operation of international institutions determines the ability to regulate multilateral industrial behavior. First, the study explores how the type of legal commitment--binding or nonbinding--influences outcomes. Second, the study examines how the operation of procedures for gathering and assessing information on implementation--"implementation review"--make regulatory agreements more effective. Third, the study explores whether and how international institutions can respond to implementation failures, such as noncompliance, that are identified by implementation review.

These questions are examined with three studies of three regulatory regimes--on trade in hazardous chemicals and pesticides, food safety, and consumption of substances that deplete the ozone layer.

The factors that influence the behavior of industrial firms are complicated; thus isolating the influence of the particular variables examined in this study is difficult. Efforts are made to identify the main independent variables--both the three variables that correspond with the three questions assessed in this study, and the other major independent variables. Each of the case studies traces the influence of the three main independent variables but is mindful to separate, where possible, the influence of the other variables as well.

To aid in the effort to isolate the influence of the three main variables, for each of the three regimes a handful of critical "episodes" is identified. Those episodes multiply the utility of the data, in part by allowing partially controlled comparisons within and between the cases.
Regulating Trade in Hazardous Chemicals and Pesticides: The Origins, Operation and Effectiveness of the Prior Informed Consent (PIC) System

Chapter 2
Introduction

In response to environmental pressure and concerns, since the early 1970s every major OECD nation has sharply tightened regulations on chemicals and pesticides. Initially those domestic controls did not apply to rapidly growing export markets. Especially in developing countries the continued spread of the green revolution and cash cropping led to rising demand for pesticides, including pesticides that had been banned in industrialized countries. By the late 1970s environmental and consumer groups warned that a “circle of poison” was enveloping the rich industrialized nations—poisons banned at home but exported to developing countries were returning as residues on imported fruits and vegetables. Development organizations documented a rising tide of health effects among agriculture workers in developing countries, where hazardous pesticides were being imported and used often with little knowledge of the risks. Multinational corporations were blamed for promoting excessive use of pesticides. Developing countries rallied against dumping of these substances on local markets. They were joined by environmental groups in calling for bans on the toxic trade.

Despite the severe problems caused by unregulated trade in hazardous chemicals and pesticides and intense pressures to address it, by the early 1980s few trade controls had been adopted. Major producers of pesticides and chemicals—all located in industrialized countries—had successfully rebuffed pressures for export regulation; some countries had adopted minimal requirements to exchange information about chemical and pesticide hazards with importers, but those were poorly implemented and had little impact on trade patterns.

Within a decade that same industry had sharply changed course. In 1989 a voluntary system was adopted to ensure that exports of the most hazardous chemicals and pesticides took place only with the prior informed consent (PIC) of importing nations. Chemical and pesticide producers have enthusiastically supported that voluntary system and played a leading role in implementing it.

Managed jointly by the Food and Agriculture Organization (FAO) and the United Nations Environment Programme (UNEP), the objective of PIC is to improve the capacity of developing countries to make and implement informed decisions to regulate chemical and pesticide hazards. The means of the PIC system is to improve the ability of importers, which are increasingly

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For initial discussions and documents the author thanks Bill Murray (FAO, now government of Canada), Peter Sand (World Bank, now University of Munich), and Aase Tuxen (UNEP Chemicals). For documents and background discussions, the author is also grateful to Barbara Dinham (Pesticides Trust), Birgit Engelhardt (CEFIC), Ronald Macfarlane (Consumers International), Richard Nielsson (GCPF, formerly GIFAP), Jenny Pronczuk de Garbino (WHO), Achim Alexander Halpaap (UNITAR), René von Sloten (CEFIC), Michael Walls (Chemical Manufacturers Association)
developing countries, to exercise tighter control over hazardous imports. PIC makes useful information on those hazards available to developing countries, and it partially shifts the burden of regulating trade from importers to exporters, which are predominantly rich industrialized countries with high capacity to regulate pesticide and chemical shipments. The first substances formally entered the PIC procedure in 1991; by the middle of 1997, 38 pesticides and industrial chemicals were either in the PIC system or soon to be. Although data for assessing PIC's effectiveness are poor, the system appears to be responsible for a significant increase in regulation of chemicals and pesticides trade between North and South in part because all the major industry associations have required that their members implement PIC. There have been no known violations of the voluntary PIC system. International training programs to help developing countries implement PIC have increased the capacity of developing countries to implement PIC (and to manage hazardous chemicals and pesticides more generally). Although the "PIC list" includes many substances that have been practically banned worldwide and thus not much traded, over time it has expanded to include many substances that are still used widely. The success of the voluntary PIC system is evident in the fact that PIC did not merely codify what firms and governments were doing already--its scope and influence on behavior have widened.

This chapter describes the origins and operation of the PIC system. It reviews early domestic regulations in the industrialized countries, especially the United States and Western Europe, and shows how they constrained and shaped later international regulations. It documents the negotiations that led to the voluntary PIC system and provides a detailed assessment of PIC's operation. Throughout, the object of the study (dependent variable) is twofold: the content of the PIC rules, and the extent to which those rules have influenced their ultimate targets: the firms that export and import hazardous chemicals and pesticides.

In addition to providing a history of the PIC system, this chapter also focuses on several factors (independent variables) that have affected the content and effectiveness of the PIC system. These factors correspond with the main questions and independent variables identified in the introduction to this thesis.

First, the study gives special attention to how the type of legal agreement affects outcomes. PIC was established by two instruments--UNEP's *London Guidelines* (1987) and FAO's *Code of Conduct on the Distribution and Use of Pesticides* (1985). Both were amended in 1989 to include the PIC system, and neither is legally binding. In contrast, virtually all studies of international environmental governance have focused on legally binding accords implemented mainly with legally binding national legislation; this study is one of the few that examines in-depth the effectiveness of a nonbinding instrument for international environmental regulation. Conventional wisdom holds that binding instruments are the most effective mechanisms for international regulation, yet the evidence in this study suggests that the nonbinding PIC system has been highly effective. Other studies recognize that nonbinding legal commitments can be
effective in cases of "pure coordination,"
but PIC has required that exporting firms substantially change their behavior, not merely coordinate their actions. This study shows that PIC's effectiveness can be traced to two factors. One is that pesticides and chemical industry reluctantly embraced the voluntary PIC system because it (correctly) predicted that more onerous (and uncoordinated) regulation would result in the absence of a unified, global PIC system. Thus this study supports what has analysts of the use of voluntary regulation at the national level have found--regulatory targets "volunteer" to constrain their behavior when much worse (often binding) regulation looms.²

The other reason that PIC has been effective is that its nonbinding form was highly flexible and facilitated "learning by doing". Binding instruments might be superior when parties are tempted to violate an accord because binding instruments might be taken more seriously and often have formal status under national law, but in the PIC case violations have been nil. More important than laying the groundwork for handling violations has been to achieve active industry participation and to start the process of learning by doing, both of which have been best achieved with a nonbinding instrument. International cooperation to address many environmental problems--from global warming to land-based sources of marine pollution--are marked by lack of clarity and the need for learning, especially at the early stages; contrary to conventional wisdom, this study suggests that such problems, too, would benefit from a nonbinding approach.

These tentative conclusions about the effectiveness of a nonbinding approach can be partially tested by examining the impact of efforts to convert the voluntary PIC system to a binding legal instrument. Under pressure from developing countries, the European Union, and most environmental groups active on the pesticides issue, negotiations on a binding "PIC Convention" are nearly complete. Those negotiations have been principally guided by the lessons learned in the nonbinding PIC system; moreover, countries are being much more cautious


about what they will accept in the binding instrument than they were during the nonbinding phase of the PIC system. Many innovations developed during the nonbinding phase, such as the extension of PIC to pesticides formulations that are hazardous only when used in certain ways in developing countries, would probably have been impossible to include if PIC had been adopted as a binding system back in 1989. Today they are accepted as a legitimate part of the PIC system. It remains to be seen whether the conversion to a binding instrument will bring any added benefits; so far, the voluntary system worked quite well. In only two areas does the proposed binding convention appear to move significantly beyond the voluntary system—in formalizing a mechanism for technical assistance to developing countries, and in improving monitoring and compliance control. But in the former, actual practice in many international organizations has led to substantial technical assistance. On the latter, which is vitally needed, all of the critical decisions are likely to be postponed until after the Convention enters into force—in short, the Convention seems likely to do nothing more than the voluntary system has already achieved. That lack of progress has come at significant cost—implementation of the voluntary system stalled for two years while the binding system has been negotiated, and many of the lessons learned under the voluntary system have not been put into practice because the conversion to a binding instrument has shifted the domestic activities under PIC from agriculture and other field ministries for foreign affairs, diplomats and lawyers.

Second, this study examines how the PIC system has been dynamic and responsive to new information. Other studies have shown that regulatory instruments require mechanisms for adaptation—what has been termed "adaptive management". Some scholars have applied these concepts to international regulation. However, few studies have examined how those information feedbacks operate in practice, and none has examined their operation in a nonbinding legal regime. Such feedbacks may be especially important in nonbinding regimes because, as claimed above, those are most conducive to learning by doing. The voluntary PIC system includes few formal provisions for such information; especially limited are provisions for review of information about how PIC is implemented at the national level, which is vital if PIC is to have any practical influence on behavior. However, this study shows that in practice an elaborate system for implementation review (SIR) has emerged, consisting of many decentralized activities of international organizations, national and international funding agencies, national governments, and NGOs. For example, the need to include several of the most dangerous chemicals in the PIC procedure was identified by nongovernmental organizations (NGOs) that independently reviewed the implementation of the Code of Conduct and other efforts to regulate pesticides. The main

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3C.S. Holling, ed., Adaptive Environmental Assessment and Management (Chichester: John Wiley & Sons). For other studies that also emphasize information feedbacks in the management of resources, see E. Ostrom, 1990, Governing the Commons: The Evolution of Institutions for Collective Action (Cambridge: Cambridge University Press).

4e.g., T. Gehring, 1994, Dynamic International Regimes: Institutions for International Environmental Governance (Frankfurt: Peter Lang).
industry association, FAO, and several other international organizations have also played a role in reviewing and promoting implementation of PIC, in part by adding PIC to activities that were already underway to enhance management of pesticides. The many elements of the SIR have operated in concert, although no body is formally charged with coordination. At the center of the SIR has been a FAO/UNEP Joint Group of Experts that has reviewed experience and evidence; because PIC was nonbinding, that small group could also make policy decisions that, in practice, have maintained and expanded the PIC system. The presence of that SIR made learning by doing possible. The need for PIC to adjust to new information was greatest in late 1995 and 1996, after the effectiveness of initial efforts to implement PIC was evident and after the SIR had emerged; unfortunately, that was exactly the time when efforts to implement the voluntary PIC system slowed as governments and NGOs focused on negotiation of a binding PIC system.

This study does not address the issue--identified in the introduction of this thesis--of how international institutions handle problems of noncompliance. As indicated, it appears that compliance with the main regulatory commitments of PIC has been perfect, although compliance with the programmatic commitments in London Guidelines and Code of Conduct to report data have been poor in many cases--only the easiest requirements, such as to name designated national authorities, have yielded widespread compliance. Much more important in the PIC regime than formal compliance has been implementation--in particular, the development of the PIC rules through the work of the Joint Group. This study shows that, as with most problems that require regulating complex behavior, groups that are influential during the rulemaking process are predominantly those with special expertise on the problems at hand. Often only industry has such expertise, which raises the concern that rules could be written for industry's advantage--in the PIC case, defining the scope of the PIC mechanism and PIC procedures narrowly, thus in practice limiting PIC's influence. In this case, industry made such efforts, but regulatory capture was avoided because industry claims were evaluated by an expert group whose decision-making procedures were governed mainly by scientific criteria--the group evaluated policy options mainly according to whether they contributed to the objective of reducing chemical and pesticides hazards by allowing developing countries to exercise greater control over imports. Moreover, industry influence was by the active participation of several public interest groups that also had such implementation expertise; their presence ensured that institutions were not merely a handmaiden of powerful states and interest groups. Public interest groups that failed to develop implementation expertise had little influence on the critical process of implementation and thus little influence on the rules and effectiveness of the PIC system.

Third, although this study focuses on how the type of legal instrument and the presence of an SIR has influenced outcomes, it also examines how the interests and capabilities of the five major stakeholders have influenced regulation of trade in hazardous chemicals and pesticides: (1) chemical and pesticide firms, (2) public interest groups, (3) developing countries, (4) industrialized countries, and (5) international organizations. It explores when and why the interests of these groups and their ability to have a voice in the policy process have changed, and how the changes have affected the content of PIC rules and the influence of those rules on behavior. The interests of these stakeholders, especially producer firms, are the most important
explanators of major national and international policy changes. Environment and development organizations have put many issues on the domestic and international policy agendas, but every substantive development of trade regulation has required at least the consent, and often the active support, of the chemicals and pesticides industry. Even when developing countries had a voting majority, no international organization adopted a scheme for regulating trade that did not mainly reflect the interests of most industrialized country exporters. Industry embraced PIC only when its interests changed--fearing the adoption of uncoordinated binding PIC systems in some major markets but not others.

Outline of the Study

The history of PIC is complicated because the system did not emerge from the top-down; nor did it emerge in response to a particular well-defined international environmental problem. Rather, the regime to regulate trade in hazardous chemicals and pesticides has been built up through many decentralized national regulatory efforts as well as the activities of several international organizations; PIC is merely one component. All of these activities are partially coordinated, mainly informally and tacitly--similar industries and governments are active in all fora; often the same delegates and bureaucrats guide the critical policy decisions. Contrary to expectations that a growing web of international standards and overlapping activities might lead to "treaty congestion," on balance the overlapping efforts have been complementary rather than conflicting; coordination has been less difficult than analysts expected. The result was a "regime complex" for regulating trade in hazardous chemicals and pesticides. By the early 1980s such a complex was evident in OECD nations, which had harmonized many aspects of chemical and pesticides regulation and trade; a decade later it had spread globally. PIC is only one element of a global effort to improve management of chemicals and pesticides.

The global regime that emerged for controlling trade in hazardous chemicals and pesticides encompasses two related functions: (a) harmonization of national regulations to lower barriers to trade and (b) regulation of trade, both by requiring exporters to notify importers of hazardous exports and, eventually, by requiring prior informed consent. The ultimate aim of this study is to explore the operation and effectiveness of the latter part, notably the PIC system. But in order to understand why the PIC mechanism was chosen, its institutional forms, and how PIC operates in practice, one must look more broadly. Thus this study also examines efforts to harmonize national regulations, especially among OECD nations that have the earliest, most extensive, and varied national systems for managing chemical and pesticide risks.6


6The approach taken in this chapter, which identifies the PIC system as emerging from the dual agenda--harmonization and regulation--is consistent with the background to PIC in the account
The complicated story is told in five parts. First national regulation of chemicals and pesticides in industrialized countries is briefly reviewed, from early in the twentieth century through the 1970s—special attention is given to health and safety regulations adopted since the 1960s. As the cost of supplying information on health and environmental hazards to regulators rose rapidly so did pressure from industry to harmonize domestic regulations in the major markets, especially in the U.S. and Europe. Second the study reviews the generally low capacity of developing countries to regulate the rising demand for these hazardous substances. Starting in the late 1970s, public interest groups and developing countries sought to limit exports of hazardous chemicals and pesticides from industrialized countries (where all major producers were located) to developing countries. Few of those efforts to regulate trade had any practical consequences, but they did set the stage for effective later regulation, including the PIC system. Many involved the United Nations Environment Programme—created in 1972—which has thus remained heavily involved in the issue. Third is a history of international regulatory efforts in the 1980s, which ultimately led to the PIC system. Fourth is analysis of the operation of PIC from 1989, when the system was adopted, through 1996, when implementation stalled because the major stakeholders had focused their attention to negotiation of a legally binding PIC treaty. The analysis shows that virtually every significant aspect of PIC’s operation has hinged on policy decisions made during this implementation period. Fifth is analysis of the major factors identified above.

I. National Regulation and International Harmonization: Formation of an OECD Chemicals regime

Prior to the rise of environmental awareness in the 1960s, efforts to regulate pesticides focussed mainly at protecting brands and consumers by ensuring that products on the market were effective and trade names accurately described active ingredients. The U.S. 1910 Insecticide Act, initiated by farmers and the U.S. Department of Agriculture is often cited as the first public regulation of pesticides. It specified minimum percentages of particular ingredients in some common pesticides. It was part of the earliest phase of American social regulation that included the creation of meat packing inspectorates and other regulations to limit contamination of foods,

protect consumers and ensure that substances were effective as advertised. After the second world war additional regulations were added to protect pesticide producers and promote fair trade. The 1947 Federal Insecticide, Fungicide and Rodenticide Act (FIFRA), supported by producers, strengthened labeling requirements and required registration of products. Today, "registration" is the hallmark of regulatory approval that a product is fit for market. Until the incorporation of environmental concerns, registration merely insured that active ingredients were effective and labels accurately described the contents and efficacy of the pesticide.\footnote{The story of U.S. pesticide regulation is told in detail in many places. One recent review is John Carlucci, 1994, "Reforming the Law on Pesticides" \textit{Virginia Environmental Law Journal 14}, 189-224, section II.}

Regulation in other industrialized countries with large production of pesticides followed similar patterns. Spanish pesticide regulation began in 1944 with the objective of ensuring that products on the market were effective; requirements for environmental data were added in 1973. German and Swedish regulation began in the 1930s with the same objectives. Some industrialized countries did not enact domestic regulations until concern about the human health and environmental effects of chemicals and pesticides put the issue on the agenda. For example, Greece had no formal controls on pesticide usage until 1977.\footnote{For one compact survey of German, Greek, Italian, Spanish and Swedish pesticide regulations, see: General Accounting Office, 1993, \textit{A Comparative Study of Industrialized Nations' Regulatory Systems}, GAO/PEMD-93-17 (July 1993), pp. 44-50.} But in general, the major markets for chemicals and pesticides--which until the 1970s were all in the industrialized world--all had a long history of regulation to ensure that the product sold was the same as advertised, that products were effective, and that brands and other forms of intellectual property were protected. Producers and users both benefitted from and thus favored these regulations--users acquired higher quality products; reputable and large producers gained secure markets.\footnote{As intended, the losers in this wave of regulation were producers of ineffective products as well as those that illegally copied products. Losers probably also included small producers for which regulations became a barrier to entry.}

\footnote{The content of her message appeared in a series of three essays in the \textit{New Yorker} in 1962 and was published in the book \textit{Silent Spring} in 1963.}
nongovernmental organizations (ENGOs), scored its first major victory in 1969, only two years after its founding, when it successfully defended a ban on DDT in the state of Wisconsin. Many other states followed, and the U.S. federal government announced a nationwide ban on the use of DDT in 1971, which was fully implemented in 1973. DDT, which is still used in some developing countries and only recently banned in Eastern Europe and the former Soviet Union, became a symbol of the need for extensive public regulation of industrial chemicals and pesticides.¹¹

Between the late 1960s and early 1970s, public concern about the environment led to dozens of new statutes. A central challenge to regulators in all countries was to gather and assess the mass of toxicological data needed to determine which substances were safe for the environment. Although national styles of regulation varied markedly,¹² the common solution was to place the burden of toxicological testing on industry. In the United States, the 1972 Federal Pesticide Control Act expanded the registration scheme under FIFRA to require assessment of the environmental consequences before a pesticide could be registered. It also required reregistration of existing pesticides—a difficult process hampered by poor and falsified

¹¹The author is mindful that it is important not to overstate the case nor to attribute too much of environmental regulation to the rapid rise of the environmental movement. Some trends were already under way in the 1950s, before Rachel Carson and environmentalism. Indeed, pesticide companies and government regulators were aware that many of the most widely used products—including DDT—were toxic to humans and had other effects on the natural environment. The need for lower toxicity was one factor driving the search for new pesticides in the 1950s. Moreover, before the onset of mass public environmental concerns government regulators had banned the use of some pesticides on the basis that the environmental costs exceeded the benefits; despite the lack of specific laws creating such regulatory functions, many such bans were supported when challenged in court.

and data. Administration of FIFRA was taken from the U.S. Department of Agriculture (USDA), seen as an ally of farmers and pesticide manufacturers, and given to the newly created U.S. Environmental Protection Agency (EPA). Comprehensive legislation on chemicals came four years later, in the 1976 Toxic Substances Control Act (TSCA) which included similar requirements to test for human and environmental health effects and also put the burden of proof on industry. By the end of the decade the basic regulatory framework was in place in the United States; FIFRA and TSCA were its cornerstones.

The environmental movement arose in other major industrialized countries at approximately the same time, and with it spread pressure to regulate the environmental hazards of chemicals and pesticides. The resulting patchwork of different chemicals and pesticides regulations caused two international problems that have animated industry and environmental groups since the 1970s. Together they have led to the PIC system and related efforts to manage trade in hazardous chemicals and pesticides. The first was the problem of harmonizing national systems, which is discussed here; the second was regulating trade, especially trade with developing countries that had low domestic capacity to control imports and limit products on local markets, which is addressed later. The PIC system concerns the latter, but the former was a precursor of PIC and strongly influenced the institutions and industry participation that have subsequently influenced the PIC system.


14 This is the often-discussed Rebuttable Presumption Against Registration (RPAR) in which pesticides thought to be dangerous to the environment were “presumed” not to be eligible for re-registration and thus effectively banned until the presumption was rebutted with evidence supplied by those who favored re-registration (the manufacturers of pesticides). The approach was very American in that it relied on the contest of different interests—EPA on one side and manufacturers on the other—to yield the necessary supply of data and proof.

Harmonization of National Regulations

The adoption of environmental rules immediately and dramatically raised the cost of registering a chemical or pesticide for sale in an OECD nation. Most trade in chemicals and pesticides occurred between OECD nations, and thus producers potentially faced onerous and duplicative requirements to register their products in each market.\(^\text{16}\) The pesticides industry, which was the first and main target of environmental regulation, was especially export-oriented; in the 1970s 25% of total sales crossed borders. Thus producers, especially the large multinational firms that controlled most of the market, immediately faced a strong incentive to harmonize national regulatory systems. They pursued their interests in the European Economic Community (EEC) and through the OECD.

Harmonization in Europe

In Europe harmonization of national standards fit well with the goal of a common European market. The European Commission was steward of that goal, deriving its authority to reduce barriers to trade between national members of the EEC from the Treaty of Rome. Although general progress towards an integrated European market stalled in the 1970s through the middle 1980s, chemical and pesticide regulations was one area where substantial harmonization was achieved. Pressure from producer firms kept harmonization on the agenda, and progress was made along two lines.

First, steady progress was made in the harmonization of pesticides regulations because they affected the standards for the foods on which pesticides were applied. Creation of common standards for food was one of the first goals in creating a common European market and the reason for a European-wide Codex Alimentarius ("food law") founded in the 1950s. From the early 1960s to the present that system was expanded to a global Codex. Among the tasks of the Codex Alimentarius Commission and its subcommittees is to review the technical literature and adopt standard safe maximum residue levels (MRLs) for particular pesticides on particular foods. Acceptance of those standards has been low in most countries and accounts for why the influence of Codex on harmonization has also been low (see chapter 3 of this thesis). But in Europe the

\(^{16}\)Here the term "trade" reflects two activities: (1) physical trade of the chemical or pesticide, or (2) trade in the intellectual property, such as by licensing a local producer (e.g. a national office of a multinational corporation) to manufacture a product that was developed in another country. In the 1970s and early 1980s the potentially duplicative registration requirements applied to both. Today, in Europe, that is increasingly not true as products that are allowed on the market in one EU country increasingly must be accepted in all other EU markets without re-registration; in contrast, production of the chemical or pesticide in another EU country in most instances does require re-registration. (However, as documented below, registration requirements are increasingly common, thus reducing the burden of re-registration.)
Codex system has been more influential because interest in regulatory harmonization among many the small European markets has been high. Moreover, Community law has been codified with the same method (MRLs) as used in Codex—thus when harmonization has been politically possible it has been technically easy to implement. (In contrast, U.S. food safety standards employ many standards, including MRLs; even if political pressure to harmonize US standards with those of other countries were higher, such goal would be legally and technically difficult.) In 1976 the Community adopted MRLs for fruits and vegetables; for most food products since, when a common MRL has been adopted by the Community that standard has governed trade between Community members. The MRL approach did not affect trade in pesticides themselves, but it did make possible a common approach in applying those pesticides to crops.

Second, the EC sought to reduce barriers to trade in chemical products themselves, not only products that were produced—grown or manufactured—by using hazardous substances such as pesticides. With public attention focused by the 1976 accident at a chemical plant in Seveso and chemical firms concerned that TSCA would limit access to US markets, the Commission sought to update its 1967 Directive on Dangerous Substances, creating a comprehensive European-wide chemical legislation. The result was adoption of the "Sixth Amendment" to the Directive in 1979. The Amendment established a common set of tests for chemicals to be marketed in the Community. Unlike FIFRA and TSCA, it did not apply to substances already on the market, and its allowances for firms to declare data as confidential were more expansive than those in US legislation. (However, studies have shown that in practice, TSCA's allowances have, until the 1990s, been used expansively.) Although it allowed considerable flexibility for national authorities to waive some tests and require others, ever since the Sixth Amendment registration of a chemical in one member state loosely bound the others to do the same. The approach met the interests of national governments by offering some flexibility and special provisions, and it met the interests of industry by harmonizing market access and setting standards that would constrain otherwise zealous national regulators from moving too far beyond

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17See GAO comparison of regulatory systems, op cit. note 8; see also chapter 3 of this thesis.


Community-wide standards. A similar scheme to harmonize notification for marketing of pesticides throughout the European Community (EC) was proposed in 1976 but did not lead to any action. (The reader is cautioned that in chemical and pesticide regulation, the term "notification" is used in two ways. One, here, concerns the requirement to notify regulators prior to marketing a substance. The other, used later in this article, concerns the requirement to notify importing countries of chemical hazards and impending shipments.)

Harmonization in the OECD

Thus by the late 1970s both the U.S. and the EC had well-developed but largely separate schemes for regulating hazardous substances. European markets were partially harmonized but the OECD as a whole--mainly the EEC, Japan, Switzerland and the U.S.--remained a patchwork. Chemicals and pesticides were regulated separately; testing standards and registration requirements differed; firms that sought access to multiple markets were required to submit several different packages of "pre-marketing data" to demonstrate that their products were safe in each market.

Although harmonization was low, it was not zero. To some degree, national regulations were autonomously coordinated--they constituted a tacit regime for managing hazardous chemicals and pesticides. The Sixth Amendment was concluded in the shadow of the United States' implementation of TSCA, whose complicated and contradictory objectives and testing procedures alarmed many European exporters who feared losing access to the lucrative American market. In response to the Sixth Amendment, US exporters also feared loss of access to the markets of the European Community. The largest market for U.S. chemical exports was the European Community, and concerns about U.S. competitiveness increasingly focused on barriers to trade with the Community. Indeed, the European debate leading to the Sixth Amendment had shown EC firms interested in both reducing internal barriers to trade and limiting the influx of non-EEC competitors; harmonization and protectionism could go hand-in-hand. As tariffs on all products had been cut through several rounds of GATT negotiations, notably in the 1960s, firms on both sides of the Atlantic increasingly worried about non-tariff barriers to trade, including differences in national regulatory systems. The contemporary GATT negotiations, leading to the Tokyo Round agreements in 1979, addressed some issues of technical barriers to trade, but none directly related to chemicals and pesticides.

By far the most logical forum to address these issues was the OECD. In the late 1970s three-fourths of chemicals trade was among OECD members, and thus OECD's membership

22Brickman et al., 1985, op. cit. ref. 12, pp. 276-281.

23See Boardman's discussion of the debate leading to 1979 amendments to the Hazardous Substances Directive; Boardman, 1986, op. cit., ref. 18, chapter 5.
nearly accounted for the full extent of the potential trade barriers due to poor harmonization of national regulations. Broader than the EC, an OECD approach would allow the U.S. to ensure that harmonization efforts reflected U.S. interests. Furthermore, harmonization was mainly an effort to promote industrial production and trade and thus consistent with OECD's core mission and competence. No other intergovernmental forum had the needed competence, and none could gain the confidence of major industrial producers as well as the OECD. Global fora such as FAO could provide some competence but could not provide all the functions needed for sophisticated harmonization. Neither could such a technical role be entrusted with the newly minted United Nations Environment Programme (UNEP)--then, as now, its missions have been small and catalytic and have not been marked by extensive industrial expertise.

In 1978, at the instigation of the United States, OECD members gave the Organization clear mandate to work on the harmonization of data requirements and the exchange of information. The goal was not the politically impossible task of usurping national decision making (as the EC had only partially done for Community members with the Sixth Amendment) but merely to harmonize where possible those activities that were duplicative and needlessly contradictory, leaving to national governments the choices of how to regulate particular chemicals.

Negotiations within OECD yielded a set of principles, standards and decisions on notification of chemical regulations. Together they made up a three-part approach to harmonization. First, OECD established a notification "package" consisting of a minimum amount of data that OECD members could use to assess the hazards of chemicals. That minimum pre-marketing data (MPD) could be augmented as needed by national authorities, but a minimum package would ensure that basic chemicals testing programmes--which could cost up to $100,000 per chemical--would have a common and clear content, increasing the likelihood that one testing regime would be adequate for all countries. The chemical industry was highly competitive, and leading firms sought to expand market share through rapid introduction of new products--in the early 1980s, 300 new chemicals were marketed each year in the US alone. Thus leading firms had strong incentives to reduce barriers to market entry. Second, OECD guidelines required that OECD members accept each other's toxicological data--the most expensive part of chemical testing--provided that they were prepared using particular standards on good laboratory practice (GLP). OECD produced guidelines on GLP, which were adopted in 1981 as the OECD standard. Third, OECD adopted principles concerning exchange of confidential data. This three-part approach addressed all the major concerns of industry, though it did not meet industry's ultimate


goal of full harmonization. Instead, the OECD system allowed sufficient flexibility to accommodate US and European regulatory approaches. But once this system was in place, notification from one of these major markets would smooth the way to acceptance in the others. In addition to OECD's contribution to harmonization, the U.S. Reagan Administration implemented TSCA by exempting most of the same substances that were also exempt under the Sixth Amendment.\textsuperscript{26} In practice, from the late 1970s to the present harmonization of national systems of OECD members has been extensive, even when national law has not explicitly required it.\textsuperscript{27}

By the middle 1980s a regime was in place in OECD nations for the regulation of chemical hazards.\textsuperscript{28} The regime was based on the principles that chemicals could cause harm to the natural and human environment and thus should not be marketed until tested, that the burden of testing should be paid by industry, and to the extent possible the technical requirements for registration should be harmonized among OECD nations. Specific rules and decisionmaking procedures that gave effect to the regime were developed and implemented by nations, but those aspects that could easily be harmonized--such as data requirements and laboratory standards--were coordinated by the OECD. Although all OECD nations were not indifferent to the standards adopted, all major markets had adopted similar (strict) testing requirements. In large part the need was simply for coordination.

The OECD chemicals regime was largely tacit--it reflected that all major countries faced similar domestic pressure at roughly the same time and that the regulations that were adopted reflected some partial awareness of what other countries were doing in parallel. The regime was built on top of existing national systems; in 1979, when the OECD harmonization efforts began, every major OECD nation already had extensive domestic legislation in place. OECD codified some technical standards that aided coordination. Industry associations pursued their self interest and pushed for coordination within each major market and, through national governments, at OECD. Communication among officials (often through OECD) as well as pressure from industry resulted in implementation of national laws in a way that extended harmonization. The

\textsuperscript{26}An overview of OECD harmonization in the wake of TSCA and Sixth Amendment is Brickman et al., 1985, pp 281-285.


\textsuperscript{28}The existence of such a regime is one conclusion from the most authoritative independent comparison of chemicals regulation. See Brickman et al., 1985, \textit{op. cit.}, ref. 12. See also, Ilgen, 1983, \textit{op. cit.}, ref. 25.
EC, not surprisingly, has had the most integrated international approach because the European Commission and major chemical producers (in France, Germany and UK) have been able to negotiate and implement a supranational approach through the mandate of the common market and the European Commission. Nonetheless, not even in the EC has it been possible to fully harmonize national standards—rather, supranational efforts have been influential mainly only in cases of coordination, not significant change in national rules and risk management.

The OECD chemicals regime has proved both durable and expansive. OECD's GLP is updated periodically and remains the standard today. OECD's minimum PMD standards have been adjusted, but the principle of harmonized data requirements has proved robust. Today those principles are being diffused to the East, where the UN's Economic Commission for Europe's recommendations to the governments of Central and Eastern Europe include advice on the adoption of GLP as the central guidelines for chemicals testing. Countries with economies in transition that seek early membership in the European Union are already adjusting their standards to those of the EU, and thus de facto also implementing the OECD chemicals regime. OECD can't impose chemical testing priorities or perfect coordination. But the OECD is the single most important and legitimate international forum working on such issues, and its standards are used to bring different national efforts into line and to ensure that lesser known chemicals with substantial production receive adequate evaluation. While OECD standards have been adopted by many non-OECD nations, the work of OECD has principally enhanced coordination and reduced duplication in OECD nations.

In 1976 the U.S. unilaterally developed TSCA. By 1984 no industrialized country would develop and implement new chemicals legislation without reference to data harmonization and OECD standards; since 1979 no current or prospective member of the European Community has deviated substantially from common EC chemicals regulations that guaranteed notification in one country would open the entire EC market. A U.S. General Accounting Office study comparing the data requirements for pesticide registration in 18 OECD countries and the European Community found that by the early 1990s the actual data requirements overlapped by 71% to

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30For example, OECD is organizing the effort to screen the tens of thousands of chemicals that have been on the market prior to rise in concern about environmental and worker safety. See mainly OECD Council, 1987, "Systematic Investigation of Existing Chemicals," adopted 65th session of OECD Council, 26 June 1987, C(87)90 (Final). To this end, in 1989 OECD established the Screening Information Data Sets (SIDS) program to help coordinate the evaluation of high production chemicals that previously had not received much assessment of health and ecological effects.
83%; a study by OECD found similar results.\textsuperscript{31} By 1993 a group of US chemical industry executives could claim that "to a large extent, the harmonization of data requirements has already taken place."\textsuperscript{32} Experts on European regulation arrived at similar conclusions on the extent to which the EC had harmonized its testing requirements.\textsuperscript{33} Test requirements and risk assessments differed, but a core data package could satisfy most requirements, even if it meant supplying more test data in a particular market than legally required.

**II. Regulation of International Trade in Hazardous Pesticides and Chemicals**

The OECD chemicals regime would be the dominant system today and would have remained focused on harmonization of national standards if not for the fact that environmental, consumer and development NGOs were pushing a different agenda: reduction of hazardous exports to developing countries. Many of those public interest groups were well-informed of the hazards of chemicals and pesticides because they had been active in the policy battles to limit registration of those same substances within industrialized countries. However, none of the first generation of regulations adopted by OECD nations to regulate the environmental consequences of chemicals and pesticides had a significant impact on exports, except when exports were sent to other countries that, also, adopted health and safety legislation. Indeed, most exports went to other

\textsuperscript{31}These figures reflect 39 tests identified by GAO on the basis of U.S. testing requirements. Perfect overlap (100\%) would be the requirement of each test by each of the OECD nations and the EC (i.e. 19 "countries" x 39 tests = 741 country-tests). Figures computed by the author from GAO's survey sent to U.S. Embassy Officials in the EC and 17 OECD nations (all 24 OECD members at the time, minus Iceland, Ireland, Luxembourg, New Zealand, Switzerland and Turkey). The range reflects all tests as required by law and practice (71\%) and all tests except wildlife tests (83\%). Because chemical effects depend upon the environment in which chemicals are released, it is understandable that some of the test requirements should vary, notably those concerning wildlife. Some tests must be performed using different procedures—for example, environmental fate tests must be conducted at lower ambient temperatures for countries in cold climates. In those cases, the test is coded as "required" in the relevant countries, but in practice a different test is needed to satisfy the data requirements. GAO also noted that while data requirements are similar, risk assessment, monitoring and enforcement practices—which also affect the influence of regulations on firm behavior and trade—still vary considerably (see p. 87). GAO briefly reports results from the OECD survey (see pp. 37-38). GAO, 1993, \textit{op cit.} ref. 8.

\textsuperscript{32}Based on GAO roundtable meetings (GAO, 1993, \textit{op cit.} ref. 8), p.40. For more on de facto harmonization through implementation, see also Brickman et al., 1985, \textit{op. cit.} ref. 12.

OECD nations where effective regulatory systems were already in place (hence the interest of exporters in regulatory harmonization). But a rising fraction of world trade flowed to developing countries. In the 1970s world trade in chemical products rose more than fourfold to nearly $100 billion, but exports to developing countries rose nearly 500%. By 1980, one quarter of world trade in chemical products was imported by developing countries.  

A higher fraction—one-third—of trade in pesticides flowed to developing countries.

Here the problem of exports to developing countries is examined from two perspectives: first from the exporters (industrialized countries) and then from the importers (developing countries). In both, the analysis focuses on two main interest groups: the industry that produces and imports these hazardous substances, who were the ultimate targets of regulation; and, the array of public interest groups that favored some form of regulation to reduce hazards to the environment and workers. The approach that results—global regulation, ultimately in the form of PIC—addresses the problems faced by importers in building domestic capacity to regulate these substances while also accommodating the interests of industry, especially exporters.

Regulation of Exports from Industrialized Countries

In the industrialized countries environmental pressure groups, fresh from successful efforts in the early 1970s to ban some pesticides and regulate all others, were keenly aware that domestic bans did not limit exports of these substances. In the late 1970s they estimated that a quarter of U.S. pesticide exports to developing countries were banned, severely restricted, or had not ever been registered for use in the U.S. domestic market. Some exports had been manufactured for the U.S. market but then dumped on less regulated markets when U.S. regulations came into place. However, the larger (and rising share) of hazardous exports from industrialized countries was the result of normal commerce—supplying products to meet demand, even when those products were banned or never registered for use in the countries where they were produced. However, then (as now) the exact magnitude of trade in restricted substances was unclear. Because data were poor

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36Then and now, estimates vary because data are poor and highly sensitive to varying interpretations and definitions. The U.S. General Accounting Office estimated that about 30% of U.S. pesticide exports were not registered for sale in the United States. U.S. General Accounting Office, 1979, "Better Regulation of Pesticide Exports and Pesticide Residues in Imported Foods is Essential."
37The persistent problem of poor data on hazardous exports is revealed in a study by a U.S. environmental group analyzing export data for 1992 to 1994 was able to identify the active ingredient in only 26% of U.S.-declared pesticide exports. Of the amount identified, only 2.8%
and abstract, ENGOS illustrated their arguments with cases. They focused on three hazards: (1) to workers in developing countries where hazardous substances, notably pesticides, were used; (2) to factory workers in industrialized countries where the hazardous exports were manufactured; and, (3) to consumers in industrialized countries who ate foods produced in developing countries where hazardous pesticides had been applied. In essence, ENGOS sent up many trial balloons, hoping that at least one would resonate with the public. Evidence for the last hazard of trade in chemicals and pesticides—to agricultural consumers in industrialized countries—was the weakest, but that issue proved to have the broadest public appeal. Ever since, there has been some tension between the concerns that have motivated public concern and spurred industrialized countries to regulate exports and those that have been of greatest relevance to developing countries. Because reducing hazards to developing countries themselves has been low on the political agenda it has been possible for many small states and interest groups to have an influence on outcomes that would have been more difficult if the political salience of this issue had been higher.

(1) Hazards to Developing Countries

First, and most directly, pressure groups in industrialized countries argued that hazardous exports caused harm in importing countries—the same types of harms that motivated their regulation within industrialized countries. In the case of pesticides, the harms may have been greater because workers lacked protective clothing, often lived with their families in the same fields that were sprayed, and few regulations governed the application of pesticides.

Substantively, the dangers to workers and families in developing countries was the best developed of the three arguments that were used to press for regulation of hazardous chemical and pesticide exports. The World Health Organization (WHO) had long focussed on the issue of worker safety in developing countries, and thus virtually every study on the hazards of pesticide exports began by quoting WHO statistics on the number of people in developing countries poisoned and killed by improper pesticide usage. In the early 1970s, WHO estimated that 500,000 people were accidentally poisoned by pesticides, roughly half of which were in

were banned, severely restricted, or never registered by EPA. This author expects that because of mandatory FIFRA notification requirements, identification of such especially hazardous substances is likely to be more complete than for other substances that are allowed on the U.S. market, and thus the 2.8% may be an accurate figure. But without identification of the bulk of U.S. exports, it is difficult to know if the actual fraction of total exports is 0.7% (i.e., 26% of 2.8%) or much higher. (However, note that these numbers and the estimates by environmental groups and the GAO (note 36) in the late 1970s are not comparable because the earlier figures were collected before FIFRA notification had been implemented. Report by Foundation for Advancements in Science and Education (FASE). Results summarized in "Lack of Chemical-Specific Data for Exports Criticized in Report" International Environment Reporter 6 March 1996.
developing countries.\textsuperscript{38} David Bull's authoritative study for OXFAM in the early 1980s quoted 375,000 annual accidental poisonings in developing countries, with 10,000 leading to death.\textsuperscript{39} By the early 1990s, WHO data suggested there were perhaps 1.5 million to 3 million worldwide.\textsuperscript{40} Some quote estimates as high as 25 million accidental poisonings.\textsuperscript{41} Although only one-fifth of global pesticide application takes place in developing countries, by the 1990s those countries accounted for perhaps three-fourths of the world's poisonings.\textsuperscript{42} At least one study has statistically estimated that pesticide use in developing countries degrades the health of farmers and lowers net agricultural productivity and social gains from agriculture.\textsuperscript{43} In most OECD countries pesticide usage has leveled and is declining, in part because environmental and worker safety regulations have been tightened and uses for pesticides have saturated.\textsuperscript{44} But in developing countries usage is still expanding. From the early 1970s to the middle 1980s, pesticide imports in Africa doubled and increased by half in Latin America; pesticide use in developing countries is expected to double in the 1990s.\textsuperscript{45} Development organizations with extensive on-the-ground expertise also documented the hazards. The data were imperfect because pesticide related deaths were practically impossible to measure accurately. Moreover, proper measurement of the hazards required separating accidental poisonings from intentional acts--in some countries, hazardous pesticides are the method of choice for suicide. For example,


\textsuperscript{39}Bull, D., 1982, \textit{A Growing Problem: Pesticides and the Third World Poor} (Birmingham, UK: OXFAM).

\textsuperscript{40}WHO and other data cited in Paarlberg, \textit{op. cit.} note 6, p. 310. The high number, also based on WHO data, is quoted in Dinham, B., 1991, "FAO and Pesticides: Promotion or Proscription?" \textit{The Ecologist}, 21, March/April, pp. 61-65.


\textsuperscript{42}For the lower fraction, see US AID data cited in Paarlberg, \textit{op. cit.} note 6, p. 310.


\textsuperscript{44}Comparable data on pesticide application, even in OECD countries, are poor. See OECD, 1995, \textit{OECD Environmental Data: Compendium 1995} (Paris: OECD), table 11.7B.

in the 1990s a WHO pilot project to measure pesticide poisonings in developing countries suggested that more than half of the 400 poisonings investigated in 3 countries were intentional; data from governments and from industry show similar results. To this day, there is widespread acknowledgement of the need for comparable and accurate data on pesticide poisonings, but practically none exist.

Although data are extremely poor, the existence of a serious and growing problem was unassailable. Although the dangers were known, so were the benefits of pesticides and chemicals for food production and social development. Some public interest groups advocated sharp cuts or even elimination of pesticide usage and a halt to exports of such hazardous substances. But a more nuanced view was taken by the mainstream view of development organizations such as OXFAM and the Pesticides Action Network (PAN)—a global network of local nongovernmental organizations (NGOs) concerned with sharply cutting the usage and ill effects of pesticides, formed in 1982 by the network NGO International Organization of Consumers Union (IOCU, 

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46 Data from Paraná (Brazil), for example, show that from 1982 to 1991 approximately 90% of deaths from pesticide poisonings were suicides, with no discernible trend over time (see Tucker and Brown, 1995, op. cit., ref. 65, p.85). Industry data for Nicaragua show that all pesticide-related deaths in 1995 (17 fatalities) and 1996 (27 fatalities) were suicides (see Cheminova, 1997, "Report on the use of Cheminova's products in Central America", 23 May 1997; report issued in response to Danish TV documentary, see ref. 159).

47 This need is echoed in almost every report that examines the problem of poisonings. The PIC system has been hampered by the lack of such data--ideally the mechanism for determining which pesticide formulations might be added to PIC because of hazardous "conditions of use" in developing countries should identify formulations on the basis of objective data on hazards, such as poisonings. Absent such data, expert guesswork has been needed to identify those substances. (See discussion below on operation of PIC.) The identity of the main hazards is relatively obvious, but as (or if) PIC extends beyond the first half dozen dangerous formulations, the absence of this data will become a more serious obstacle. WHO is leading efforts to gather such data through a standardized reporting format (INTOX). (INTOX, which is designed to aid poison centers and allows them to build systematic databases of patient records, includes other main sources of poisonings, notably pharmaceuticals, plants and animals; the project began in 1988 with funding from Canada and WHO.) An experimental application of INTOX in a few countries yielded the data on accidental (nonintentional) and self-inflicted (intentional) poisonings. Unpublished WHO data reported by: Dr. Jenny Pronczuk de Garbino (WHO), presentation at the Intergovernmental Negotiating Committee for An International Legally Binding Instrument for the Application of the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade, 29 May 1997, Geneva, 6pm.
later Consumers International) with Dutch financial support in 1982. None of the major development organizations favored a ban on trade in hazardous pesticides, including pesticides banned for sale in industrialized countries. Developing countries themselves issued statements and adopted policies that reflected both views; however, few of these required practical action and thus it is difficult to infer interests from the rhetoric. Demand for substances that had been banned in industrialized countries, such as DDT, continued to climb; often the substances were used in government-sponsored programs, suggesting that the real interests of developing countries lay with the development organizations.

While NGOs and developing countries did not speak with a single voice on trade regulation, they did agree that pesticide applications could be reduced significantly. They endorsed integrated pest management (IPM)—a concept named in the late 1960s to describe the natural means of limiting pesticide usage (e.g., crop rotations which limit the ability of crop-specific pests to survive in fields between plantings) and targeted use of pesticides (e.g. only in calibrated dosages and at times when plants are vulnerable to specific pests). IPM promised to reduce hazardous pesticide applications as well as to make existing applications more effective by reducing the pace at which pests developed resistance to pesticides. Development and environmental organizations all argued in favor of IPM and criticized multinational corporations that promoted excessive use of pesticides. In practice, by the middle 1970s IPM was conventional wisdom in crop management and increasingly employed by all major field programs that included the use of pesticides. IPM was widely promoted even by the United Nations' Food and Agriculture Organization (FAO), which was often criticized as beholden to pesticide producers and distributors. (Claims of industry capture have been leveled at other international organizations working in the area and are practically impossible to avoid—the organizations depend heavily on industry for data and field expertise.) has IPM been incorporated into the first FAO Code of Conduct in 1985, and with that it became even more

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48 The role of Dutch financial support in early meetings is mentioned in Paarlberg, op. cit. note 6. Paarlberg also discusses the role of pesticides in food production and attributes the collapse of world food prices in the early 1980s, and talk of a food surplus, as a critical agenda-setting opportunity. However, research for the present study suggests that this factor was not particularly important; momentum for regulating pesticide use was under way since the middle 1970s, and the agenda setting opportunity did not yield much practical action—the legal instruments that followed, until PIC was adopted in 1989, did not have any significant influence on behavior.


50 For example the International Program on Chemical Safety—a cooperative program between ILO, WHO and UNEP established after the 1972 Stockholm conference—has also been charged with industry capture. See "Director of U.N. Chemical Safety Program Rebuts Allegations of Industry Favoritism," International Environment Reporter, 1 May 1996, pp. 357-358.
widely accepted as "best practice" and thus incorporated, for example, into the operational directives and guidelines on best practice that govern the funding of World Bank projects.\textsuperscript{51} NGOs still charge that western funding agencies and the FAO promote pesticide usage, but in large part the wisdom of IPM was accepted and put into practice by all major stakeholders by the end of the 1970s.

Public interest NGOs were also unified in the view that more information on chemical and pesticide hazards would allow developing countries to make more informed decisions about which hazardous imports to allow and how to regulate the marketing and use of pesticides inside the country. The argument had a rapid influence on U.S. policy. The Carter administration and Congress, sympathetic to these concerns, added export notification in the 1978 amendments to FIFRA. The amended FIFRA required that exporters of any pesticide banned, severely restricted, or not marketed in the United States also supply the importing country with basic toxicological information on the hazards. The first shipment of any such substance required that exporters obtain a written "acknowledgment statement" saying that the importer understands the pesticide's regulatory status in the U.S. Labels were required to indicate that the product was not registered for use in the United States, and manufacturers must communicate data on production, sales and trade to EPA. (Export notification and special export labeling was not required for substances that were registered for use in the United States.)\textsuperscript{52}

In addition to amending FIFRA, by Executive Order (thus not requiring Congressional approval), Carter also strengthened export notification procedures and created a Commodity Control List for regulating hazardous exports.\textsuperscript{53} Exports of substances on the List would require a license, thus allowing more direct government control on exports. (The Carter Administration also explored but did not use the 1979 Export Administration Act, which allowed export controls to further "United States foreign policy or to fulfill declared international obligations.") Congress was actively involved and continued symbolic efforts to regulate exports after Carter left office. Between the late 1970s and the middle 1980s at least six pieces of draft legislation would have created more stringent U.S. export controls, including a system of legally binding prior informed consent. At least one of the bills would have also required that exports be subject

\textsuperscript{51}World Bank, "Operational Directive 4.03" \textit{The World Bank Operational Manual}, July 1992; See also World Bank, "Guidelines and Best Practice 4.03", ibid., April 1993. The OD also requires pesticide management plans, which are similar to the prerequisite for effective IPM and also similar (but narrower than) the country profiles being prepared under UNITAR and IOMC (see below).


\textsuperscript{53}Executive Order 12264.
to determination by the U.S. government of whether the product's benefits exceeded its risks.54

Most of the Carter Administration's limits on exports of hazardous substances were reversed early in the Reagan Administration as part of the new Administration's effort to eliminate regulations that interfered with commerce. Only the FIFRA notification system survived--changing it would have required a legislative act because it was an integral part of FIFRA legislation.55 The notification system was severely criticized by environmental pressure groups as ineffective; observers inside and outside the Administration agreed that notifications were often not received, or the recipient agencies in developing countries could do little useful with the information.56 The practical impact of the U.S. notification system on trade appears to have been small or zero, although some analysts claim that some developing countries did ban some imports after receiving information through the FIFRA notification process.57 Ever since the FIFRA amendments, notification has been enshrined as the minimum acceptable regulation of trade in hazardous chemicals and pesticides; efforts to develop a global notification system in the middle 1980s proceeded rapidly, despite the U.S. Administration's hostility to global rules, because the U.S. had already adopted such a system; potential opposition from industry, which

54These provisions are reviewed in Raymond Hill, 1988, "Problems and Policy for Pesticide Exports to Developed Countries" Natural Resources Journal 28, 699-720, esp. pp. 708-710.

55Limits on the President's ability to influence policy, illustrated with the case of Reagan's attach on U.S. pesticides regulation, are analyzed in George Hobberg, 1990, "Reaganism, pluralism and the politics of pesticide regulation," Policy Sciences 23, 257-289.

56For example, see Pallemaerts, 1988, op. cit., ref. 6, who cites a 1984 EPA study on the operation of the US notification system under FIFRA: F. Halter, 1984, How to Improve International Notification Procedures for Pesticides under United States Law, unpublished, Washington, US Environmental Protection Agency. The problems of non-received notifications has been improved, although it remains questionable whether the information is useful--for example, the identity of shippers and recipients is typically protected as confidential business information, and thus importers are still typically unable to intercept shipments, if they wanted to.

57Some analysis suggests that Mexico and South Korea were among the countries that stopped exporting some substances in response to FIFRA export notifications received from the US. Norris, R., ed., 1982, Pills, Pesticides and Profits: The International Trade in Toxic Substances (Croton-on-Hudson: North River Press), cited in: Goldberg, K.A., 1985, "Efforts to Prevent Misuse of Pesticides Exported to Developing Countries: Progressing Beyond Regulation and Notification," Ecology Law Quarterly 12, 1025-1051. Surveys cited by Schulberg (op. cit. ref. ?, p. 366) show that when export notification was adopted, many countries were keen to receive information--a State Department survey showed that 66% of the responding countries wanted to receive notifications; a GAO survey found that representatives from developing countries were especially keen to receive notifications because they did not have the capacity to perform hazard analyses comparable to those of US EPA.
found it easy to comply with the U.S. notification system, was blunted.

No other industrialized country adopted a notification system in the 1970s, which probably reflects the timing of the US policy actions and the sympathetic Carter Administration. The US export notification system was adopted in the wake of public outrage over children’s sleepwear treated with TRIS, a carcinogenic flame retardant banned from sale in the US in 1977. After the US domestic market was closed, manufacturers dumped several million TRIS-treated products in other markets, including developing countries.58 Exports of TRIS-treated products were then banned in 1978. The resulting scandal helped to mobilize concern in developing countries and launch the UN’s response to trade in hazardous substances (see below), and it also energized the Congress and Administration to act. The 1978 FIFRA amendments were adopted after the TRIS dumping scandal, and the Administration’s actions followed.59 The EEC, whose mandate was narrowly defined to promote European integration, adopted no such notification system in 1979 with the Sixth Amendment. The European Parliament made its first prominent statement on the need to regulate hazardous pesticide exports only in 1983, but that body was nearly powerless at the time. The Dutch government adopted a notification and consent system at the end of 1985 and used its presidency of the EEC in the first half of 1986 to press (without success) for an EEC-wide notification and export consent system—even a limited form of the Dutch proposed PIC system was not adopted.60 Only in 1988, after the London Guidelines had been adopted, did the EEC adopt a system to require member states notify importing countries at the time of the first shipment of a banned or severely restricted chemical.61

Although it was objectively well-supported, the first argument—dangers to developing


59The connection between the TRIS scandal and efforts in the US to strengthen export controls under FIFRA in 1978, is made in: Kablack, M.A., 1991, "Pesticide Abuses in Third World Countries and a Model for Reform," Boston College Third World Law Journal 11, 277-305. The importance of that scandal, and of the Carter administration which favored tougher export regulation, is evident when comparing TSCA (which was amended in 1976 and includes virtually no labeling of hazards associated with chemicals destined for export nor any system for export notification) with FIFRA (which contains both). However, in practice, TSCA has been implemented by EPA to require annual notification for chemical exports (see Wirth, 1985, op. cit., ref. 72; Mehri, 1988, op. cit., ref. 74). Nonetheless, FIFRA’s export notification is more extensive and applies to each shipment.

60The Dutch PIC system and proposals for an EC PIC system are reviewed in Mehri, 1988, op. cit., ref. 74.

61Regulation EEC/1734/88, which applied to member states starting June 1989. It applies only to chemicals listed on an annex, which is adjusted periodically.
countries—never galvanized public attention nor led to strong pressure from politically powerful groups to change U.S. policy. It did contribute to incremental changes in policy in the form of the notification system. If the Carter Administration had not lost the 1980 election the U.S. probably would have adopted tougher export controls; facing these controls in the U.S. market, industry might have favored global or at least OECD-wide trade regulation in the early 1980s, which would have dramatically altered the character and pace of international regulation. It could have easily led to a global PIC system in the early 1980s when European environmental groups became active on the issue; it might also have put these issues more prominently on the agenda of the GATT Uruguay Round, leading to more pressure to regulate exports of domestically prohibited goods (DPGs). Indeed, a working group on DPGs was formed, but it languished for lack of support by industrialized countries. Those could have been the futures for trade regulation, but Carter lost the election.

(2) Dangers to Workers

A second argument highlighted the danger but led to no export policy changes. U.S. workers in factories manufacturing these hazardous exports were exposed to dangers as a consequence of the manufacturing process. An often-used example was sterility in workers at a California factory producing 2,4,5-T, a herbicide banned for use in the United States but still exported to developing nations. (The same ailment probably afflicted many more field workers who applied the herbicide in developing countries.) These issues made for good political symbols but were matters for conventional workplace safety regulation and did not figure prominently in the development of international controls.

(3) Circle of Poison

The third argument gained the most attention within OECD nations, especially the United States. Environmental and consumer NGOs in industrialized countries argued that exports of pesticides banned as too hazardous at home were being re-imported as residues on the agricultural products imported from developing countries. While the problem was known in the early 1970s, it became part of the mainstream debate during the Carter Administration with scandals such a pesticide-laced cranberries. At the end of the administration one NGO published the book Circle of Poison; written by investigative journalists, it provided both a fear-filled image and defined the problem with pesticide trade for the public. As with alarm in the 1900s about inadequate inspection of meat packers, the public feared the circle of poison that threatened a safe food supply. But the tactical problem for public interest groups was how to translate public concern into action. Indeed, while long on documenting the problems and fears, the Circle of Poison authors recommended actions that were politically unrealistic or would have no impact on the problem. They urged the concerned public to support draft legislation that would have imposed detailed government oversight on exports which went far beyond even proposals of the Carter Administration and had no chance of political acceptance. (As good marketers, the authors also
urged that the concerned public enclose a copy of the book with letters of support sent to legislators.)

In sum, the problem of hazardous pesticide exports did not arouse mass public concern in industrialized countries except when it was coupled with the safety of the food supply. But addressing food safety concerns would not necessarily address the most serious hazards that confronted workers in developing countries. Lack of broad-based public pressure as well as industry opposition to trade regulation meant that little would be done in industrialized countries to help developing countries regulate these hazards except in countries where the government itself was interested to limit such hazardous exports. In the late 1970s the Carter Administration provided this role, and consequently the U.S. government went further than all others in regulating trade. In the 1980s the Dutch provided the role. Although the Netherlands was not one of the largest chemical and pesticides producers, the Dutch used the European Community and eventually the UN system to achieve the goal of limiting hazardous exports. The Netherlands was the first in the EC to adopt a PIC system and it played the leading role in pressing the EC to strengthen community regulations and to promote a worldwide PIC system. Dutch civil servants have occupied key positions in the PIC system, and the Dutch government has funded many of the key projects to implement PIC and build capacity in developing countries.

Domestic Regulation and Import Controls in Developing Countries

The need for an international scheme to regulate trade in hazardous chemicals and pesticides derives fundamentally from the fact that these substances are poorly regulated in some major and rapidly growing markets—developing countries. Low administrative and scientific capacity to analyze hazards, low administrative capacity to develop and enforce regulations and trade controls, corruption and exploitative multinational corporations have all been documented extensively. 62

That administrative capacity is low in developing countries is undisputable. However, several aspects of the low capacity problem have strongly affected how these countries have addressed pesticide hazards. First, while administrative capacity was low it was not zero. During the 1970s and 1980s, when industrialized countries took action to limit the marketing of hazardous chemicals and pesticides, many developing countries also created regulatory systems. For example, Malaysia passed its first national pesticides regulations in 1976. By 1989, when PIC was adopted, many major developing countries had some form of regulation and regulatory

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authority in place. By the middle 1980s, when FAO surveyed implementation of its 1985 Code of Conduct on the Distribution and Use of Pesticides, it found that roughly half of the developing countries surveyed had no legislation to restrict the marketing of pesticides, although industry data suggested that the prevalence of such legislation was higher. When FAO repeated the survey in the early 1990s, the fraction of developing countries with legislation had grown considerably, but the capacity to analyze and use data (which is essential for making informed regulatory decisions) remained very low. The principle of PIC would be to supplement existing national regulatory structures, not to build new structures de novo.

Second, in developing countries national regulatory systems were much more heavily influenced by external factors. In contrast, the fundamental political pressures to regulate chemical and pesticide hazards in industrialized countries were internal. Some ideas and images of course came from outside—*Silent Spring*, published in the U.S., for example, spurred regulation of DDT and other pesticides in other industrialized countries. Nonetheless, the pressure groups as well as the writing and implementation of basic legislation in industrialized countries, were mainly internal. In developing countries, both industry and environmental groups were guided by outside agendas and support, and thus environmental regulation in these countries has been highly harmonized—both tacitly and overtly—with activities on the outside. Many of the same issues on the agenda, as well as regulatory approaches, in industrialized countries diffused into developing countries. Boardman's comprehensive study of Malaysia shows that pesticide regulation came on the agenda in part because illegally imported, unregistered pesticides were taking market share from established pesticide formulators and manufacturers, most of which were owned by or affiliated with Western companies.

Environmental concerns were also imparted, in part by the local chapter of the global ENGO Friends of the Earth (FOE), which Boardman shows helped to set the agenda, playing on general public sympathy for environmental causes and consumer anxiety about pesticide contamination of food. Other imported environmental concerns included fear of the environmental effects of the Concorde, which led to a public debate over whether to ban Concorde flights over Malaysian

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64Data from GIFAP (1984), cited in Pallemaerts, 1988, *op. cit.*, ref. 6.

territory similar to the debate on the same topic in the U.S. The FOE chapter also imported western protest tactics although in practice the environmental pressure groups were helpful in setting the agenda and catalyzing media interest in the issues but not dictating the details of regulations that were agreed and implemented. Once the agenda was set, international organizations also provided pressure to adopt pesticide regulations and also supplied specific advice on the design and content. Boardman traces specific provisions of the 1974 Pesticides Act to the model legislation developed by FAO and, especially, active efforts of British officials working in FAO or seconded to the Malaysian government.66

A third factor, the international political context, also affected how developing countries became involved in chemicals and pesticides regulation. The middle 1970s was the era of the New International Economic Order (NIEO) through which developing countries sought to redistribute wealth through and to regain control of their destiny. They pinned failure of the existing international order on multinational corporations whose global reach allowed them to evade local laws and hide profits, playing weak developing countries off each other. Pesticides and chemicals were mainly the products of large multinational corporations and thus these hazards were often-used to symbolize global injustices. For example, all but one of the 22 pesticide manufacturers and formulators in the Phillipines was owned by a parent company in the United States or Europe.67 Most pesticides, and all of the latest generation (often most powerful and least toxic), were imported from firms based in industrialized countries. As industrialized countries tightened regulation on many products at home, the 1970s were marked by many celebrated symbols of product dumping in developing countries--dumping of hazardous chemicals and pesticides, such as PCBs and DDT, as well as products laced with hazardous substances, such as TRIS-treated sleepwear.

66See Boardman, 1986, op. cit., ref. 18, chapter 8. Enthusiasts of the “epistemic community” idea will find many examples in this history to support their ideas, as well as some new twists on the argument. Experts have been placed by governments and international organizations into the service of governments in developing countries. They have an influence on policy because they offer ready-available solutions, often in the form of particular technical standards and/or model legislation. Others experts, even advocacy groups, often don’t supply competing standards or legislation because they are expensive to develop--indeed, the missions of many international programs is to help states overcome the lack of “capacity” by providing such services. Furthermore, typically only one or a few states and international organizations engage in such activities, and thus it is especially easy for a common view, e.g., of the best ways to regulate pesticides to emerge. In the case of pesticides, virtually all the efforts to develop model legislation has been dominated by the FAO and British and Dutch civil servants. In the 1990s, UNEP initiated a project to develop model legislation; it appears that it had little or no influence because, by then, the vast majority of developing countries already had legislation in place.

67Estimated from data in Weir and Schapiro, 1981, op. cit, ref. 62, table 4. The number may be as high as 4 in 22.
The cohesion of developing countries around NIEO objectives helps to explain why the issue of regulating hazardous chemicals and pesticides was defined as the problem of stopping dumping when it came on the agenda in the middle 1970s. Had the problem been defined as one of capacity-building it might have been possible to move forward more rapidly. Only a decade later did the focus shift—after the grip of the NIEO on the agenda for trade in hazardous chemicals and pesticides was relaxed.

III. Global Regulation of Trade in Chemicals and Pesticides

By the early 1980s, pressure from public interest groups had put the need to improve regulation of hazardous chemicals and, especially, pesticides in developing countries on the agenda of industrialized and developing countries alike. Some environmental groups had argued that most (or even all) uses of pesticides were ultimately counter-productive because pests would develop resistance, imports led to dependence upon multinational corporations, and the usage of pesticides caused harm to workers, their families and consumers. Other interest groups, mainly industry, opposed virtually all trade regulation. However, the mainstream view favored integrated pest management to reduce the usage and effects of pesticides where they were not needed and to target (often new, more profitable) pesticides to particular pests.

But the core of the problem that motivated the concern of public interest groups and developing countries remained largely untouched—how would developing countries with low capacity regulate these hazards? Translating concern into action remained problematic. Training programs to improve pesticide management were under way, as part of FAO activities, but they were small. The main instrument available to exporters was to control exports of these hazards, and few exporters did this. In the U.S., the largest exporter, only a modest notification system was in place; other U.S. efforts to control hazardous exports were eliminated by the Reagan Administration. Industry and OECD helped to harmonize regulations in the industrialized countries, but that did not significantly affect the control of exports to developing countries, which industry had consistently opposed. Harmonization efforts did not go beyond the elimination of duplicative regulatory requirements and other uncontroversial actions that did not much affect the ability of countries to regulate these hazards within their borders. Moreover, industry consistently opposed efforts to extend modest notification systems in ways that could significantly affect exports. The European Community, whose members together were the second largest exporter of chemicals and pesticides to developing countries, was unable to forge a common European position on most topics that did not directly promote a common market; it did not even adopt a notification system. Outright bans on hazardous exports, especially of products that were not registered for use in industrialized countries, had been proposed by ENGOs but were neither politically feasible and thus not adopted by any major pesticide or chemical exporting nation. Moreover, such bans would not necessarily serve the interests of developing countries—some of the hazardous substances were still extremely useful in developing countries where newer, less toxic formulations were not affordable or effective. Although the prospects for tighter regulation of international trade seemed poor, from the late
1970s to the present public interest NGOs nonetheless consistently pushed for more stringent controls on exports.

In addition to these two extremes—minimal regulation of trade through existing notification schemes or politically infeasible bans of exports—a third alternative emerged for regulating exports from industrialized to developing countries: prior informed consent (PIC). PIC would be much stronger than the existing notification schemes, which in practice allowed shipments to proceed even without assuring the informed and explicit and consent of importing governments, but PIC would not halt trade.

The author most often cited as coining the phrase is OXFAM's David Bull whose 1982 book on pesticide usage in developing countries was the ENGOs' bible of statistics and arguments. However, the principle of consent was among the many in circulation in the late 1970s when industrialized countries were facing the need to regulate exports of many hazards, including chemicals and pesticides. In the US the FIFRA system of notification and "acknowledgment statements" was an attempt to promote consent of hazardous shipments. Fundamentally, consent is the foundation of a properly functioning market—in the case of hazardous exports, public interest groups argued that the free market had failed because information was not available and importers did not have the capacity to weigh the evidence and implement their choices. Encouraged by PAN, socialists in the European Parliament had these arguments in mind when they sponsored in 1983 a resolution that urged European nations to assist developing countries in building capacity to regulate pesticide hazards and to limit exports of those hazards according to the principle of prior informed consent. Adopted unanimously, the resolution marks the first formal statement supporting PIC and export notification by the European Community.

Chemicals and pesticides were not the only hazardous exports. Notably, following the scandals over product dumping in the 1970s, public interest groups and developing countries also put exports of hazardous wastes on the agenda at the end of the 1970s. PIC emerged as the principle for managing those substances. In 1982 the European Commission considered a form of PIC as part of the policy governing hazardous waste trade among community members, along with a notification scheme. Although European environmental groups explicitly urged adoption of a PIC scheme for hazardous waste exports, the Community's 1983 Directive on hazardous

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69 For example, in 1975 Japan had applied a system of prior informed consent for exports of DDT and BHC. See Palremaerts, 1988, op. cit. ref. 6.

waste included only a notification system.\textsuperscript{71} In 1984 the United States was the first country to adopt a PIC system for hazardous waste exports, which was implemented in 1986. US rules provided the basis for OECD and UNEP guidelines, adopted in the middle 1980s, that extended the existing notification systems and urged countries to adopt practices that, \textit{de facto}, would require prior consent.\textsuperscript{72} The 1989 Basel Convention on Transboundary Movement of Hazardous Wastes explicitly included a PIC system. In short, the evolution of PIC for chemicals and pesticides has evolved in parallel with PIC for hazardous waste exports. (The principle of export notification also co-evolved in these two areas--OECD's 1984 Decision and Recommendation on hazardous waste also urged extensive information exchange, similar to the principles of information exchange and export notification that governed trade in hazardous chemicals and pesticides.) Although these two areas co-evolved through the late 1980s, since then several legal instruments have practically banned trade from North to South; thus, unlike PIC for chemicals and pesticides, the PIC system for hazardous waste was not actually used much.\textsuperscript{73} Insofar as PIC is an emerging principle of international law to govern trade in hazardous products between countries with markedly different levels of regulatory capacity, the experience with the chemical and pesticides PIC system is so far the only guide to how PIC might be implemented and its


\textsuperscript{73}Krueger, J.P., 1996, "The Effectiveness of the Basel Convention's Procedure for Prior Informed Consent," Working Paper, IEC Project, International Institute for Applied Systems Analysis. The discussion in this chapter will not analyze other links between regulation of hazardous chemicals and pesticides and the Basel Convention. Notably, the line between "hazardous chemical and pesticide" and "hazardous waste" is fuzzy. The line will become even fuzzier as hazardous chemicals and pesticides become more extensively regulated--for example, under the POPs Convention, which will be negotiated starting in 1998. Tighter regulation will focus attention on the need to recover, recycle and properly dispose of organic compounds already in use, in turn leading to transborder industries for that purpose. In general, special efforts have been made to adjust the scope of the PIC Convention so that it does not overlap with the Basel Convention, notably by excluding chemical wastes from the PIC Convention.
effectiveness. 74

Although varied national and regional responses emerged in the 1970s, inevitably the issue would arise on the agenda of every international organization with competence in the area, namely: OECD, FAO, UNEP, ILO, WHO, and UNIDO. The first three have played the most important roles and are the focus here. Given OECD's existing role in harmonization the task of regulating trade immediately arose on OECD's agenda, not least because some OECD nations (notably Canada and the US) feared that export regulation would otherwise be dominated by UNEP, whose governing council had passed strong resolutions on the need to control exports every year since 1977 (see below).

A PIC scheme was considered (and rejected) in OECD in 1982-1983. However, given its existing activities to promote harmonization and coordination of domestic rules, testing and registration, it was a small step for OECD to develop guidelines on export notification. In 1984 the OECD Council Recommended a notification system that would inform importing countries of domestic restrictions (i.e. bans or severe restrictions) at the time of the first export of the product, followed by an opportunity for the importing country to request more information.75 The OECD system did not exactly follow any of the existing systems in OECD countries, although it did largely reflect the existing US notification system. Rather, OECD's Recommendation resembled a least common denominator compromise among the interests of the major hazardous chemical exporters. It did not, for example, include notification requirements for exports of substances that had never been registered or had been withdrawn from consideration before a registration decision. The OECD Recommendation, which was not binding and appears to have had no influence on OECD nations, did codify what was initially acceptable to all OECD nations and to the pesticides and chemical industry in 1984 and thus it is helpful, at least to researchers, in charting the evolution of interests on this issue. The lack of the influence of this Recommendation can be explained by the fact that export notification never became a central part of OECD's activities on chemicals, which during the 1980s focused on extending national coordination and harmonization mainly in OECD nations. OECD was not under strong pressure to engage the problem of hazardous chemical and pesticide exports; as in

74For a comprehensive survey on the use of PIC until the late 1980s, see especially: Mehri, C., 1988, "Prior Informed Consent: an Emerging Compromise for Hazardous Exports," Cornell International Law Journal, 21, 365-389; and Gündling, L., 1989, "Prior Notification and Consultation," in G. Handl and R.E. Lutz, eds., Transferring Hazardous Technologies and Substances: The International Legal Challenges (London: Graham & Trotman), pp. 63-82. Mehri and Gündling argue that by the mid-late 1980s, PIC was not a principle of international law. However, today—with PIC had been adopted for trade in hazardous wastes, chemicals and pesticides—probably it would classified as a widely accepted principle for regulation of hazardous exports.

the area of hazardous waste trade, OECD actions were more (failed) attempts to avoid global regulation in other fora where industrialized countries had less control over outcomes.

The failure of OECD to adopt any stricter measure reflects that OECD does not stray far from the interests of any major member. Moreover, the problem of exports to developing countries necessarily was broader than OECD's mandate. Developing an effective regulatory scheme would require addressing the special conditions in developing countries, including often limited domestic capacity to gather information on hazards for the purpose of making regulatory decisions and limited capacity to implement those decisions. Beyond the functional limitation of the Organization, OECD would not satisfy the symbolic or functional need for a global approach-one that gave developing countries a voice in managing a system intended for their benefit. Although OECD, by necessity, could not go further, its efforts harmonize regulations nonetheless continued. Thus global responses would need to be compatible with the existing notification systems and with efforts to harmonize regulations among OECD nations. Indeed, because other viable ideas for regulating trade did not exist, the starting point for global efforts to regulate trade in hazardous chemicals and pesticides was the existing consensus—namely, notification systems—developed by the U.S. in the 1970s and extended throughout the industrialized world by the OECD in the early 1980s.

The global response developed on two parallel tracks: one through UNEP and the other through FAO. UNEP focused on chemicals and FAO on pesticides, which reflected these organizations differing mandates rather than overt coordination. Most diplomatic negotiations leading to global regulatory systems, and ultimately PIC, took place under UNEP auspices, but the organization had poor or nonexistent relations with chemical and pesticides producers and little practical experience in developing countries. UNEP was catalytic, rather than action-oriented; as in many other areas, it spawned agreements and institutions. In contrast, FAO had extensive experience implementing agriculture projects in developing countries and, after a decade of criticism for promoting over-consumption of pesticides in the 1970s, was implementing pesticides management programs. The activities of these two organizations were joined when the PIC system was created. However, many of the organizational differences persist. Here I review the activities of the two organizations, beginning with UNEP. Where possible, the activities of the two organizations and substances are separated because the two experiences help to illustrate why some organizations and procedures have been effective while others have failed. Although many efforts have been made to establish an integrated PIC system, the differences between "chemicals" and "pesticides" and the roles of UNEP and FAO have remained distinct.

United Nations Environment Programme

UNEP's sustained activity on the exchange of information originates in the 1970s with the concerns and symbols of international trade in hazardous products. One of UNEP's first few concrete actions was to establish the International Register for Potentially Toxic Chemicals
(IRPTC) in 1976 with the task of compiling and circulating information on chemical hazards. In 1978, the UNEP Governing Council specifically directed IRPTC to focus on providing information on limitations, bans and regulations that had been enacted in exporting nations. From 1979, every year the United Nations (UN) General Assembly adopted a stronger resolution against exports of products that had been banned in industrialized countries and advocating greater information exchange. Led by developing countries, these efforts culminated in a 1982 Resolution that created the UN Consolidated List of Products whose Consumption and/or Sale have been Banned, Withdrawn, Severely Restricted or not Approved by Governments. IRPTC was one of three organizations charged with contributing to that list, which first appeared in 1983 and has been updated twice since. Like the notification system already in place in the US, the Consolidated List was intended to provide useful information to importers (mainly developing countries) on what substances have been deemed hazardous--industry reviled the concept, many firms refused to provide information to IRPTC, and the US (alone) voted against the Resolution, because the Consolidated List was de facto a "black list" with few controls on its accuracy. Ever since the Consolidated List was launched, IRPTC has been the main agent of the UN with expertise on what countries's databanks on control actions.

Developing countries first used UNEP to register their protest over product dumping. Although rarely cited today, developing countries aligned their support behind a 1977 UNEP Governing Council Decision on export of banned or severely restricted chemicals. Based on a Belgian proposal, that Decision created the basic framework for UNEP's role in promoting the exchange of information and ensuring that chemicals deemed "unacceptable for domestic purposes, in the exporting country, are not ... exported without the knowledge and consent of appropriate authorities in the importing country." The term "PIC" is not used, but all of the


78Resolution 37/137, which urges that banned products be exported only when a "request...is received from an importing country or when the consumption of such products is officially permitted in the importing country." This development of GA activity is reviewed by Pallemaerts, 1988, op. cit., ref. 6, p. 65. See also Goldberg, K.A., 1985, "Efforts to Prevent Misuse of Pesticides Exported to Developing Countries: Progressing Beyond Regulation and Notification," Ecology Law Quarterly 12, 1025-1051.

79UNEP Governing Council, Decision 5/85 (1977). One of the few recent acknowledgments of the important foundation of that Decision is "Statement by the Delegation of Belgium on the Closing of the Third Session of the Intergovernmental Negotiating Committee for an International Legally Binding Instrument for the Application of the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade, Geneva, 30 May 1997. That statement was delivered by Marc Pallemaerts, formerly observer for Greenpeace and one of the chief entrepreneurs who engineered adoption of the PIC mechanism in the UNEP Governing Council and
elements of a PIC system are evident in that decision. Every year since the Governing Council has adopted a significant Decision on the need to regulate trade in chemicals and especially pesticides. Of all the issues on UNEP's agenda, this one has enjoyed the strongest continuous support by developing countries and public interest NGOs. The PIC system is the culmination of a long and sustained effort by UNEP to implement that first Decision.

In 1984, in parallel with OECD's Recommendation on information exchange, UNEP's Governing Council created the "Provisional Notification Scheme for Banned and Severely Restricted Chemicals." The scheme emerged from a working group created by UNEP in 1982, under pressure from the Dutch government, to propose guidelines for exchanging information related to trade in hazardous chemicals, especially pesticides—in essence, to improve what IRPTC was already doing. Developing countries hoped that the working group would yield trade regulations, which exporters strongly opposed. Failure to agree led to a provisional system modeled on OECD's information system--some parts were even excerpted verbatim. The scheme charged IRPTC with developing and managing a database of decisions by countries to ban or severely restrict a chemical. Known as "control actions," the database of these decisions would be circulated by IRPTC to all UN members; in principle, that information would increase awareness of controls on hazardous substances. Like every scheme to regulate trade in hazardous chemicals and pesticides adopted by every international institution (except the EC), the Provisional Notification Scheme was not legally binding.

The Provisional Scheme did not go beyond the export notification schemes already in place in the U.S. or being considered in other major exporting nations. Nor did it add much additional information to make the existing notification systems more effective. However, the Provisional Scheme extended the OECD system in two ways. First, the UNEP framework created a universal system and thus open to all members of the United Nations. Second, it created an explicit institutional structure to manage the exchange of information. It required IRPTC to provide a clearinghouse for information and advice; participating states were asked to name Designated National Authorities (DNAs) who would communicate with IRPTC. DNAs were requested to notify IRPTC of all "control actions" to ban, severely restrict, or withdraw

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82 See Pallemaerts, 1988, op. cit., ref. 6, p. 66.

83 For a brief overview of the operation of the Scheme, and related activities in the early 1980s, see Goldberg, 1985, op. cit. ref. 78, pp. 1041-1045.
hazardous chemicals and pesticides from the market. Ever since, DNAs and control actions have been the cornerstone of every significant attempt to regulate international trade in hazardous chemicals and pesticides.

With the ink barely dry on the Provisional Notification Scheme, UNEP reconvened the same working group that developed the Provisional Scheme with the mandate to create a more permanent system. As before, ENGOs and developing countries urged inclusion of PIC; as before, industry and the main exporting nations were united in their opposition. Three years later (in 1987) UNEP adopted the *London Guidelines for the Exchange of Information on Chemicals in International Trade*. Little changed from 1984 to 1987—the guidelines merely augment the Provisional Scheme with general commitments to promote the sound management of chemicals. Today the 1987 *London Guidelines* are often cited as the beginning of UNEP's notification activities. However, this author's assessment is that the same history of developing a UNEP notification system could have transpired under the Provisional Notification Scheme. It didn't because little attention was given by UNEP to implementing the Provisional Notification Scheme; no mechanism was established to review whether countries were implementing the Scheme, and UNEP sponsored only cursory reviews of legislation relevant to the *London Guidelines*. Instead, UNEP's activities focused on negotiating more legal instruments—a pattern that has been repeated several times since. In practice, neither the Provisional Notification Scheme nor the *London Guidelines* appear to have significantly increased the flow of useful information to developing countries. Perhaps most important is that both of the UNEP legal instruments, as well as the OECD Recommendation and most importantly pressure from the Dutch government, resulted in the EEC adopting an export notification system in 1988. Like all notification systems, it is difficult to attribute much improvement in the management of hazardous trade to the EEC system, but that system also resulted in more EEC-wide regulation of the most hazardous chemicals and pesticides. As will be shown, that system was essential to launching PIC a few years later.

In parallel with efforts to implement the Provisional Notification Scheme and the *London Guidelines*, ENGOs put more rigorous systems for regulating trade of hazardous chemicals and pesticides on the agenda of national governments. By the late 1980s virtually all major chemical-exporting nations were considering, and a few had implemented, systems for export notification. A few were considering PIC procedures. The Netherlands had implemented a voluntary PIC system in 1986; however, by 1991 all Dutch production of especially dangerous substances had been stopped, which made PIC largely superfluous for the Netherlands. The United States had an export notification system in place; in the late 1980s it was developing rules for a possible PIC system. Canada was developing a system for export notification of severely

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Then as now, "withdrawal" has been defined to mean withdrawal for reasons of human or environmental safety. Other withdrawals (e.g. because markets were not profitable) did not constitute a "control action." Bans and severe restrictions were actions taken by governments; withdrawals were made by firms.
restricted chemicals; as with Japan, it had banned export of domestically banned chemicals. The United Kingdom had a voluntary export notification scheme in place since 1986. The European Community implemented a regulation in June 1989 for export notification of 21 chemicals (or chemical groups) which had been banned or severely restricted chemicals within the Community.\textsuperscript{85}

The legacy of the 1987 \textit{London Guidelines} is less that it established a notification system--which, as argued above, probably had minimal influence on trade--and more that it moved trade regulation from the OECD to a global forum. Nonetheless, it did not resolve the fundamental question: how to ensure that hazardous chemicals proceeded with the consent of the importer? Lack of consent is what irked developing countries when they claimed that substances that had been banned or severely restricted in the North were being dumped in the South; improving information and consent was the focus of the UNEP Decisions and UN General Assembly Declarations in the late 1970s and early 1980s. The principle of consent would seem consistent with the ideology and interests of most if not all nations. Importers and NGOs favored consent because, in principle, it enhanced the capacity of importing states to control hazardous substances. Market-oriented exporting countries found consent to be consistent with the principles of informed market choice. Indeed, before UNEP became involved in developing a consent system some major exporters were considering whether to adopt their own PIC systems. However, exporters were not uniform in their acceptance of a consent system; fears of UNEP meddling in trade kept PIC from being adopted as part of the \textit{London Guidelines} in 1987.

\textbf{Food and Agriculture Organization}

Concern about trade in hazardous chemicals from industrialized to developing countries has historically been directed at pesticides. Indeed, it was mainly concern about pesticides that originally motivated the UNEP Provisional Notification Scheme and the \textit{London Guidelines}. The U.N.'s most important activities related to pesticides have been managed by the Food and Agriculture Organization (FAO), which logically plays a central role because its mandate centrally concerns the food production system. Because FAO implements country-level programmes on food production, its involvement with pesticides has been extensive. FAO's approach to pest management is codified in the nonbinding 1985 \textit{FAO Code of Conduct on the Distribution and Use of Pesticides}. Like many other codes and guidelines, the \textit{FAO Code of Conduct} is broad--it establishes guidelines for the marketing and use of pesticides and identifies specific responsibilities for industry and government. Like many other Codes, it is difficult to evaluate its influence. Before and after the Code, FAO engaged in training programs to limit and ensure the safe use of pesticides. As mentioned above, FAO added IPM to its field programs in

the 1970s. Ever since the Code was put into place, all such activities to reduce pesticide hazards have been described as efforts to implement the Code, but in practice most (or all) probably would have happened anyway. Most such programs are funded with bilateral aid that is coordinated and spent through FAO, and thus the extent to which projects are pursued is less affected by the Code and more by priorities of national governments. Throughout the 1980s, awareness of pesticide hazards rose in the industrialized countries, and with them so did some funding of programs by donor nations. The main sponsors of these projects were the Japan, the Netherlands, and the United States.

Although the negotiations that led to PIC were held under UNEP auspices, government delegates and bureaucrats alike realized that effective trade controls would require FAO participation, especially if trade regulation would be part of an integrated global approach that included ground-level projects and training programs. Absent any opposition to this approach, a merger of the discussions in UNEP and FAO was easily achieved. The same governments were active in both fora which made coordination easier; indeed, the late 1980s marked rising concern among government officials that international organizations were needlessly proliferating, and thus pressure to avoid duplication was high.

**UNEP and FAO Adopt a Joint PIC System**

PIC was the result of continuous pressure by entrepreneurial public interest groups and developing countries. Since 1982, public interest groups have been unified in their support for PIC, even when they had different views on the extent to which use and trade of hazardous chemicals and pesticides should be banned completely. PIC was on the agenda but rejected when the Provisional Notification Scheme was adopted. OXFAM's David Bull, the most respected expert in the NGO community that had pressured industry and FAO to do more to control pesticide risks, was enlisted by FAO to draft the *FAO Code of Conduct*. His draft included PIC, which was removed under industry pressure in 1985 when the final draft was adopted.  

Public interest NGOs and developing countries also pushed for inclusion of PIC in the *London Guidelines*, where it was also rejected by a minority of industrialized countries that exported chemicals and pesticides. At the 1987 UNEP Governing Council meeting when the *London Guidelines* (minus PIC) were adopted, Greenpeace and PAN helped to organize a coalition of developing countries led by Senegal that adopted a parallel Decision to require a working group to investigate amending the *Guidelines* to include PIC. While PIC had been stripped away by its foes at every turn, from the early 1980s to 1987, the 1987 Governing Council Decision was

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87See Pallemaerts, 1988, *op. cit.*, ref. 6. Pallemaerts modestly does not indicate his own role; interviews with others present at the Council meeting suggest that he was instrumental in organizing the coalition.
the first that isolated the focus of international negotiations on adopting PIC. Only months after the UNEP Governing Council decision, the coalition of developing countries forced adoption of resolution in the FAO Conference requiring that PIC be incorporated into the Code of Conduct.\textsuperscript{88} Thereafter, opponents could scuttle PIC only at great cost.

Following the mandates of 1987, UNEP and FAO working groups in developed procedures for a PIC system. In 1989 the UNEP Governing Council adopted the Amended London Guidelines which differed from the original in their inclusion of Prior Informed Consent.\textsuperscript{89} In 1989, later the same year that UNEP amended the London Guidelines to add PIC, the FAO governing body amended the Code to add a compatible system of information exchange and Prior Informed Consent. The definitions of "prior informed consent" in the two documents are identical, except that FAO's refers only to pesticides and UNEP's uses the broader term chemicals. The terms and procedures for exchanging information in the PIC system are the same. A memorandum of understanding between the Executive Director of UNEP and the Director-General of FAO provides the formal basis for implementing PIC jointly.\textsuperscript{90} Bureaucrats in FAO and UNEP ensured that the two systems could operate together—a goal that was supported by all major exporting countries who worked, in parallel, in the governing bodies of FAO and UNEP to ensure that both organizations adopted compatible procedures.

Although the two PIC systems were developed in tandem and implemented jointly, in 1989 it was hardly clear that UNEP and FAO visions of PIC would be fully compatible.\textsuperscript{91} In particular, ENGOs and developing countries active in UNEP feared that FAO was beholden to agriculture ministries and pesticides producers and would implement PIC reluctantly and poorly. Some had charged that the Code of Conduct, even without PIC, was already widely abused.\textsuperscript{92} Thus UNEP's Amended London Guidelines gave UNEP and FAO joint "operational

\textsuperscript{88}See Pallemamerts, 1988, op. cit., ref. 6, p. 67. For an account of these events which emphasizes that PIC, if it had been adopted, would yield few additional benefits at high cost, see: Walls, M.P., 1988, "Chemical Exports and the Age of Consent: The High Cost of International Export Control Proposals," International Law and Politics, 20, 753-775.

\textsuperscript{89}UNEP Governing Council Decision 15/30 (1989).

\textsuperscript{90}November 1992.

\textsuperscript{91}Even the first FAO/UNEP Joint Meeting of Experts, held in 1989 shortly after the two separate PIC procedures had been adopted, suggested that UNEP and FAO might even adopt different (but similar) decision guidance documents. The role of the Joint Meeting is discussed further below. See Joint Meeting of Experts on Prior Informed Consent (JMPIC), 1989, "Eighth session of the FAO panel of experts on pesticide specifications, registration requirements and application standards, First FAO/UNEP joint meeting, Report," 18-21 December, p.8.

responsibility...in accordance with their specialized expertise, with UNEP handling industrial chemicals and FAO handling pesticides...."93 UNEP would not include pesticides on its list of PIC substances "[i]f the procedures recommended by the FAO Committee on Agriculture prove to be at least equally protective to human health and the environment." If not, UNEP would include them in their part of PIC, with (presumably a looser) PIC also implemented on the same substances by FAO.94 How UNEP would have made this determination is unclear; so far, the problem has not occurred, and the division of responsibility between "chemicals" and "pesticides"--between UNEP and FAO--has been relatively clear. Thus an area of international law that was a prime candidate for conflicts between overlapping legal instruments--"treaty congestion"--in fact illustrates a case of remarkable speed and coordination in adopting new and significant commitments.95 The speed and coordination were probably enhanced because these were nonbinding instruments, which is a well-known benefit of soft law.96 Even more important, as will be shown later, is that most of the key elements of the PIC system were not resolved in 1989; rather, they were developed through the process of implementation--learning by doing--which was greatly aided by the flexibility of the nonbinding instruments.

UNCED and Agenda 21

This story is about the development of PIC which took place mainly in the fora of UNEP and FAO. However, at the same time they were adopting and implementing PIC the agencies and member states of the UN system were preparing for the United Nations Conference on Environment and Development (UNCED) to mark the 20th anniversary of the 1972 Stockholm Conference and to set an agenda for the future--the 900+ page Agenda 21. The issues discussed included regulation of chemicals and pesticides as well as virtually every other topic related to the environment and development. Many claim that such summits help focus attention on the need for further action; it is worth pausing briefly in the story of PIC to evaluate such claims in light of the experience with PIC. Just as PIC was beginning operation in 1991, UNCED-related


94 CRP.2.

95 On "treaty congestion" see Edith Brown Weiss, 1989, op. cit., ref. 5.

96 Notably, many analysts point to the speed at which nonbinding instruments take effect because they do not require ratification and thus do not sit idle during sometimes long periods of "entry into force". On this point, see notably Peter H. Sand, 1990, Lessons Learned in Global Environmental Governance (Washington: World Resources Institute).
activities were gaining momentum; the period since UNCED, when attention to PIC has also been needed, has seen extensive UNCED follow-up and review activities, notably by the UN's Commission on Sustainable Development (CSD) and (in 1997) a special debate in the General Assembly to assess progress at the 5 year milestone. If summits help focus attention and catalyze needed actions, the timing of PIC's adoption and development could make it a major beneficiary of summit fever.

The evidence suggests that UNCED and *Agenda 21* have had little influence on PIC. Chapter 19 of *Agenda 21* is devoted to management of toxic chemicals. Like most of *Agenda 21*, it presents a broad agenda that is the superset of existing activities augmented by a long wish-list. It encourages assessment of chemical risks, building national capacity for chemicals management, and harmonization of labeling and classification. It also encourages continued implementation of the information exchange provisions of the *Code of Conduct* and in the *Amended London Guidelines* as well as implementation of the voluntary PIC system.

*Agenda 21* also reflected, but did not extend, a debate on how to make PIC more effective. After finally achieving the adoption of a voluntary PIC system in 1989, ENGOs and developing countries did not stop their pressure for more legal instruments. In a replay of the 1987 Governing Council Decision to add PIC to the *London Guidelines*, in 1991 the coalition that favored tighter export regulation organized a Decision by the UNEP Governing Council to establish a working group to debate whether to convert PIC to a binding instrument. They urged that PIC be converted to a binding instrument; some, including Belgium and the Netherlands, urged UNEP to consider the need for a chemicals convention, which would include PIC as well as many other regulatory efforts pushed by public interest NGOs. Notably, since


98The Belgian and Dutch pressure to integrate UNEP's chemicals work continues to the present. The latest proposal was to integrate the instruments on PIC, persistent organic pollutants and potentially other chemicals safety issues considered by UNEP's Governing Council. See Government-Designated Group of Experts on Further Measures to Reduce the Risks from a Limited Number of Hazardous Chemicals, 1996, "Report of the Government-Designated Group of Experts on Further Measures to Reduce the Risks from a Limited Number of Hazardous Chemicals on its Work," UNEP/PIC/EG/1/3 (8 July), Annex II. Other governments have not given strong support to this proposal, especially if it delayed action on PIC and persistent organic pollutants. See UNEP Governing Council, 1997, "Summary of Responses to a Letter from the Executive Director to Governments Seeking the Views on a Possible Integrated International Mechanism Concerning the Management of Hazardous Chemicals," (8 January). Public interest NGOs have also advocated the need for a wider "chemicals convention". See, e.g., Consumers International, Pesticides Action Network Asia and the Pacific, and the Pesticides Trust, 1997, "Action to support an improved Prior Informed Consent as an early-warming system for trade in hazardous chemicals," An NGO submission to the Third Intergovernmental Negotiating Committee of the [sic] International Legally
the middle 1980s PAN had advocated banning use of a "dirty dozen" of pesticides that are particularly hazardous, many of which (such as DDT) were persistent organic pollutants (POPs) that accumulate in the environment.\footnote{99} The battle lines over a binding convention were similar to those over PIC in general--most industrialized countries and the chemical and pesticides industry favored continuation of the nonbinding PIC system; developing countries, a few activist industrialized countries (mainly with small or nonexistent chemical and pesticide exporting industries), and nearly all public interest NGOs urged conversion to a binding instrument. Chapter 19 of Agenda 21 urges countries to explore "possible mandatory application [of PIC] through legally binding instruments."\footnote{100} UNEP was already doing that.

Chapter 19 has not gone without notice. Since UNCED, virtually every official act by an international organization concerning chemicals management refers to Chapter 19.\footnote{101} The existence of chemicals in Agenda 21 has put the issue on the agenda of the Commission on Sustainable Development (CSD), which is reviewing progress in this area in 1997. But in practice it is difficult to trace any significant effect of Agenda 21 on the development of the Amended London Guidelines, the FAO Code of Conduct, or PIC. The key decisions to adopt PIC and to explore the possibility of a legally binding instrument were all taken before what became chapter 19 was negotiated in the UNCED preparatory process. The important domestic pressure for a legally binding PIC system, notably from members of the European Community--which was already planning to implement PIC with a binding instrument--reflected their a priori views that a binding instrument would be more effective and not appreciably affected by UNCED and Agenda 21. The most important event in 1992, implementation of PIC on a legally binding basis

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\footnote{99}{The "dirty dozen" is no longer rigorously a dozen. It includes: aldicarb, camphlor (Toxaphene), chlordane and heptachlor, chlordimeform, DBCP, DDT, aldrin (and dieldrin and endrin), EDB, HCH/BHC and lindane, paraquat, parathion and methyl parathion, pentachlorphenol, and 2,4,5-T.}


\footnote{101}{For example, see the survey of activities by members of the IOMC, which was created following the UNCED process to coordinate the activities that implement Chapter 19 of Agenda 21. It is a list of actions, few (if any) were caused by UNCED. IOMC, 1996, Inventory of Activities: Summary Report, IOMC/IOCC 96.8 (December).}
within the EC, was based on an agreement reached a year earlier by the EC Council. The EC actions was not driven by UNCED preparations. At the time of negotiating Agenda 21, implementation of the existing PIC program was the most important activity in the trade of hazardous chemicals and pesticides. That is reflected in Agenda 21, but not a consequence of the Agenda 21 process.

There is some evidence that UNCED impeded PIC at a crucial time. From late 1991 to the end of 1992 marks a period of nearly zero progress in the implementation of PIC--advocates and implementers of PIC were busy with the preparation and exhaustion of UNCED. The timing of UNCED was unfortunate for PIC because it meant that there was little implementation of PIC at either the national or international level between late 1991 and early 1993. The delay was especially unfortunate because only two years UNEP's Governing Council decided to pursue a legally binding PIC Convention which, again, impeded implementation of the voluntary PIC system. As argued below, one benefit of a non-binding PIC system was that its flexibility allowed time for experimentation and learning; in practice, UNCED interrupted that process and much less was learned as a consequence.

Some reorganization of the work of international organizations on chemical safety can be traced to Agenda 21, which urged more cooperation. Since the 1970s, ILO, UNEP and WHO have conducted a joint technical program on chemical assessment and management—the International Programme on Chemical Safety (IPCS). ILO's involvement stemmed from two Conventions (Nos 170 and 174) and a Recommendation of the ILO Council concerning worker safety and chemicals. As noted earlier, WHO had been involved in assessment of chemical risks on health, notably pesticides, since the 1950s. And UNEP's involvement in chemicals activities can be traced to the mandate given when UNEP was founded in 1972 at the Stockholm Conference. IPCS was one point of overlap of these three organizations' interests: it coordinated and reviewed scientific research on the impacts of chemicals on human health and the environment. IPCS was the main technical advisory body for each of these three organizations on matters of chemical hazards. Three other international organizations with substantial chemicals-related activities were notably absent: FAO, OECD and UNIDO. Of those, UNIDO had already approached IPCS about becoming a member. FAO and OECD long had their own internal expert advisory bodies. UNCED's call for coordination gave the need for broader involvement a boost. However, even in this case where UNCED's role is clear, the needed activities were already largely under way. Indeed, by 1991 IPCS was already exploring a possible intergovernmental mechanism on chemical risk and management. Instructed by its Governing Council in 1991, UNEP officials were pushing from within IPCS to expand

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cooperation from the three IPCS members to include the European Community and OECD.\textsuperscript{103} After UNCED, IPCS efforts to gain broader involvement of other international organizations in IPCS continued, but the fundamental pressures began much earlier and for reasons unrelated to UNCED. Finally, in 1994, experts and lawyers from the three IPCS organizations as well as FAO, OECD and UNIDO developed a memorandum of understanding (MOU) to coordinate the activities of their six organizations through a new Inter-Organization Programme for the Sound Management of Chemicals (IOMC).\textsuperscript{104} The MOU entered into force in 1995; its central component is a standing coordinating committee. It does not supersede any of the existing programmatic activities, including the IPCS. These events may not have occurred without UNCED, but it is unclear whether the MOU and coordinating committee will have much practical effect on what international organizations actually do.

This pessimistic assessment of Agenda 21's influence does not hold for all aspects of chemicals regulation. Notably, the reduction of lead--especially removal of lead from gasoline--has been influentially championed by industrialized countries and environmental groups in the CSD, with the result that the CSD is the central global forum now for action against lead and sponsor of a nonbinding ban on lead which appears to be influential.\textsuperscript{105} In parallel with creation of the IOMC and implementation of Chapter 19 of Agenda 21, governments also created the Intergovernmental Forum on Chemical Safety (IFCS), which meets periodically to discuss chemical hazards and may help raise the profile of these issues within the UN system.\textsuperscript{106} Moreover, while it is still too early to make an assessment, the CSD may be playing a role in furthering global regulation of POPs, although even in that case many other fora--such as the United Nations Economic Commission for Europe and UNEP--are working on the issue and have launched substantive negotiations to regulate POPs.\textsuperscript{107} But in the area of PIC, UNCED on balance did little that improved the effectiveness of regulation and perhaps slowed progress at a critical time.


\textsuperscript{104}See the Introductory Note on the IOMC by Anne Trebilcock and the MOU itself: \textit{International Legal Materials}, 34, 1311-1321 (1995).

\textsuperscript{105}Arguably much of that activity also would have happened anyway; the U.S. Government and several multinational NGOs have been conducted a campaign to reduce lead exposure in developing countries and would have done so without UNCED. However, the existence of CSD may have helped improve coordination of that campaign.

\textsuperscript{106}For more on IFCS, see especially the compact summaries of its origins and activities in \textit{Earth Negotiations Bulletin}, at <www.iisd.ca/linkages/>.

IV. Implementing the Voluntary PIC System

PIC is intended to help governments control the imports of hazardous chemicals and pesticides. Both the Amended London Guidelines and the amended FAO Code of Conduct on the Distribution and Use of Pesticides require that all participating governments name designated national authorities (DNAs) who are responsible for regulating chemicals and pesticides (or both). The DNA(s) in each country are expected to notify the joint FAO/UNEP Secretariat of "control actions" to ban or severely restrict a chemical or pesticide. Those substances are then eligible for the PIC system.

For each substance in PIC the Secretariat prepares (usually by commission) a Decision Guidance Document (DGD) that summarizes published scientific (peer-reviewed) information on the hazards of the chemical or pesticide. The DGD is sent to all DNAs who then evaluate whether and under what conditions to allow future imports and summarize their decision in an "Importing Country Response." Those responses are sent back to the Secretariat, which collates them and transmits them to all other DNAs. Thereafter, exporters of PIC chemicals will have easy access to information on whether a particular nation allows imports of a particular substance which is part of the PIC system. If the importer has decided to ban the substance then the exporter should prohibit the export. If the importer has allowed imports only with a permit, the exporter must ensure the proper permit is obtained prior to export. In essence, PIC shifts enforcement responsibilities from importing nations, some of which are developing nations that have low administrative capacity, to exporters that are mainly industrialized countries with high administrative capacity. When information is absent, the status quo prevails—exporters are expected to make an effort to determine whether the country allows the PIC chemical to be imported. Figure 2.1 summarizes the sequence of events.

[figure 2.1 about here]

Because the PIC system is part of broader efforts to regulate trade in chemicals and pesticides—and to improve management of these hazards generally—figure 2.1 also shows the notification systems codified in US and EEC legislation, the 1984 OECD Recommendation, and the original 1985 FAO Code of Conduct and 1987 London Guidelines. The notification systems require exporters to provide information on control actions; most also require notification of

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108Small shipments (below 10kg) are excluded. See 6th meeting, p.12. Also excluded are shipments of any size for purely research purposes and personal effects. Also excluded are articles that contain PIC chemicals—the scheme applies only to shipments of the chemicals themselves. See 6th Meeting, p.11. There is widespread agreement that similar exemptions should apply to the PIC Convention. See, e.g., INC-PIC, 1995, "Comments on the Possible Elements for an International Legally Binding Instrument for the Application of the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade Identified by the Ad Hoc Working Group," Brussels, 11-15 March 1996, UNEP/FAO/PIC/INC.1/3 (8 December), para. 21.
Figure 2.1
The Operation of the PIC System of the Amended London Guidelines and the FAO Code of Conduct

Exporters notify importers of shipments of substances that are subjected to "control actions" in exporting state (first-time, annual, or per-shipment basis) 5,6

Secretariat collates data on "control actions" 7 Data on "control actions" sent to DNAs

"Export Notification"

"Notification system" 7

A state adopts a "control action" to ban or severely restrict 1 a chemical;

entry into PIC via "control actions"

list of candidates for PIC list

Expert Group selects PIC list and sets priorities for completing DGDs 3

Completed DGDs sent to DNAs 4

Chemical Enters the PIC System

DNAs issue "Importing Country Response" that indicates whether, and under what conditions, future imports of the PIC chemical will be allowed

Secretariat sends Responses to all DNAs

Exporters regulate shipments per Responses of importing countries

1 Withdrawal from market, an action taken by producers rather than governments, also qualifies as a "control action"
2 The generic term "chemical" denotes all substances eligible for PIC—hazardous industrial & consumer chemicals and pesticides
3 Decision Guidance Document (DGD), which summarizes the reasons for controls actions, known hazards, alternatives
4 Designated National Authorities (DNAs)—the government agencies that are the conduits for information between the PIC system and national governments
5 Exporting countries may select their preferred method of export shipment notification (if any)
6 The FAO/UNEP system does not include export notification, but US rules (FIFRA 1978) and EEC regulations (1988 and 1992) require notification of shipments;
7 US and EEC rules (see note 6) require direct notification of control actions, and thus in these cases national law duplicates the function performed by FAO and UNEP
exports. The influence of those notification systems will not be further considered here, except insofar as the data required for them to operate (i.e., on control actions and on shipments) is also needed for the operation and evaluation of the PIC system. In the past, notification systems appear to have had little influence; by coupling notification with the PIC system, perhaps the information provided during notification will be more accurate, timely and useful—that hypothesis is worth testing but not examined further here. Similar requirements for notification can also be found in other binding and nonbinding legal instruments, such as the ILO Convention on safe use of chemicals in the workplace.  

Putting PIC into practice—implementation—has depended on several critical processes at the international and national levels. At the international level, two processes have been particular important: (1) the development of the "PIC list" of chemicals and pesticides that are part of the PIC system; (2) the preparation of DGDs. Other international functions such as the gathering and distribution of importing country responses are also vital, but they have been relatively easy to achieve. Implementation of the PIC system at the national level has been critical to the success of PIC. Particularly important national implementation activities have been the naming of DNAs, communication of information by DNAs, and regulation of production and trade of PIC chemicals. In this section each of these critical international and national activities is examined.

**International Implementation**

Implementation at the international level has required many policy decisions that were unresolved or unknown in 1989 when the Amended London Guidelines and the FAO Code of Conduct were adopted. Those decisions were made in an expert forum—the FAO/UNEP Joint Meetings on Prior Informed Consent. Thus before turning to the particular processes that have been required to implement PIC, the origins and operation of the Joint Meetings are reviewed. The flexibility and expert orientation of the FAO/UNEP Joint Group is the main reason why PIC has been able to handle efficiently the many problems that have arisen over its few years of operation.

**FAO/UNEP Joint Meetings on Prior Informed Consent**

Like all dynamic agreements the PIC system requires a forum for debating and making policy decisions. In virtually all international environmental agreements such a forum consists of a regular meeting of the parties—national governments that have ratified the agreement—subcommittees and working groups. PIC is different because it was created with non-binding instruments. There are no formal parties to non-binding instruments and thus no automatic need

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for a formal supreme decision-making body consisting of the parties.\textsuperscript{110} Moreover, because it is non-binding there was no established pattern for decision-making bodies to be created under such instruments. Indeed, neither the FAO Code of Conduct nor the UNEP Amended London Guidelines contain much guidance on the creation of any review- or decision-making body.\textsuperscript{111} The Amended London Guidelines give the role of providing secretariat functions to the IRPTC--since renamed "UNEP Chemicals"--and the Code of Conduct merely says that FAO will provide some secretariat functions in coordination with UNEP. Neither envisioned the need for a body to regularly make significant decisions once the PIC system was in place. The supreme decision-making fora were the FAO and UNEP governing bodies--which were composed of government representatives--which had adopted the PIC system. However, in practice, none of the operational decisions for PIC would be made by those bodies, which were large and unwieldy and had many other issues on their agendas.

Because PIC was especially created to regulate pesticides most of the technical capacity for the PIC system at the early stages came from FAO. Because the FAO Code and the UNEP Amended London Guidelines did not specify a particular form for policy making, FAO employed a model that it had already used extensively--to convene a group of experts on a regular basis to provide guidance on technical questions. After the Code of Conduct was adopted, FAO added the implementation of PIC to the mandate of an existing group: the FAO Panel of Experts on Pesticide Specifications, Registration Requirements and Application Standards--a regular meeting of experts who review and debate draft technical guidelines on the use of pesticides. Because PIC was to be implemented jointly with UNEP, FAO asked UNEP to invite half the experts to the meeting. After one meeting the agenda quickly grew and a separate group dedicated to PIC was established: the FAO/UNEP Joint Meetings on Prior Informed Consent (JMPIC). At each Meeting, the Joint Group of experts discusses, develops and resolves issues related to the operation and implementation of PIC. Other international technical organizations had employed similar bodies to settle the technical details related to a non-binding accord. FAO's experience with this model includes the FAO Joint Meeting on Pesticide Residues

\textsuperscript{110}Indeed, there are no formal "parties" to the PIC agreements. Under international law, countries "adhere to" or "participate in" the PIC system; they do not become parties in the same sense that parties to international treaties. That distinction reflects that under international law, parties to binding agreements are expected to comply whereas the moral and legal requirement to comply with nonbinding agreements may be less intense. Whether that is true, and its implications for the effectiveness of international agreements, is one subject of this thesis.

\textsuperscript{111}The Amended London Guidelines mention an Expert Group in Annex II but only for a narrow purpose of determining hazardous pesticide formulations. This task has been performed in the identification of so-called Class 1A+ chemicals, discussed below. The Amended London Guidelines also mentions in passing that "[a]n informal consultative process may be used to assist IRPTC in determining whether the control action meets the definition of the Guidelines." (Article 7.2).
(JMPR)—a standing committee convened with WHO for the purpose of analyzing data on the health and environmental effects of pesticides that were necessary for setting pesticide residue standards (see the study on the *Codex Alimentarius*, chapter 3).

The FAO/UNEP Joint Group consists of about 10 experts—half chosen by each organization and roughly balanced between developed and developing countries—selected as individuals rather than government representatives. In practice, FAO and UNEP contacts are mainly through governments and thus most experts are government employees; governments thus potentially have some influence over outcomes, although so far no group has publicly charged that any of the experts have made improper or instructed assessments of any issue that the Joint Group has examined. Technical work is done by the secretariat and consultants but with the guidance and advice of this expert Committee. Other international organizations with active pesticides and chemicals trade programs (WHO, OECD, ILO and EEC) normally send observers.

Nongovernmental organizations (NGOs) have also participated actively in the work of JMPIC. Near the end of its life, JMPIC adopted formal NGO access rules and limited participation to a pair of experts from each of four organizations—two from industry and two from public interest groups—or 8 people in total. Because many more people actually participated at the time, the Joint Group envisioned that these rules would result in tag-team alternation. In practice, those rules were not strictly applied. Participation was governed more by groups that are interested in the work of JMPIC than the rules. Pesticide producers have been represented by the Groupement International des Associations Nationales de Fabricants de Produits Agrochimiques (GIFAP), which normally sends the largest delegation and has a close historical relationship with FAO. (GIFAP changed its name in 1996 to the Global Crop Protection Federation—GCPF.) Chemical producers in Europe were represented by the European Chemical Industry Council (CEFIC); the Chemical Manufacturers Association (CMA) represents North American producers. In addition, the International Council of Chemical Associations (ICCA) began in 1993, with CEFIC as its secretariat, with the mandate to represent the global interests of chemical producers but so far has not supplanted the separate North American and European industry associations. Public interests have been represented by Pesticides Action Network (PAN) and the International Organization of Consumer Unions (IOCU), which is now less awkwardly called Consumers International (CI). The World Wide Fund for Nature International (WWF) has also participated.¹¹² Most of the key participants from industry and public interest groups have been active on these issues since before JMPIC began operation and coordinate their work informally. NGO participants have been excluded when JMPIC has decided particularly sensitive matters, such as which substances will be on the PIC list because of "conditions of use" in developing countries (see below).

Developing the PIC list

First, and fundamentally, the Joint Group has had the task of setting priorities for the pesticides and chemicals that would be included in PIC. More than 1000 control actions existed at the time that PIC was created. Setting priorities would be crucial because a substance could not enter the PIC system until a DGD had been prepared—an expensive and time-consuming process. Negotiators anticipated that the PIC procedure could not be immediately launched for all eligible chemicals; thus the Amended London Guidelines include instructions on the identification of an initial PIC list consisting of those chemicals that had been banned or severely restricted in 5 or more countries. In principle that rule would help to set priorities during the start-up stage, but in practice it was not immediately useful because the inventory of existing control actions had been derived from IRPTC's databanks that contributed to the UN Consolidated List of Products whose Consumption and/or Sale have been Banned, Withdrawn, Severely Restricted—the same list mandated by the 1982 General Assembly Resolution and reviled by industry. The contents of that list could not be easily verified, and thus while the List in principle could have been a starting point for PIC, in practice it was useless and the Joint Group of Experts decided it was unreliable. Similarly, IRPTC could have been in a good position to provide information on control actions from its work to implement the Provisional Notification Scheme and the 1987 London Guidelines, but in practice little attention to payed to implementing those instruments fully and to cataloging control actions using consistent definitions. In short, when JMPIC first considered what would be on the PIC list, the slate was clean.

113 One of the few issues that the Joint Group did not need to address were the definitions of controlled substances. The standard definitions, codified in the Amended London Guidelines and the FAO Code are: (1) "pesticides", which are chemicals applied to control pests in agriculture and animal husbandry, disease vectors, defoliants and plant growth regulators; (2) "industrial chemicals", which are chemicals used in industrial processes; and, (3) "consumer chemicals", which are chemicals used for private, non-occupational purposes. The PIC scheme explicitly excludes other chemicals, such as fertilizers and drugs; the Joint Group also decided to exclude small (less than 10kg) shipments of consumer chemicals and all chemicals used for laboratory scientific research.


115 Annex II, Amended London Guidelines (1989); no time limit was set for the start-up phase.

116 The number of 1000 control actions was based on IRPTC's estimates from its databases, including the UN Consolidated List of Products whose Consumption and/or Sale have been Banned, Withdrawn, Severely Restricted or not Approved by Governments. Industry representatives reported that the list contained many errors, and in 1991 the Joint Group advised that because of errors and the difficulty in substantiating control actions that the list should not be used at all (3rd meeting report, p.15.)
Developing the PIC list and setting priorities required two major actions, and the Joint Group played the central role in both. First was the need to clarify what types of control actions qualified under PIC. The Guidelines and Code state that "bans" and "severe restrictions" qualify as control actions. The FAO Conference report, written at the time the Code was amended, also clearly states that chemicals that had been rejected for registration or voluntarily withdrawn from registration for reasons of health or environment should be included in PIC. Thus in practice four types of control actions make a chemical eligible for PIC: "ban", "severe restriction", "rejection" and "withdrawal".117 Putting those four concepts into operation has not been easy.

For each type of control action the Joint Group has developed more detailed definitions and has revised the reporting requirements for control actions so it would be clearer when a control action satisfied the new criteria and to improve comparability of national control actions.118 As a consequence, the PIC system now has available more useful information about the reasons why the particular chemical has been controlled by other countries. In principle, that should improve management of PIC chemicals—for example, by allowing DGDs to include more useful information on why particular chemicals have been regulated—although that benefit is understandably not yet much in evidence. Furthermore, the revised reporting scheme includes requests for data on actual production and usage, making it easier to set priorities among chemicals. Much of the early work of the Joint Group in setting priorities was based on their expert sense of whether the chemical was a severe threat, some of which has been later revised when official data has been submitted.119 The new reporting system has helped to increase the probability that decisions can be made on a more informed basis from the outset.

In borderline cases, JMPIC has evaluated control actions on a case-by-case basis. For example, some substances are severely restricted only in particular geographical locations or agricultural settings. A related problem is that the PIC system is triggered when such bans or severe restrictions apply to particular use—for example, banned as a pesticide. But in practice some national legislation controls production, distribution, labeling or other aspects of pesticide

117The four categories, and explicit omission of a fifth (non-registered pesticides) are reviewed in the first meeting report, pp. 10-11.

118For discussion and elaboration of the definitions, see: JMPIC, 1989, "Eighth session of the FAO panel of experts on pesticide specifications, registration requirements and application standards, First FAO/UNEP joint meeting, Report," 18-21 December, p.5.

119An example is toxaphene, which was excluded from PIC (although it had been banned in the EC) because the Joint Group thought there was no production. Later they found that production was taking place in a Nicaraguan plant. Similarly, Chlordecone was reinstated when it was discovered that the pesticide was produced in Brazil and exported to Africa. Both these substances were reinstated as PIC candidates (i.e., recommended for a DGD). JMPIC, 1992, "Fifth FAO/UNEP joint meeting on Prior Informed Consent (PIC), Report" 26-30 October, p. 17.
delivery and application that are not the actual use. 120 Some ambiguities, resolved by the Joint Group, are illustrated by the pesticide Bifenthrin, which the Netherlands allows to be applied only within certain greenhouses because of its toxicity to aquatic organisms. The substance was on JMPIC's agenda as a borderline case because industry had objected to the Dutch government's inclusion of the substance in its export notification scheme, which industry thought would alarm potential importers and disrupt efforts to have the pesticide registered in other countries. Considering that case, the group agreed it should not be in PIC because it was not "severely restricted" except under conditions relevant in the Netherlands but that information on such chemicals should be distributed to DNAs on "information data sheets". 121 Information sheets, themselves an innovation of the Joint Group, were intended to provide relevant information on existing or possible regulations that affected pesticides but they were formally outside the PIC process. 122 The earlier notification schemes--UNEP's Provisional Notification System and the original (1987) London Guidelines--did not envision a need for such reporting and data sheets.

Second, while resolving definitions and other issues that have affected PIC the Joint Group has also been the forum where the PIC list has been adopted. In 1990, when the Joint Group took stock of which verified control actions chemicals and pesticides qualified for PIC, none had received the necessary five (or more) notifications of control actions and thus the initial PIC list was empty. Few countries had notified the IRPTC or FAO of their control actions, and IRPTC's databases were not reliable. At the meeting, the EC presented its list of restricted chemicals from the appendix to the Regulation that established the EC notification system (Regulation 1734/88). 123 Lacking any other candidate lists, the Joint Group accepted the EC list; because the EC consisted of 12 member states, every substance on its list immediately passed the threshold of 5 control actions. The Community's regulations thus defined the first group of chemicals for PIC. In practice, many such vacuums of information have been filled by EC ideas. The role of the EC, which established its notification system through the Community and not

120 2nd expert meeting, p.14.

121 The Bienfrin case is reviewed in 2nd expert report, p.12.

122 JMPIC, 1st meeting, p.8.

123 The only minor exception is HCH and isomers. The PIC scheme adopts a general term to cover isomer mixtures "HCH, mixed isomers" whereas the Community Regulation specifies fractions of a specific isomer: "HCH containing less than 99.0% of the gamma isomer". The extent to which the lists conform is astounding. Even the bizarre ordering of industrial chemicals on the UNEP/FAO PIC list, for example, reflects the ordering of the list in the Community's regulation, which sorts chemicals by whether they are banned (b) or severely restricted (sr), and within each category lists the compound according to CAS number. For the Community Regulation see EEC Regulation 1734/88. That regulation is superseded by the EC Regulation 2455/92, by which the EC implemented PIC; substances 1-21 of Annex I are the original 21 chemicals and pesticides included in the EC's notification system.
with the intention of it serving as the PIC list, explains some oddities, such as why two chemicals whose use and production had been largely discontinued (endrin and toxaphene) were nonetheless on the PIC list whereas many other chemicals of greater importance in developing countries initially were not.

Although the EC list allowed swift action to determine the PIC list, in general the Joint Group has faced the problem that information it has on control actions is incomplete, as is information on the hazards themselves--whenever it has faced a large gap in information, progress in implementing PIC has been impossible. At the time that the EC submitted its list of control actions, which _de facto_ defined the initial PIC list, 16 other chemicals were formally eligible (i.e. they were subject to 5 or more control actions); but for each, information on control actions remained highly incomplete. And the chemicals considered, such as lead and carbon tetrachloride would be complicated to include in PIC. In the case of lead, separate DGDs would be needed on organic and inorganic forms, which were used for widely different purposes, had different properties, and thus posed different hazards. In the case of carbon tetrachloride, it was being phased out in the Montreal Protocol.\(^{124}\) DGDs for it and other substances in the Protocol were planned, with the information on the control actions to be circulated, but the chemicals were not slated to be included in the PIC scheme because they were already extensively regulated by the Protocol.\(^{125}\) (Methyl Bromide, which was a candidate under the "conditions of use" criteria discussed below, was also excluded from PIC because it is regulated by the Montreal Protocol. These are two examples of informal coordination that in practice has reduced "treaty congestion."\(^{126}\) Late in 1991 DGDs for the first six pesticides were circulated, and PIC formally began operation.\(^{127}\)

The Joint Group also adopted a procedure for removing chemicals, which was developed by implementing the removal of Cyhexatin from PIC. In 1989 a review of studies concluded that Cyhexatin was teratogenic to rabbits (i.e. caused birth defects). Dow Chemical, the manufacturer, withdrew the substance from sale and five countries notified the UNEP/FAO Secretariat for PIC that they had banned or severely restricted cyhexatin. The substance entered

\(^{124}\text{JMPIC, 3rd meeting report, p. 16.}\)

\(^{125}\text{In this case, the Joint Group referred to the requirement that the London Guidelines require that they be "complementary" to existing international instruments and "should be implemented in a non-duplicative manner for the different classes of chemicals covered by existing instruments". In that spirit, the Montreal Protocol chemicals are subject to the information exchange provisions of the London Guidelines but not PIC. See JMPIC, 6th Joint Meeting Report, pp. 10-11.}\)

\(^{126}\text{See note 7 above and discussion in main text.}\)

\(^{127}\text{Joint FAO/UNEP Programme for the Operation of Prior Informed Consent, "Decision Guidance Documents: Aldrin, DDT, dieldrin, dinoseb and dinoseb salts, fluorocetamide and HCH (mixed isomers)," Rome (1991).}\)
the PIC procedure, and a DGD was circulated to all DNAs. More testing showed no
teratogenicity, which was confirmed in a 1994 review by the WHO/FAO Joint Meeting on
Pesticide Residues (JMPCR). Some countries withdrew their objections; two other manufacturers
began sale of the substance, and the Joint Group decided to revise the DGD (in July 1995). A
year later, Cyhexatin was removed from the procedure.128

As more control actions were notified by governments, the total list of candidate PIC
substances grew beyond the EC list. Once PIC was under way, late in 1991, the system soon
faced the problem that has remained ever since: the number of eligible chemicals is many times
the capacity of the PIC procedure. The Joint Group declared January 1992 would mark the end
of the PIC start-up phase. Since then, as required by the London Guidelines and the FAO Code, a
control action by any single country invokes the PIC system.129 The flood of control actions that
could result was most vividly illustrated in the case of Austria, which adopted new chemicals
legislation that banned or severely restricted 81 chemicals, 70 of which were not in the PIC
system.130 A literal reading of the Amended London Guidelines and FAO Code of Conduct
would require that all these substances be included in Pic. Instead, the Joint Group developed
priorities that emphasized chemicals that were actually used and excluded those no longer in
production. Such priorities were never envisioned in the Guidelines and Code, but in practice
they have proved important because the process of bringing a chemical into the PIC procedure is
time consuming. By 1995 the list of PIC candidates numbered 127 chemicals and was still
growing, but only 17 were in the system.131 By mid-1997 only 38 chemicals and pesticides were
on the PIC list. Priorities, which the Joint Group has explicitly adopted, have been crucial to
putting PIC into practice.132

Conditions of Use in Developing Countries The PIC system is triggered by national legislation.
Countries decide how to manage chemicals domestically, and when those national decisions
include a ban, severe restriction, withdrawal or rejection then the chemical is eligible for the PIC
list. However, such a scheme potentially misses many substances that are hazardous but widely
used in the developing countries. Many substances are considered safe and thus not severely

128 See JMPIC, 7th meeting, pp. 19-20 and JMPIC, 8th Joint Meeting report, pp. 21-22.

129 JMPIC, 3rd meeting report, p.17.

130 JMPIC, 1992, "Fifth FAO/UNEP joint meeting on Prior Informed Consent (PIC), Report"
26-30 October, p. 16.

Geneva, 6-10 March, p. 10.

132 For the Joint Group's criteria for setting priorities for the completion of DGDs for PIC-
eligible chemicals see JMPIC, 8th Meeting report, pp. 12-13.
restricted, banned, withdrawn or rejected when used under certain conditions (e.g. by workers wearing heavy rubber boots and respirators); but they may not be safe when applied under conditions that are typical in some developing countries (e.g., in hot, steamy fields where rubber suits are impractical or unaffordable). Of course developing countries might control those substances, which would trigger PIC, but in practice many did not have the administrative capacity to identify the hazards and develop the necessary control actions. Typically labels warned of the hazards, and in many countries the law formally required that protective gear be worn during application, but in practice directions were not followed and many severe poisonings resulted. Some pesticides did not have known antidotes; for others, antidotes were not locally available. The author will call this the problem of "conditions of use in developing countries", but the formal term is much longer and more complicated in order to satisfy industry concerns that this list of substances not be interpreted by importers as a ban on use (and thus sales) of the pesticides. Particular concern was focused on particularly hazardous formulations of specific pesticides.

The existence of these hazards has been the focus of efforts to reduce pesticide hazards since at least the early 1970s. WHO, for example, had developed a four-tier method of classifying pesticide formulations according to toxicity—Extremely Hazardous (Class 1a), Highly Hazardous (Class 1b), Moderately Hazardous (Class 2), and Slightly Hazardous (Class 3). In principle, that list—especially Class 1a formulations—would allow easy identification of dangerous pesticide formulations and thus might be included in PIC. How, in practice, the PIC system expanded to include "conditions of use" substances illustrates the flexibility of the nonbinding instrument and crucial functions performed by the Joint Group of Experts and by NGOs.

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133 The term most widely used now in official documents is: "Acutely hazardous pesticide formulations which have not been banned or severely restricted in any country for health or environmental reasons, but which are causing problems under conditions of use found in developing countries." For the source of this name, see ref. 138. Industry had documented to the Expert Group that misinterpretations—treatment of lists of pesticide formulations that were candidates for "conditions of use" inclusion as a "black list"—had occurred. Since 1993, this concern of industry has also led the Expert Group not to include candidate lists in its reports. For similar reasons, an extensive disclaimer has been added to the cover of DGDs for "conditions of use" substances. Moreover, the Secretariat was instructed by the Joint Group of Experts to make a special effort to explain the purpose of the "conditions of use" inclusion in the PIC system. See, 6th meeting, pages 17-19. In the PIC Convention, these "conditions of use" substances will probably be termed "Acutely Hazardous Pesticide Formulations."

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134 For the current contents of those lists, see International Programme on Chemical Safety, 1996, The WHO Recommended Classification of Pesticides by Hazard and Guidelines to Classification, 1996-1997, WHP/PCS/96.3.
(The condition of use problem is closely related to ILO's efforts to protect worker safety. In 1990 ILO adopted a Convention Concerning Safety in the Use of Chemicals in the Workplace. That broad Convention covers all major aspects of chemical safety, and it includes requirements, under Article 19, that exporters notify importers of substances that have been banned for all or some uses for reasons of worker safety. This analyst doubts if that provision could have been included in the ILO Convention if the broader notification system were not already in place in most OECD countries and also enshrined in UNEP's Provisional Notification System and London Guidelines. ILO has been in close context with the FAO/UNEP system to develop an implementation scheme that would, in effect, extend the existing notification scheme to include notifications as required under the ILO Convention. To whom such notifications should be made remains unclear. The relationship between the ILO and FAO/UNEP activities was not contemplated in detail by any of the political decision making bodies when they adopted their respective instruments and thus ILO remains outside the FAO/UNEP joint system. However, at this writing, it remains unclear how Article 19 will be implemented.)

That dangerous pesticide formulations could slip through the cracks of PIC was widely known, but the only guidance was a brief mention added to the Amended London Guidelines that an expert group should study the issue of "acutely hazardous pesticide formulations to determine if there exists a need for a list of such products to supplement the chemicals already subject to the PIC procedure." The Amended London Guidelines direct the expert group, as a starting point, to review the hazardous formulations listed by the WHO as "Class 1A," but that list is long, many are tightly regulated already, and reliable data on which substances cause the greatest problems is scarce (see ref. 47). Environmental groups helped to fill the gaps. At an early meeting, Pesticides Trust presented a survey on implementation of the FAO Code of Conduct that it had conducted with members of the Pesticides Action Network (PAN) on the use of 19 hazardous pesticides in 17 countries. It identified 9 pesticides that frequently caused problems. The Joint Group used this as the starting point for a new classification--termed "Class 1A+"--which were then candidates for the "PIC list". It consisted of 10 substances: all of the ones

135 ILO Convention No. 170.

136 Amended London Guidelines, Annex II.

137 Pesticides Trust, FAO Code: Missing Ingredients, London, Pesticides Trust, 1989. The NGO list was: aldicarb, carbofuran, dichlorvos, methamidophos, methomyl, monocrotophos, parathion methyl, parquat, and phosphamidon. 8 were WHO Class 1a or 1b substances; parquat formulations were on only WHO class II, but widespread improper use made the substance hazardous.

138 Here and throughout this chapter, the term "PIC List" is used to denote the list of chemicals and pesticides that are in the PIC system (i.e., DGDs have been circulated) or have been given a priority for inclusion in the PIC system (i.e., DGDs are being prepared and reviewed). However, the author is mindful that the term is controversial because industry fears that it will be viewed as
identified by the NGOs plus methyl bromide (a fumigant that was widely used and caused known
hazards, and which also attracted attention because it was being regulated under the Montreal
Protocol as an ozone-depleting substance).\textsuperscript{139}

The creation of Class 1A+ chemicals and their inclusion in PIC was not beyond the
mandate of the Amended London Guidelines, nor of a similar provision in the FAO Code of
Conduct. But the NGO activity ensured that this review took place and that consideration of
these substances was based on factual assessment of the hazards. It led (albeit with considerable
delay) to inclusion of specific formulations under the Class 1A+ scheme. The list has been
adjusted slightly over time. Ultimately, ten pesticides were identified for special priority under
class 1A+.

NGOs were influential in developing the Class 1A+ list because they supplied a
commodity--useful information--that was in high demand.\textsuperscript{140} Similarly, industry representatives
have given briefings on the hazards associated with their products--providing information that
was difficult or impossible for the policy-making Joint Group to get from other sources.\textsuperscript{141}

\textsuperscript{139}For selection of the 10 on this short list, see JMPIC, 1992, "Fifth FAO/UNEP Joint
Meeting on Prior Informed Consent (PIC), Report," Rome, 26-30 October, pp. 8-9. See also, JMPIC,
1990, "Second FAO/UNEP joint meeting on prior informed consent, Report," Geneva, 1-5 October,
pp.8-9. Later the closely related substance "parathion" was added to the list, based mainly on a
WHO draft Environmental Health Criteria (EHC) document on parathion. See JMPIC, 1991, "Third
FAO/UNEP joint meeting on Prior Informed Consent (PIC), Report" Rome, 3-7 June, p.16.
Parathion was not named as priority according to the NGO survey but was on the WHO Class 1A
list and had long been the subject of scrutiny by pesticide experts. It was, for example, part of the
Pesticide Action Network's "dirty dozen" list.

\textsuperscript{140}Their role here resonated with an earlier request from the Expert Group that the Secretariat
"obtain information on pesticides in the WHO category 1A and any other pesticides regardless of
the hazard category, that have been observed to cause problems due to toxicity and under conditions
of use in their countries." JMPIC, 1st meeting report, p. 12.

\textsuperscript{141}For example, a briefing on Paraquat by its producer (ICI), speaking to issues about
paraquat hazards that were important for the DGD on Paraquat, which was being revised at the time.
17-21 February, p. 19.
Public interest groups could identify some of the hazards, but the details, which were important for setting priorities and for ensuring an even-handed approach to identifying "conditions of use" substances. Greenpeace and the German PAN affiliate urged expansion of the PIC system to include substances that had never been submitted for registration in exporting nations. Such substances could not trigger PIC because they had not been banned, severely restricted, withdrawn or rejected. The Expert Group deferred the issue and never addressed it again. That the NGO case was not supported by any factual analysis of whether these substances were causing problems probably contributed to inaction. Nonetheless, a counter factual assessment of why this effort failed is complicated; unlike the extension of PIC to "conditions of use" pesticides, including unregistered chemicals and pesticides in the PIC system had been discussed thoroughly in the negotiations leading to the adoption of PIC by FAO and UNEP and explicitly not included in the PIC system at that time. Thus clearly the NGO request went beyond the mandate of the PIC system and was (in the author's view) appropriately rejected. But to this day there remains no reliable and useful information on whether these substances are problematic, and thus they remain off the agenda.

Although NGOs helped to set the agenda on this crucial issue of "conditions of use," they did not control it for long. Industry argued for a narrow definition of the "conditions of use" problem, which would have resulted in few, if any, substances being included. The Joint Group initiated its own study with a questionnaire circulated to developing countries in order to get more information on substances that caused "conditions of use" problems. Response was poor--after 5 months only 22% replied; reminders from the Secretariat elevated the response rate to only 35% after more than a year had passed. Moreover, the responses did not offer much information on the topics of greatest interest, such as the number of poisonings caused by these Class 1A+ substances. Lack of data on such problems continues to be a serious problem. The Expert Group developed a point system that would allow an objective assessment of which formulations would be included under the "conditions of use," but the system was not useful in practice. Industry advocated its own point system, which would have required data on

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142 Many substances in this category were registered elsewhere and then banned or severely restricted, and thus already eligible for inclusion in PIC. Some were already on the PIC priority lists, and many did not have sufficient testing data to allow the compilation of a DGD. See also, JMPIC, 1990, "Second FAO/UNEP joint meeting on prior informed consent, Report," Geneva, 1-5 October, pp. 12-13.

143 JMPIC, first meeting report, pp.10-11.


145 For the point system, which was tested but never used in practice, JMPIC, 1992, "Fifth FAO/UNEP joint meeting on Prior Informed Consent (PIC), Report" 26-30 October, Annex 2.
poisonings that didn't exist and thus would have delayed implementation of the "conditions of use" provisions even further. Thus the final decisions on which substances are included in PIC has depended heavily on the expert case-by-case judgment of the Joint Group.

On the basis of all the information they could gather, the Joint Group held a rare closed session and selected a total of six chemicals for inclusion in PIC on the basis of hazards caused by conditions of use in developing countries.146 Five of those have joined the PIC procedure in 1997. Moreover, contrary to industry pressure, the DGDs for these substances are written to cover their active ingredient, although the original rationale for adding these substances to PIC was only that specific formulations were dangerous--the Joint Group decided that DGDs limited to specific formulations would not be helpful to developing countries that needed to weigh risks and benefits of pesticides.147

Assessing what would have happened on "conditions of use" without the NGO survey and pressure is difficult; the author's assessment is that those substances would not have been brought into PIC as rapidly if the NGOs had not been active, which is no small accomplishment since these substances represent some of the greatest chemical hazards in developing countries.

Decision guidance documents

If PIC operates properly it could be one of the largest organized transfers of useful regulatory information to developing countries, which in turn could contribute to the ultimate goal of the PIC system--to improve management of hazardous chemicals and pesticides. The prospects for PIC to provide this benefit are good. PIC differs from the earlier information exchange systems in the U.S., OECD, EC and UNEP because PIC requires prior consent. Because prior consent potentially delays shipments it gives both exporters and importers an incentive to ensure that information reaches its destination so that decisions can be made on a timely basis. In contrast, earlier notification systems merely required that exporters send information about chemical hazards to importers; typically that information was not scientifically reviewed nor presented in a format that was comparable with information on other chemical hazards or useful for regulatory decisions. Much of the information never even reached importers.

146 parathion, methyl parathion, monocrotophos (600g/l formulation and higher), methamidophos (600 g/l formulation and higher), and phosphamidon (1000g/l formulation and higher). I also include paraquat in the list, which was on the initial PIC list (see 3rd Joint Meeting report, Table 1) but has not yet been implemented. The Joint Group revisited the paraquat decision in 1992 and deferred consideration of the chemical. JMPIC, 1992, "Fifth FAO/UNEP joint meeting on Prior Informed Consent (PIC), Report" 26-30 October, pp. 17-19.

147 For the decision to write DGDs for the active ingredient, see: JMPIC, 1994, "Seventh FAO/UNEP joint meeting on Prior Informed Consent (PIC), Report" 21-25 March, p. 19.
The PIC system supplies information on chemical and pesticide hazards through Decision Guidance Documents (DGDs) that summarize available scientific assessments. A chemical on the PIC list becomes part of the PIC system only when its DGD is completed, approved by the Joint Group of Experts, and sent to all participating countries for their review. Designated National Authorities (DNAs) in those countries are requested to respond within 90 days with a decision on whether and under what conditions imports of the PIC chemical will be allowed. (In practice, only a tiny fraction of DNA responses are received within that limit, but most eventually do respond.) Thus the availability of a DGD is pivotal to the operation of PIC. Preparing DGDs is time-consuming, which is one reason why PIC is still not fully implemented seven years after the scheme was created and why it took nearly two years for the first substances to enter the PIC system—from 1989 when the Code of Conduct and the Amended London Guidelines were adopted and JMPIC first met, until late 1991 when the first DGDs were for 6 pesticides were circulated.

The experience of preparing and adopting DGDs has varied enormously for pesticides and chemicals—progress on pesticides has been rapid while only a few chemicals are part of PIC. The first 12 substances to enter PIC were all pesticides, followed by 5 chemicals. Of the 38 substances on the PIC list today, 28 are pesticides, 5 are pesticides that are hazardous under "conditions of use" and only 5 are industrial chemicals. These stark differences reflect two factors: one that is intrinsic to the substances involved and the other a consequence of the organizations that have been involved in the implementation of PIC. The intrinsic factor is that pesticides have a much longer and more extensive history of regulation for their particular health and environmental effects. When PIC began there were many existing control actions on pesticides; governments, international organizations and NGOs had extensive experience and knowledge of pesticide hazards. In contrast, control actions on chemicals were fewer and more difficult to assess.

Although pesticides should be more better represented in the PIC scheme, the long history of pesticide regulation does not explain fully the persistent problems in implementing PIC for industrial chemicals. After the PIC system had been in place for three years, twelve pesticides were part of PIC but no industrial chemicals had been added although more than a dozen had been identified as PIC candidates by the Joint Group.

Part of the explanation for PIC's failure to include many industrial chemicals lies with the organizations and procedures used to implement the PIC system. The central problem in compiling DGDs is to gather information about the hazard—exactly the problem that countries have faced for a long time and which motivated the creation of the PIC system as a device to help countries with low administrative capacity. DGDs are most useful when the information is clear

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and easily leads to decisions, but that is difficult to achieve when (as is common) toxicity tests conflict. Thus in practice a crucial condition for efficient preparation of DGDs is the availability of consensual expert information on hazards and/or a legitimate procedure for producing that information.

Although PIC combined the existing activities in FAO on pesticides and at UNEP on industrial chemicals (as well as pesticides), the two organizations have retained their areas of expertise. FAO has taken the lead for matters related to pesticides. FAO's long history of setting standards for pesticide residues and helping countries regulate pesticides gave it extensive in-house expertise, and that capacity could easily be applied to the preparation of DGDs. A central factor is the existence of the FAO/WHO Joint Meeting on Pesticide Residues (JMPR), a permanent group of experts that assesses scientific evidence about pesticide-related hazards and regularly publishes systematic reviews of the literature. (JMPR also contributes to the operation of the Codex Alimentarius Commission—see chapter 3.) Most of the pesticides included in PIC so far have already been addressed by JMPR and thus the information on hazards that is needed for DGDs is readily available. Moreover, JMPR's long history and reputation help ensure that its findings are not contested. The case of Cyhexatin, which was added to PIC in 1992 when its DGD was finalized, illustrates the importance of JMPR's activities. It has been reviewed by JMPR 9 times since 1970, which produced a long series of well-established data that could be used for its DGD. When new tests showed Cyhexatin was not a teratogen (see above), the DGD was revised only after JMPR reviewed the test results. Removal of Cyhexatin might otherwise have been a controversial decision, or at least one that would be difficult to make with certainty; the existence of a JMPR review made it much easier. Reliance on JMPR has not excluded industry and other stakeholders. All DGDs are sent by the FAO/UNEP Joint Secretariat to industry and consumer groups, as well as all members of the Joint Group of Experts, for review.

In contrast, preparation of DGDs for industrial chemicals has taken much longer. UNEP has no regular system for reviewing and assessing data on chemical hazards. The IRPTC has existed since 1976, but its role is to facilitate the exchange of information and not to engage in comprehensive expert reviews of hazards data. UNEP is a member of the International Program on Chemical Safety (IPCS), a joint program established by UNEP, WHO and ILO to assess and develop criteria for environmental health. But IPCS is young—it has been active since only the 1970s and its activities have been criticized as failing to be balanced, comprehensive and timely. In practice, it has supplied information to the PIC system, but the link between IPCS and PIC is weak. Like JMPR, IPCS conducts reviews of the scientific literature on known hazards of particular chemicals—the result is an Environmental Health Criteria (EHC) Document. All five of the industrial chemicals in the PIC system have had at least one EHC. However, the interface between PIC and IPCS is poor—the first EHCs for the two PIC chemicals PBBs and Tris (2,3 dibromopropyl) phosphate were published at least a year after these substances entered the PIC system. The EHCs for two other PIC chemicals—PCBs and PCTs—were first published in 1976, reflecting that these substances have long been a concern of regulators; revised editions were published in 1993, also after the initial DGDs for these substances had already been written and
were under review. The chemicals that are in the PIC system are among the easiest to assess because they have been subjected to domestic regulation and assessment for the longest period—they are the best cases for good and timely coordination. The lack of an established assessment mechanism implies that the prospects for including other industrial chemicals in PIC are not bright.

**National Implementation**

PIC rests fundamentally on decisions and actions by national governments. It is triggered by the regulatory actions of governments, it aims to provide useful information on chemical hazards to governments that want to regulate imports of these hazardous substances, and it relies on exporting countries to regulate trade. This section evaluates how governments and exporting firms have implemented three critical actions on which PIC's influence rests: (a) for all participating countries to name the DNAs that are responsible for exchanging information and to make decisions about which PIC substances to permit; (b) for importing countries to build administrative capacity and make informed decisions and to manage hazardous chemicals and pesticides; and (c) for exporters to regulate exports according to the declared preferences of importers.

**Designated National Authorities (DNAs) and Information Exchange**

Participating nations must declare a designated national authority (DNA) through which information is funneled between exporters and importers of hazardous chemicals and pesticides. PIC aims to change the behavior of exporters and importers, which it does by strengthening the hand of government agencies (the DNAs) that are the intermediaries. In particular, it aims to strengthen DNAs in importing nations by shifting some of the responsibility for regulating trade to exporters. Thus the establishment and performance of DNAs is crucial to the effectiveness of the whole PIC system.

The PIC system allows governments to declare different DNAs for pesticides and for chemicals. Most countries have declared separate DNAs. Differences between these two types of DNAs illustrate differences in the national capacity to regulate chemical and pesticide hazards and thus differences in the ability to influence its ultimate targets. Countries that have decided to name two DNAs have consistently named the DNA for pesticides earlier. The pattern is most evident in developing countries—those the PIC system was created to assist. In the first year of PIC's existence, 40 countries elected to declare separate DNAs for pesticides and for industrial & consumer chemicals. But most named only the DNA for pesticides; all of those were in

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149 The fifth chemical is crocidolite, a form of asbestos; an EHC for asbestos was published in 1986.
developing countries. Not one country named a DNA for chemicals but not for pesticides. Table 2.1 summarizes the situation in 1996--143 countries participated in the voluntary PIC procedures; 33 of the countries that have declared that they will name separate DNAs have so far named only one of the two required DNAs. All of the missing DNAs are for chemicals.

[insert table 2.1 about here]

DNAs for pesticides also perform better than their chemical counterparts. Table 2.2 shows the responses for the first two sets of pesticides (12 pesticides, including Cyhexatin which was later removed) and the first set of 5 industrial chemicals. These 17 substances have been in the PIC system since 1991-1993--long enough to make meaningful comparisons. The next set of substances (6 pesticides) entered PIC only in January 1997. Responses to the twelve DGDs for pesticides have been much more rapid in comparison with responses for the five DGDs on industrial chemicals. The stark differences reveal that while administrative capacity varies across countries and is generally lower in the developing countries, it also varies considerably by sector. The capacity to participate in PIC is systematically higher for pesticides than for chemicals.

[insert table 2.2 about here]

As with the earlier comparison between pesticides and industrial chemicals, some of the difference is explained by the longer history of pesticides regulation. Malaysia, the Phillipines, and many other developing countries had pesticides legislation in place in the 1970s; chemicals regulations were generally developed a decade later.¹⁵⁰ Moreover, import decisions for chemicals may be more complicated (and time consuming) because many countries intend to allow future imports of these chemicals; in contrast, roughly 90% of pesticide responses have simply banned future imports.

Differences also reflect the organizations and industries involved. Through its projects, FAO--which is responsible for pesticides--has a long standing relationship with agriculture ministries in developing countries. Thus when there are problems, FAO has had an established point of contact and relationship that can resolve the matter. In contrast, those few developing countries that have named DNAs for chemicals have typically given the task to the

¹⁵⁰This general point is illustrated by a UNEP survey of 10 political units--6 industrialized countries, 3 developing countries, and the European Community--conducted in 1990. The three developing countries (Ghana, Malaysia, and Mexico) had no national legislation, registration & licensing, and import policies regarding industrial chemicals; however, all had legislation, registration & licensing, and import policies for pesticides. Each also had prohibitions or severe restrictions on the books for some pesticides, though neither country was classified as enforcing those rules. See Ad Hoc Working Group of Experts on the Implementation of the Amended London Guidelines, "Review of Activities Related to the Production and Use of Chemicals, Report of the Secretariat," Nairobi, 15-19 October 1990, UNEP/PIC.WG.3/4 (24 September 1990), tables 1-2.
Table 2.1
Designated National Authorities (DNAs):
Types of DNAs declared by the 143 countries that participate in the voluntary PIC system.

<table>
<thead>
<tr>
<th>Type of DNA Declaration</th>
<th>Countries</th>
</tr>
</thead>
<tbody>
<tr>
<td>Separate DNAs for chemicals and pesticides(^1)</td>
<td>59 (41%)</td>
</tr>
<tr>
<td>Combined DNAs(^2)</td>
<td>61 (43%)</td>
</tr>
<tr>
<td>Only DNA for pesticides</td>
<td>33 (23%)</td>
</tr>
<tr>
<td>Only DNA for chemicals</td>
<td>0 (0%)</td>
</tr>
<tr>
<td><strong>Total # of Countries that have named DNAs</strong></td>
<td><strong>143</strong></td>
</tr>
</tbody>
</table>


Notes
\(^1\)Countries that have named at least one DNA responsible for pesticides and at least one responsible for chemicals. Several countries in this category have named a joint DNA (i.e. responsible for chemicals and pesticides) as well as a DNA for pesticides.
\(^2\)Country has named only one DNA which is given responsibility for pesticides and for chemicals.
Table 2.2
Import Responses for Pesticides and Chemicals

<table>
<thead>
<tr>
<th></th>
<th>Prohibit</th>
<th>Permit</th>
<th>Total Responses</th>
<th>Response Rate¹</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pesticides</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>First Set of Pesticides (entered PIC September 1991)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aldrin</td>
<td>86</td>
<td>9</td>
<td>95</td>
<td>66%</td>
</tr>
<tr>
<td>Dieldrin</td>
<td>86</td>
<td>12</td>
<td>98</td>
<td>69%</td>
</tr>
<tr>
<td>DDT</td>
<td>87</td>
<td>18</td>
<td>105</td>
<td>73%</td>
</tr>
<tr>
<td>Dinoseb &amp; Dinoseb Salts</td>
<td>84</td>
<td>6</td>
<td>90</td>
<td>63%</td>
</tr>
<tr>
<td>Fluoroacetamide</td>
<td>73</td>
<td>14</td>
<td>87</td>
<td>61%</td>
</tr>
<tr>
<td>HCH (mixed isomers)</td>
<td>86</td>
<td>9</td>
<td>95</td>
<td>66%</td>
</tr>
<tr>
<td><strong>Second Set of Pesticides (entered PIC November 1992)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chlordane</td>
<td>70</td>
<td>11</td>
<td>81</td>
<td>57%</td>
</tr>
<tr>
<td>Chlordimeform</td>
<td>68</td>
<td>9</td>
<td>77</td>
<td>54%</td>
</tr>
<tr>
<td>Cyhexatin (later removed from PIC)</td>
<td>54</td>
<td>20</td>
<td>74</td>
<td>52%</td>
</tr>
<tr>
<td>EDB (1,2-dibromoethane)</td>
<td>73</td>
<td>6</td>
<td>79</td>
<td>55%</td>
</tr>
<tr>
<td>Heptachlor</td>
<td>69</td>
<td>11</td>
<td>80</td>
<td>56%</td>
</tr>
<tr>
<td>Mercury Compounds</td>
<td>71</td>
<td>6</td>
<td>77</td>
<td>54%</td>
</tr>
<tr>
<td>(average response for 3 mercury compounds)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Industrial Chemicals**

| **First Set of Industrial Chemicals (entered PIC March 1993)** | | | | |
| Crocidolite (asbestos) | 25 | 15 | 40 | 36% |
| Polybrominated Biphenyls (PBB) | 5 | 35 | 40 | 36% |
| Polychlorinated Biphenyls (PCBs) | 27 | 16 | 44 | 40% |
| Polychlorinated Terphenyls (PCTs) | 24 | 16 | 40 | 36% |
| tris (2,3 dibromopropyl) phosphate | 5 | 37 | 42 | 38% |

*Source: Compiled by author from data in PIC Circular 17 (July 1996).*

*Note:*
¹ "Response Rate" is the percentage of named DNAs that responded (143 for pesticides, and 110 for chemicals).
environmental ministry, which is typically weaker than other ministries in the government. That organizational choice largely reflects that UNEP, whose national counterparts are environmental ministries, is responsible for chemicals. Anecdotal evidence suggests that UNEP's local contacts are not as extensive or powerful as those of FAO and thus it has been less able to resolve problems with DNAs. Thus even when DNAs for chemicals are established—which is systematically less often than for pesticides—they do not perform well.

**Capacity Building in Developing Countries**

For importing countries, complying with the basic requirements of the voluntary PIC system are relatively simple—they consist mainly of naming a DNA and issuing importing country responses. Most countries eventually comply, especially with the most trivial requirement—naming a DNA—which dates back to UNEP's Provisional Notification Scheme. Moreover, over time the quality of information provided by DNAs under the PIC procedure has improved—with experience, the participants have become better able to implement PIC. However, it is worth pausing for a moment to ask whether the voluntary PIC system is resulting in improved capacity to manage chemical and pesticide hazards in developing countries. Capacity building, the ultimate aim of PIC, goes far beyond naming DNAs and responding to letters from the FAO/UNEP Joint Secretariat. Assessment of capacity building is especially important for this study because one assumption, which this study tests, is that binding legal instruments are taken more seriously by countries and thus perhaps implemented more thoroughly. Interest groups that favor better management of chemicals and pesticides may be better able to press their cause when capacity building is part of a binding instrument. Actors who are expected to pay for programs to build capacity (e.g., industrialized countries, industry) might be less likely to shirk responsibility if they face binding commitments. Indeed, one of the only areas where negotiations for a binding PIC Convention is: likely to differ significantly from the voluntary procedure is the requirement for a binding financial mechanism to transfer resources to developing countries to help build administrative capacity.

These hypotheses can't be tested fully because the PIC system has operated only on a voluntary basis. However, the experience under the voluntary PIC system shows that extensive capacity building efforts can emerge even with a nonbinding instrument. Moreover, there is suggestive evidence that industry participation has been equal or greater under the nonbinding system than with a binding PIC Convention.

Capacity building in the PIC system has principally consisted of three activities, all of which have been coupled to broader efforts to improve chemicals and pesticides management. First, after the 1989 *Code of Conduct* was adopted, PIC was immediately added to FAO's programs to improve pesticides management. Seminars to inform local government officials in

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151 Interviews.
developing countries about the PIC system began in 1990, only a year after PIC was adopted. Projects in Asia, the Caribbean and South America (with Japanese funding), in Central America (Dutch funding), and in Africa (UNDP and Dutch funding) were initiated through FAO. In additional to those regional efforts, FAO's Technical Cooperation Programme added PIC to projects on pesticide regulation--funded by the Rockefeller Foundation and the United States Environmental Protection Agency--in several countries.\textsuperscript{152}

Second, the United Nations Institute for Training and Research (UNITAR) has launched a two-phase project, to implement the London Guidelines and thus improve chemicals management in developing countries. In its first phase, started in 1991 with Swiss funding, regional and subregional workshops were conducted with extensive participation by developing countries. An extensive audit of the program, conducted by the Pesticide Service Project of the German Technical Assistance Agency (GTZ), showed that the UNITAR programs have been effective and should be extended.\textsuperscript{153} (GTZ itself was extensively involved in funding and conducting, and thus well-informed to evaluate, PIC and related chemicals and pesticides management activities.) At present, that broad approach is now being intensified with UNITAR-supported efforts for countries to develop "national profiles" for chemicals management.\textsuperscript{154} Both the extensive and intensive efforts include some attention to PIC. UNITAR has also conducted some regional workshops focused on building capacity to implement PIC.\textsuperscript{155} Switzerland, the principal funder of this project, has included its support for such activities in its high profile bid


\textsuperscript{154}UNITAR, \textit{Preparing a National Profile to Assess the National Infrastructure for Management of Chemicals--A Guidance Document} (no date).

\textsuperscript{155}These programs are conducted in cooperation with other international organizations, notably through the Inter-Organization Programme for the Sound Management of Chemicals (IOMC) and in particular UNEP. (On IOMC see ref. ?.) However, the main actor is UNITAR. For an overview see UNITAR, 1997, \textit{The UNITAR/IOMC National Profile Capacity Building Programme} (February). For more on earlier UNITAR activities directly on PIC, see ref. 189 below. The in-depth component has been developed through a pilot program in 4 countries Argentina, Ghana, Indonesia and Slovenia); see UNITAR, \textit{Planning and Implementing a National Action Programme for Integrated Chemicals Management} (May 1997).
to host the secretariat of the PIC convention.\footnote{For its bid, see, e.g., Government of Switzerland, "Geneva and PIC," circulated at INC-PIC, 30 May 1997.}

Third, the industry itself conducts some projects to improve pesticides management, often working closely with FAO. GIFAP has prominently required its members to comply with the Code of Conduct, and thus since 1989 GIFAP's projects to implement the code have included PIC. GIFAP has prepared documents for the FAO/UNEP secretariat on implementing PIC, and it has added PIC to regional workshops such as in West Africa.\footnote{JMPIC, 1995, "Eighth FAO/UNEP Joint Meeting on Prior Informed Consent, Report," Geneva, 6-10 March, p. 3.} PIC was also one element of GIFAP's $4m "Safe Use Project" in three countries—Kenya, Guatemala and Thailand—completed in 1995. As with FAO's activities, PIC was added to GIFAP's existing capacity-building activities. Other elements of GIFAP's projects include education campaigns, development of low cost protective clothing, and distribution of pesticide antidotes to local hospitals. So far the project has not been extended to other countries although industry associations and government funding agencies have conducted similar programs on a smaller scale in other countries. GIFAP has had the performance of the Safe Use Project reviewed and found measurable improvements.\footnote{Information derived from three documents prepared by industry: Safe Use Project (Thailand), Safe Use Project (Kenya), and Plant Protection: Safe Use Projects in Latin America (Guatemala); all are available from the Global Crop Protection Federation (formerly GIFAP). Additional information from GIFAP briefings at JMPIC meetings. In interviews, none of the other stakeholders has ever questioned the veracity of these reports and the accomplishments of the GIFAP Safe Use program.} When Danish television crews went to Central America to uncover poisonings caused by Danish-made pesticides, they focused their cameras in Nicaragua.\footnote{The documentary focuses on parathion and methyl-parathion poisonings in Nicaragua. TV94, "Made in Denmark," 34 Minutes, Copenhagen.} Neighboring Guatemala, where conditions were similar except that the country had been part of GIFAP's Safe Use Project, offered relatively few examples of poor management.

It is difficult to make a precise assessment of how much these activities have contributed to improved capacity in developing countries, how much that has led to a more effective PIC system, and how much of this additional capacity has been caused by PIC. Much of this would have happened anyway as attention of concerned governments and international organizations turned to the need to manage chemical and pesticide hazards in the late 1980s. However, PIC has added to and benefitted from these efforts, which is most visible in the better management of pesticides, for which training programs have been more extensive, ongoing for decades and PIC was quickly incorporated. These activities took place without an over-arching legal instrument.
was developed to address all aspects of chemicals and pesticides; nor did it matter that the principal instruments were nonbinding. Rather, most important was that the main participants focused on implementation. In contrast, the succession of UN General Assembly Resolutions and UNEP Governing Council decisions from the late 1970s through the middle 1980s resulted in little practical action on the ground because the supply of legal instruments was not accompanied by action.

Export controls\textsuperscript{160}

The process of translating the PIC system into national rules and regulations in exporting countries has taken many different forms, but in general it has proceeded swiftly and now appears essentially complete. All major pesticide and industrial chemical exporting nations have in place some form of domestic rules that implement PIC.

The speed of action reflects two factors: (1) the ease of putting PIC-consistent rules into place, and (2) active support of industry. Putting PIC-consistent rules into place has been relatively easy. Most exporting countries already had some form of export controls in place; they implemented PIC by amending their existing legislation.

Some countries, notably in Europe, amended existing legislation by adding PIC to binding rules. Finland had implemented the London Guidelines in 1990 and revised in late 1992 its Chemicals Act explicitly to add PIC; however, Finnish industry was not an exporter of domestically banned or severely restricted chemicals. Because PIC involved trade among EC members and the rest of the world, the main legislation for members of the European Community was developed by the Community rather than by individual members.

It is worth considering more closely the EU approach to implementing PIC and related systems because the markets governed by EU rules are large, and the EU has played an active role in shaping the PIC system. The West European Chemical industry produced 306 billion ECU in 1990, one-third of the world's total. Although not all West European producers, notably

the Swiss, have not been subject to EU law, in practice the Swiss have closely followed the EU and ensured, at minimum, that Swiss implementation of international rules is consistent with the EU approach. Moreover, since the middle 1980s, and led by the Dutch and German governments, the EU has moved rapidly to implement an international notification scheme and other export regulations. (In contrast, before the middle 1980s there was virtually no unified European leadership on international trade controls—the EU did not even have an export notification system.) Throughout the development and implementation of PIC, EU rules have consistently supported the basic international procedures but applied them to more chemicals and given them stronger domestic legal basis than required under the international instrument.

The EC had already implemented the information exchange provisions with a binding Regulation in 1988. A 1992 binding Regulation amended the 1988 Regulation by adding the PIC scheme. The EU has implemented information exchange provisions are implemented by requiring all exporters of banned or severely restricted chemicals and pesticides to send an export notification prior to the first shipment and wait 30 days before exporting. Bans and severe restrictions, at the community level, are made through Council Directives and the substances to which the export notification system applies are listed in Annex I of the 1992 Regulation, which can be amended by qualified majority of the European Council. The EU requires that exports of all dangerous chemicals be labeled as if for sale within the European Community, including standard warning symbols, phrases describing risks, safety requirements, emergency response procedures, and the identity of the substances according to an international system of

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162 That regulation helped to set the initial PIC list because it severely restricted the use of 21 chemicals within the Community (all of which had already been restricted by most member states individually).


164 First shipment is defined as the first shipment from an EC country to a non-EC country of the particular chemical or pesticide. The system includes a series of reference numbers (published in the Official Journal of the European Community) that is unique to the chemical and the importing country; if a reference number exists then notification has already occurred from some previous export and no new notification is required. If not, notification is required.

nomenclature.\textsuperscript{166}

For our purposes, the most important aspect of EEC/2455/92 is that it implements PIC on a mandatory basis within the Community. The Commission is the common DNA for Community, and each EU country must also name DNAs for communication between the EC and the member states. All chemicals subjected to PIC, the list of countries participating in PIC, and import decisions of participating countries are listed in the EC Regulation (Annex II) and updated regularly to match the FAO/UNEP list of PIC chemicals and pesticides, participating countries, and import decisions. There is a delay between official changes in the FAO/UNEP system and the EC PIC scheme because changes must be received by the Commission, which can then formal change the Annex II adopted by the Commission.\textsuperscript{167} Until formally amended to Annex II, new information from the FAO/UNEP Joint Programme is voluntary within the EC (as it is elsewhere in the world). In effect, the EC Regulation implements PIC completely, but on a legally binding rather than voluntary basis. As with other EC Regulations, enforcement is the responsibility of European Member States.

The EC regulations implementing PIC did not require further national legislation, but some countries strengthened the measures. Germany strengthened the EC Regulation to add stricter fines for noncompliance and also added a voluntary export notification procedure for 40 chemicals not included in the EC Regulation. Austria amended its Chemicals Act to implement PIC (effective January 1993); it, along with Sweden and Finland, are now subject to the EC Regulation as new members of the European Union. The EC has claimed (without evidence) that its binding approach to implementing PIC demonstrates the need to convert the non-binding PIC system to a legally binding treaty. Other countries that have used nonbinding instruments have fared equally well.

Most other countries adopted approaches that relied less on legally binding measures. The United States had implemented PIC as an exporting country; the export notification provisions of the Amended London Guidelines were already part of binding US Law (FIFRA and TSCA) and PIC's export controls were implemented through voluntary agreements with industry. Canada had already banned export of domestically banned substances, and thus for many of the PIC chemicals Canada had no exports. In 1994 only four Canadian companies exported three PIC chemicals; the government was implementing PIC with those companies through non-binding memoranda of understanding, backed by the threat that if the MOUs were not effective that binding regulations would be imposed. Japan implemented PIC through 1992 changes in its binding export law, requiring MITI approval of shipments of 39 chemicals, for which 24 were


\textsuperscript{167}Changes to Annex II are made according to Article 21/29 procedure in Directive 67/548/EEC by the European Commission in close cooperation with the Member States.
subject to PIC.

Switzerland had implemented the London Guidelines through a 1988 voluntary agreement between the government and the Swiss Society of Chemical Industries; the substances covered have been identical to those in the EC Regulations: in 1988 the list of substances subject to the Swiss agreement was set identically to those in the EC Council Regulation that implemented the London Guidelines in the EC. In 1992 the agreement was amended to match the substances listed in the ECE Regulation that implemented PIC in the ECE. Changing the substances covered under the Swiss agreement had been relatively easy; implementing PIC required a new instrument. By January 1994 a voluntary code of export was introduced to implement PIC, written to cover exactly the chemicals and provisions of the 1992 EC Regulation and thus minimize trade distortions with the EC; all members of the Swiss Society of Chemical Industries were bound by the code, and the government was still considering the possible need for a legal instrument. The Swiss case, like all others that have employed nonbinding instruments, illustrates that the line between binding and nonbinding approaches is fuzzy since often nonbinding measures are used with the threat of a binding approach in the background.

Thus, by 1994 all the major exporting countries in the OECD had adopted PIC into binding or nonbinding national rules. Was trade actually affected? Remarkably, this crucial question—perhaps the most important for assessing PIC and determining whether additional measures, such as converting PIC to a binding instrument—is impossible to answer systematically.

No reliable statistics exist on trade in hazardous chemicals and pesticides; nor does the PIC system require countries to report data on trade in PIC chemicals. Even the United States—which has one of the highest administrative capacities, a tradition of publicly releasing information on chemical hazards, and a long-standing export notification system—has no reliable data on the level and composition and hazardous chemical and pesticide exports. UNEP and FAO attempted a survey on production with the aim of setting priorities for PIC chemicals and assessing whether the PIC system was operating effectively. The Secretariat sent a questionnaire to all governments requesting data on actual production and trade in chemicals of the 17 chemicals and pesticides in the PIC system as well as other substances that were part of the EC's export notification scheme—in total, 44 chemicals and pesticides. Only 60 countries responded; the data they provided suggested that only 20% (9) of the 44 substances were in production. 12 of the 17 PIC substances showed no production for 1994. But trade statistics from the study (i.e., exports and imports) suggested that all but 3 of the 44 chemicals were either exported or imported, which presumably implied that production was more widespread than countries had reported. Efforts to extend the survey largely failed. The results confirm what has been widely claimed—the first 17 PIC substances have been the "easiest" because they were already widely regulated and not extensively traded.

Nonetheless, some trade in these substances has taken place. Interviews with experts who have participated in the voluntary PIC system reveal that there has never been a violation of the
voluntary PIC procedure. Some shipments of mercury were thought to be violations, but those later were determined to be small (less than 10kg) and for research purposes, both of which are excluded from PIC.

What accounts for the apparently perfect record of exporters? Part of the answer is surely that PIC has not yet expanded to include substances where the incentives to violate are high—for example, the five "conditions of use" pesticides are only now being added to PIC. However, much of the explanation lies with the producer firms.

As the OECD chemicals regime was coming into place in the middle 1980s, the chemical industry itself had begun a process of massive transformation from within. Concerned about negative public perceptions of the industry as a whole, and spurred by the Bhopal disaster in 1984, major chemical firms led the development of a massive program to improve the industry's image—notably the chemical industry's "Responsible Care" program which originated in Canada and then the United States and is now widely emulated. Consisting of guiding principles and codes that promote pollution prevention and safety, Responsible Care helped forge a new partnership between the industry and society. Almost every member of the Chemical Manufacturer's Association (the U.S. industry association) adopted Responsible Care. Today, initiatives similar to Responsible Care exist in 30 countries. Other industry standards have also been developed and implemented.\(^\text{168}\) These programs reflect the industry's awareness that many concerns about environmental protection can be addressed without threatening core businesses; moreover, some regulation—in industry's view, ideally self-regulation—is necessary to sustain public support for chemicals. Indeed, the chemical industry is one of the pioneers in the developing of voluntary agreements and non-binding government-business partnerships as an alternative to traditional end-of-the-pipe regulation.

For pesticides the features of the industry have been particular important. The industry is highly concentrated, and all of the major firms are based in industrialized countries where the public is concerned about chemicals mismanagement at home and (to a lesser degree) in developing countries. In 1991, 90% of the global pesticide market was controlled by twenty multinational corporations based in 6 countries. Of those dominant countries, U.S. producers had 30% of market share, followed by German (24%), Swiss (17%), U.K (14%), French (9%) and Japanese (5%) firms.\(^\text{169}\) Moreover, GIFAP, the industry association, has made compliance with the FAO Code of Conduct mandatory for its members, who control 90% of global pesticide production. When PIC was added to the Code in 1989, GIFAP instructed its members to ensure


that PIC was implemented. Most PIC substances are pesticides, and thus through GIFAP high compliance has been assured. NGOs that are active on the pesticides issue--notably PAN and Consumers International--are networks of many local NGOs and thus well-placed to monitor compliance. In the past, PAN has publicized incidents of noncompliance with the Code (e.g., use of misleading labels), leading to action by GIFAP; so far none of the NGOs has identified a case of noncompliance with PIC.

Analysis of Factors that Explain the Design, Operation and Effectiveness of PIC

This section revisits the three main factors, identified in the introduction, that may explain the rules and procedures that have been adopted as part of the PIC system and their influence on behavior: (1) the legal form (binding or nonbinding) of commitments; (2) implementation review; and (3) interests and power of major actors. The first two contribute to the main questions examined in this thesis; the other is a major explanator of when and why PIC was adopted and thus must be controlled for when drawing conclusions about the first two factors, which are important for policy but explain less of the variance.

Legal status of agreements

The study suggests that the legal form of the international commitment has had a significant influence on policy outputs and outcomes, although obviously it is difficult to make comparisons between various legal forms since the PIC experience so far has been exclusively conducted under only one set of (nonbinding) agreements.

Most apparent is that the use of nonbinding instruments has allowed considerable flexibility in the implementation of PIC. In 1989, when the FAO Code and the UNEP London Guidelines were amended to include PIC, it was possible to agree on only the broadest outlines of how the PIC system would operate. Virtually all of the important details--such as which substances would be on the PIC list--were left until later. Two factors that became most important to PIC's influence--an active meeting of experts that made PIC policy decisions, and extending PIC to chemicals and pesticides that were hazardous only under specific conditions of use--had only vaguely been considered in the negotiations that led to adding PIC to the FAO Code and the UNEP London Guidelines. If PIC had been legally binding, probably there would have been stricter scrutiny of the exact legal implications of these two factors, leading both to delays and to a more restrictive PIC system. If PIC had been restricted it would have transferred less information to developing countries and covered fewer (or none) of the substances that caused greatest problems in developing countries.

Most important was that unlike earlier international commitments, serious efforts were made to put PIC into practice after it was adopted in 1989. The nonbinding form probably allowed PIC to move rapidly from negotiation to implementation--it did not require ratification,
which is a time-consuming process, and most important it did not require that all of the details be resolved formally before the PIC system could be launched. However, it is important not to overstate the case. 2 years passed between the adoption of the PIC instruments and the issuance of the first DGDs; another 9 months passed before it could be said that PIC was in operation. Legally binding agreements now often enter into force in only 18 months, and the interim period-between signature of a treaty and its entry-into-force--can be (and often is) used productively. Thus in practice, faster entry-into-force, which is what most legal scholarship emphasizes as a principal benefit of nonbinding instruments, probably was not important. Rather, more important was that the nonbinding form allowed participants to get on with implementation, which was vital because it was not clear what policy decisions would make PIC most effective. Learning to develop a more effective PIC system first required doing; moving as rapidly from negotiation to implementation was best served with a nonbinding instrument.

Some claims about the benefits of nonbinding agreements can be tested, partially, with experience from the negotiations under way to convert the nonbinding PIC system to a legally binding PIC Convention--taking place in the UNEP/FAO Intergovernmental Negotiating Committee for an International Legally Binding Instrument for the Application of the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade (INC-PIC). That shift is taking place because some European countries, the EC, developing countries, and all public interest groups believe that a binding convention will be more effective.\footnote{Developing country support for a binding convention dates back to the late 1970s, although the language of the debate at that time did not employ the "PIC" term nor was there much focus on the legal status of possible commitments--no significant commitments were forthcoming, as discussed at length in this chapter. EC support is principally due to the entrepreneurial leadership of the Belgian and Dutch governments, which since the late 1980s thought that a binding Convention would be more effective. Support for this position by public interest NGOs is difficult to date; by the late 1980s, several advocated a binding convention. In 1993, Pesticides Trust and the Foundation for International Environmental Law and Development (FIELD), a legal consultancy, reported results from their review of the legal framework for pesticides, which concluded that an international convention on pesticides was needed. (See Ad Hoc Working Group of Experts on the Implementation of the Amended London Guidelines, "Report of the Ad Hoc Working Group on the Work of its Third Session," Geneva, 25-29 January, UNEP/PIC/WG.1/3/5 (23 April), para. 65.) The unity of their position is certainly evident in the INC negotiations where CI and PAN have argued: "We strongly support the need for a framework convention..." (CI and PAN, op. cit., note. 195).} That coalition led UNEP's Governing council to adopt a decision in 1991 to explore the possible use of a legally binding instrument for PIC;\footnote{Decision 16/35.} every year since, UNEP has
had an active working group or task force considering this issue.\textsuperscript{172} The formal decision to pursue a binding instrument was made in the FAO Conference in 1994 and the UNEP Governing Council in 1995.

When negotiations began, there was widespread agreement to use the voluntary procedure as the basis of the binding Convention.\textsuperscript{173} Reports confirm that, indeed, the voluntary procedure has been the principal guide to the work of those groups; however, none of those groups was ever able to consider the lessons learned from the voluntary procedure in detail—they started their work before much had been learned. The final discussion paper from this process, issued late in 1994, was based on work from a task force that reviewed experience during only the first year of PIC's operation.\textsuperscript{174} UNEP established no useful mechanism for gathering and analyzing that experience, beyond the useful but anecdotal expertise embodied in participants in the meeting and in the UNEP Chemicals secretariat. UNEP sent surveys to countries that participated in the voluntary procedure, but the response rate was low. Some effort was made to gather data on production and trade of hazardous chemicals—those on the PIC list and/or subjected to the EC's export regulation—but replies were few. The data were only qualitative and gave no indication of whether the voluntary PIC mechanism was failing; the final analysis of the data was completed only in 1995—after the process to convert PIC into a binding instrument was under way.\textsuperscript{175}

Thus the process led by advocates of tighter regulation, working mainly through UNEP, has been largely blind to systematic analysis of the experience learned during the voluntary procedure. The premise of their work—that a binding procedure could improve PIC—had not been confirmed. When Elizabeth Dowdeswell, UNEP's Executive Director, opened the first negotiating session for a binding PIC Convention, she said that "[a] legally binding procedure

\textsuperscript{172} In particular, the Ad Hoc Working Group of Experts on the Implementation of the Amended London Guidelines. That group established a Task Force to consider modalities for the development of a legally binding instrument for the mandatory application of the prior informed consent (PIC) procedure.


was needed because, as long as compliance was not mandatory, it was susceptible to producing uneven results.\textsuperscript{176} The head of the US State Department's team that negotiates environmental agreements, Eileen Claussen, said in an interview conducted after the PIC negotiations began that a PIC Convention was needed because the "voluntary scheme ... hasn't been terribly successful."\textsuperscript{177} Yet the experience appears to have been the opposite--compliance with the regulatory commitments in PIC (to make shipments only according to the wishes of importers) has been perfect, and the voluntary PIC mechanism has been a crucial way to learn through implementation--to learn by doing. Summaries of lessons learned during the voluntary procedure have been regularly supplied to the INC-PIC negotiating sessions, but since the voluntary procedure did not operate long few lessons have been learned; those documents say little beyond what was obvious in 1992 and 1993.\textsuperscript{178} Nonetheless, conversion to a binding instrument continued, contrary to the advice of the Joint Group of Experts (JMPIC)--the group with the most expertise on PIC. From 1991 to 1995, JMPIC repeatedly urged that the voluntary procedure be implemented fully prior to focusing on converting it to a binding instrument. Directly contradicting that advice, in 1994, UNEP's Ad Hoc Group of Experts on the Implementation of the Amended London Guidelines--which had demonstrated little expertise on the benefits and problems of the voluntary PIC procedure--recommended that PIC be made binding instrument.\textsuperscript{179} That year the FAO Conference voted to open formal negotiations for a binding convention, and in 1995 the UNEP Governing Council made the same decision. Yet 1994 and 1995 marked the first time that the voluntary PIC system was beginning to be implemented widely, making it possible to learn and build upon experience--only then did JMPIC start to formalize carefully its


\textsuperscript{178}See, e.g., INC-PIC, 1995, "Experience in the Implementation of the Prior Informed Consent Procedure," Brussels, 11-15 March 1996, UNEP/FAO/PIC/INC.1/6 (19 December 1995). And, see, INC-PIC, 1995, "Review of Issues Relevant to the Implementation of the Existing, Voluntary PIC Procedure: Note by the Secretariat," 11-15 March, UNEP/FAO/PIC/INC.1/5 (19 December). The importance of the voluntary procedure is evident not only in what is included in the PIC procedure and what is excluded. For example, "conditions of use" substances will be included, but chemicals that have handling restrictions are not likely to be included--in the voluntary procedure, the Joint Group of Experts devised a useful procedure for the former but made little progress on the latter. (See UNEP/FAO/PIC/INC.1/5, page 7.)

rules and procedures and expand beyond the first, simplest, 17 PIC substances.\textsuperscript{180} Implementation of PIC had been practically halted during the UNCED preparations, and the shifting attention to a binding instrument stymied implementation again. Although implementation of the voluntary procedure continued, most efforts (such as preparation of DGDs) were slowed; some activities were stopped. No meeting of JMPIC—the centerpiece of the voluntary PIC system of learning by doing—has been held since the UNEP Governing Council Decided in 1995 to initiate negotiations for a binding PIC Convention.

A comparison of the current (July 1997) INC-PIC negotiating text, which is the basis for the final Convention that will be adopted within approximately 6 months, and the voluntary PIC system shows that they are consistent in almost every respect.\textsuperscript{181} Reports and interviews from the negotiating sessions reveal that the nonbinding system has been used as the principal guide; William Murray, now on the Canadian delegation but previously at the FAO and responsible for PIC, is extensively consulted by delegates who want to know how the voluntary PIC system functioned.\textsuperscript{182} Every major design question (but three) mainly mirrors the system that has emerged through the voluntary process. Where detailed design choices are uncertain or contested, delegates have consistently chosen a narrower interpretation for the binding PIC Convention than under the voluntary PIC procedure.\textsuperscript{183}

In three places, the PIC convention may require provisions that go beyond the formal mandate of the nonbinding system. One is the creation of a financial mechanism to transfer

\textsuperscript{180}A stark increase in the formality of JMPIC is evident starting at the Seventh Meeting, where special care was taken to document what the group decided—in essence, to build up the PIC procedures through the accumulation of expert decisions and debates informed by implementation in the field. See JMPIC, 1994, "Seventh FAO/UNEP joint meeting on Prior Informed Consent (PIC), Report" 21-25 March.


\textsuperscript{182}For example, the author observed all sessions of the technical working group of the third session of INC-PIC (May 1997, Geneva). Whenever a matter of significant design was raised, primary reference was made to how that issue was addressed in the voluntary procedure. Whenever an assessment was needed of the experience under the voluntary procedure was needed, the chairman and many delegations first turned to Murray. On several occasions, debate on a matter was postponed because Murray was not in the room.

\textsuperscript{183}A strict determination of the final design choices is not possible because much of the text remains in brackets; nonetheless, the negotiations have left text in brackets even where it is clear that the compromise will be to favor narrow and conservative legal language.
resources to developing countries; in practice, however, there have been many such capacity-building activities under the voluntary procedure. A second is more explicit requirement to report data and to review implementation (including noncompliance)—the problem of poor data is now widely agreed, though ways to improve data collection have not received much attention. Projects to improve capacity, which were already under way during the voluntary procedure, may help. However, neither of those provisions of the binding PIC Convention is likely to be elaborated—rather, all of the crucial design issues will be postponed. In both these areas where the PIC Convention appears innovative, in fact its provisions merely mirror what is now "conventional wisdom" about the proper content for an international environmental convention. Indeed, much of the actual language for these two provisions is drawn verbatim from other conventions. In short, the binding PIC Convention is, so far, not poised to innovate beyond what has already been achieved under the nonbinding PIC system.

The third area where a binding PIC convention extends beyond the voluntary PIC procedure is in restricting trade with nonmembers. A binding convention, because it has formal parties and can formally supersede other instruments of international law, might be able to include effective provisions to regulate trade with nonparties and to penalize countries that stay outside the regime. The experience with the Montreal Protocol has shown that such measures are important when the incentives to stay outside the regime are high. However, in the PIC convention, importers face no incentive to stay outside—the regime is for their benefit—and exporters, which are all industrialized countries, are unlikely to stay outside because domestic pressure will force them to join or, at least, comply with the provisions. Indeed, all are already.

(The discussion here ignores proposals to include liability and compensation schemes in a PIC Convention, which would be a substantial innovation in international environmental law. There is practically no chance those proposals will survive until the final draft; nor would such schemes, which require identifying cause and effect, be workable in practice.)

One potential benefit of the binding negotiations is that they have required careful attention to the specific requirements and provisions of the PIC system. However, that benefit—which may not be important—has come at considerable cost. Financially, the cost of the joint FAO/UNEP program to implement the voluntary procedure has been $1.2m per biennium. The direct costs of translation, documentation and meeting support for the negotiations leading to a binding PIC will probably be approximately $2.5m, perhaps more. Double or triple that amount has been spent by national delegations to attend negotiating sessions. Thus the cost of

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184 E.g., see UNEP/FAO/PIC/INC.1/5, para 51.


186 These are estimates made by the author for travel, local and support costs. The direct costs (to the UNEP/FAO secretariat) of converting are easier measure—approximately $500,000 for
operating the effective voluntary system for several years has been spent merely on converting the system to a binding convention. Often such resources are not fungible, but in this case they probably are--the same countries that are paying most of the cost of negotiating the binding Convention (Switzerland, the European Union, the Netherlands and Belgium) have also been the main funders of projects to implement the voluntary PIC procedure. Once in place, a binding PIC system will probably cost twice as much to operate for the same activity (e.g., numbers of DGDS, etc.)--many parties will yield the need for regular formal meetings of all parties, which were not necessary in the nonbinding scheme. Moreover, as mentioned earlier, the shift to a binding PIC Convention has diverted attention away from implementing the voluntary procedure--and thus away from learning by doing--just when the voluntary procedure was fully operational and when the most important "conditions of use" substances were being added.

In addition to the financial costs, the shift to a binding convention may have stalled the process of "mutual education" that makes many international environmental regimes.\textsuperscript{187} Negotiations for a binding system have shifted participation within governments from operational ministries (especially agriculture) that actually regulate pesticide and chemical hazards to foreign ministries. For example, the author compared attendance lists for all regional workshops on the implementation of PIC in Africa and found that only 21% of the countries had at least one person from those workshops on their delegation to the most recent session for negotiation of a binding PIC convention, despite the availability of financial support to pay for participation of delegates from developing countries.\textsuperscript{188} Thus the conversion to a binding instrument is resulting in a large loss of information in those countries that PIC was mainly intended to benefit by increasing the flow of information. Moreover, the negotiations to convert


\textsuperscript{188}Delegation members were from the published list available at the Third Session, Intergovernmental Negotiating Committee for an International Legally Binding Instrument for the Application of the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade. (These lists are not officially published but available to delegates and observers.) The workshops were the two UNITAR workshops on PIC in Africa, funded by the European Commission (Directorate-General for Development, DGVII) and the German Technical Assistance Agency (GTZ): UNITAR/FAO/UNEP, "Workshop on the Implementation of Prior Informed Consent (PIC) and the Sound Management of Chemicals for countries of Southern and Eastern Africa," Johannesburg, South Africa, 4-8 September 1995; UNITAR/FAO/UNEP, "Workshop on the Implementation of Prior Informed Consent (PIC) and the Sound Management of Chemicals for countries of Western and Central Africa," Accra, Ghana, 22-26 July 1996.
PIC to a binding instrument have not fully benefitted from the experience gained by those who have learned about and implemented PIC in developing countries.

To close this discussion of the effectiveness of PIC as a nonbinding system it is crucial to underscore that these benefits of a nonbinding approach—notably, flexibility and speed of operation—existed because industry was supportive. Moreover, the existing institutional activities—notably FAO's field operations and mechanisms for expert advice, such as JMPR—meant that at least for pesticides there was little need to build up basic institutional functions and contacts with national governments.

System for Implementation Review

The nonbinding agreement was adopted in part because both of the international instruments that were readily available—the Code of Conduct and the London Guidelines—were nonbinding. When PIC was first adopted, practically no observers articulated the strategy that, with hindsight, is a major reason why the PIC system has been effective: it allowed learning by doing. Although industry advocated a nonbinding system because it would be more "flexible," in fact industry opposed all forms of PIC and favored a nonbinding system over a binding alternative because it thought that a nonbinding approach would be less onerous.

Learning by doing has depended crucially on the ability to learn from experience. The earlier analysis shows that PIC has been most effective where it has promptly led to efforts to gain practical experience in the field—implementation. However, learning also requires information. Participants could improve the PIC system only if they knew where PIC was inadequate. Moreover, PIC could be adjusted and improved only if there were meaningful reviews of attempts to implement PIC. Yet neither the FAO Code of Conduct nor UNEP's Amended London Guidelines makes any provision for regular reporting by participants nor for reviews of implementation. By formal design, PIC would seem poised to fail; in practice, it has worked.

In practice, an elaborate system for implementation review (SIR) has emerged around PIC, although little of that system can be traced to the formal provisions in the legal instruments that created PIC. The SIR consists principally of four elements. First and most important is the Joint Group of Experts, which has been the forum for most learning by doing. Where information has been absent, the Joint Group has filled gaps with its own expertise. Thus implementation has not been significantly stalled because of inadequate information, which was most evident in the case of adding "conditions of use" substances to PIC. If the industry-proposed "point system" had been used as the main means of identifying such substances, rather than the Joint Group's expert judgement, no such substances would be in the PIC system today—the information needed to apply such an objective point system operate does not exist.

Second, international organizations that conducted field projects on implementation of
PIC have also contributed to the SIR. Those projects have produced vital information on which PIC provisions have proved difficult to implement in the field; they have made it possible to target resources to implementation problems. In particular, UNITAR, FAO and UNEP conducted a series of regional workshops on implementation of PIC which have helped to identify implementation problems. In turn, those activities are linked to these organizations' broader activities to improve chemicals management--notably, the FAO Code of Conduct and the UNEP Amended London Guidelines. These links have made both the broader and the PIC-dedicated efforts more effective. Especially FAO has conducted two reviews of the broader instrument's effectiveness, which has identified some implementation problems. UNEP's contribution to the SIR has been less extensive--UNITAR and FAO training programs, which include UNEP participation, have made a contribution. UNEP's Working Group on Implementation of the Amended London Guidelines, and its Working Group and Task Force that considered ways to strengthen the legal basis of the London Guidelines, might have helped to review the adequacy and implementation of the voluntary PIC system because they were charged with examining in detail ways to improve the existing voluntary system. Indeed, in 1992 the UNEP Secretariat had prepared an overview of the main problems with implementation of the voluntary procedure, which the group could have used as the basis for useful assessments and proposed adjustments. (Interestingly, that report did not examine which, if any, of the well-known problems with the voluntary PIC procedure would be ameliorated by conversion to a binding instrument, which by 1991 was a policy change on the agenda of those who advocated a more effective PIC system.) However, in practice they provided little value-added and essentially no new information on PIC's operation. Rather, they focused on negotiating new instruments.

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189 Developing countries have participated in regional and sub-regional workshops on PIC, and there have been 7 national PIC workshops (with 5 more slated for 1997). See UNITAR, 1997, Training and Capacity Building Programmes in Chemicals Management--Information Note, May. For reports from regional workshops see, e.g., "Regional Follow-up Workshop on the Implementation of Prior Informed Consent (PIC)," FAO/UNEP/UNITAR, in cooperation with GTZ, Cha-Am, Thailand, 13-16 December 1993, Workshop Report. Workshops were also conducted in Africa (see ref. 188) and in Latin America. For an early overview of the UNITAR training activities, funded by the Dutch and Swiss governments, see: UNITAR/UNEP, 1992, UNEP/UNITAR Training Programme on the Implementation of the London Guidelines--Information Note, 1 March.


192 The penchant for new law extended to the drafting of model national legislation, although surveys done at the time showed that nearly all countries already had legislation—the weak link was implementation. See Ad Hoc Working Group of Experts on the Implementation of the Amended
UNEP's legal groups made only one suggestion to the Joint Group of Experts--to replace "pesticides" with "agrochemicals" in the PIC procedure--which the Joint Group rejected as ill-conceived.193 Since 1993, this UNEP-sponsored activity has been focused on preparations for a binding convention and has played no significant role in reviewing implementation of the existing procedure.

Field activities and regular reviews by international organizations made it possible to catalog the many (mostly detailed) changes to PIC operation that could improve PIC's effectiveness. PIC training workshops helped to identify pesticides that were hazardous under particular "conditions of use," which in principle would have led to inclusion of more such substances in PIC if the voluntary procedure had continued.194 Every meeting of the Joint Group of Experts included a briefing on such field activities. Some of the problems identified in the field and have led to improvements in the voluntary PIC process, such as improvements in PIC documentation and, most importantly, pressure to expand PIC from the first round of chemicals and pesticides--which were already heavily regulated in many countries--to other substances that were more widely used. Many of those detailed lessons are in mind as PIC is converted to a binding instrument, and most come from practical field experience. Indeed, several reviews of PIC's implementation have catalogued the problems with the existing PIC procedure, and most have directly or indirectly relied on the feedback of information from these field programs.

Public interest NGOs provide the third element of PIC's system for implementation review. PAN and IOCU/CI have monitored implementation of the PIC system and, more generally, the Code of Conduct. PAN members have conducted case studies on pesticide

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194For example, see the identification of Paraquat, Aldicarb, Endosulfan, Fenitrothion 60% EC and 96% EC, Fenthion, Carbofuran Granules, and Diazinon in the PIC workshop for Southern and Eastern Africa. Regional Workshop for Southern and Eastern Africa, 1995, op. cit., p.11.
hazards, especially to farmers and their families, which have helped to illustrate the problems, such as pesticide applications that cause dangers for 99% of cotton pickers (mainly women) in Pakistan and infertility routinely caused by lindane use in Ghana.\textsuperscript{195} Extensive local contacts have allowed these NGOs to conduct evaluations of the implementation of PIC and especially the \textit{Code of Conduct}; while criticized by industry for inaccuracies, these evaluations often have been the only independent assessment of the actual implementation of international rules. The \textit{Code of Conduct} is now slated to be strengthened, and the need to improve PIC, are in part due to these evaluations, which highlight problems and violations of the \textit{Code}. Without NGO pressure, backed by data, the code would not have advanced significantly beyond what was adopted in 1985. As noted, these evaluations also helped to set the agenda for inclusion of "conditions of use" substances. In addition to PAN's work, many other NGOs, such as the World-Wide Fund for Nature (WWF), have projects to monitor pesticide use and promote policies that reduce pesticide consumption; some have included monitoring of the implementation of PIC, but none has been as active or influential in the operation of PIC as PAN and its affiliates.\textsuperscript{196}

NGOs are much less active and organized on chemicals management in developing countries; no comparable review of the \textit{London Guidelines} has ever been conducted, and NGOs have played no significant role in evaluating and proposing chemicals for inclusion in the PIC system.

Industry--the fourth element--has provided vital information on some substances, especially pesticides that are hazardous under "conditions of use". Like the international organizations that conduct field projects, industry has also targeted assistance in some countries which has improved management of pesticide hazards and probably also implementation of PIC.

In sum, these four elements--the Joint Group, Field Programs, public interest NGOs, and Industry NGOs--comprise a system for implementation review that has made PIC more effective. The activities and interests of the actors in these four elements are different, but together their actions have been partially synergistic. The Joint Group has been able to make decisions mainly because information from industry and public interest NGOs has been available. Improvements to the PIC system, such as refinements to the DGDs and additional fine-tuning in converting PIC


\textsuperscript{196}One American NGO has also analyzed implementation of the Code, but the study seems to have had no influence on the Code's subsequent development. See Hansen, M., and Rengam, \textit{Violating the Code: A Preliminary Survey of Indonesia, The Philippines and Thailand} (Mount Vernon, New York: Institute for Consumer Policy Research), cited in Mehri, 1988, \textit{op cit.}, ref. 74.
to a binding instrument, were the result of information feedbacks from field programs conducted by international organizations (notably FAO, UNITAR and UNEP) and, to a lesser degree, industry. The different interests of the main stakeholder have served a useful balance to each other; along with independent expert review by the Joint Group, the result has been a policy making process that does not appear to illustrate regulatory capture. Whereas UNEP had been criticized as a handmaiden of environmental interests, and FAO attacked as advocate of pesticide producers, the joint system with explicitly balanced (and informed) participation from both sides has yielded balanced results.

Additional synergies are evident when examining the many other legal instruments and activities that govern management of and trade in chemicals and pesticides. OECD's harmonization of laboratory practices has substantially improved the comparability and probably also the accuracy of firm- and national-level data. In turn, that has improved the ability of international organizations to assess chemical and pesticide hazards. In turn, those bodies--notably JMPR--have been more able to provide useful technical judgements of the risks, which in turn has made it easier to determine which chemicals should be in and out of PIC. Accepted procedures for testing and assessing risks have made it easier to evaluate whether chemicals in PIC should remain, as evident in the case of cyhexatin.197 Few of these procedures have formal links, but in practice they work together as a system; where formal links are being created--notably between OECD and the UN organizations working on chemical safety (FAO, ILO, UNEP, WHO) the links are following much coordination, not leading it.

Those synergies bode well for other international efforts to manage hazardous chemicals and pesticides. In particular, the NGO campaign to ban the "dirty dozen" (see ref. 99) chemicals that accumulate in the environment has led to negotiations in several fora to curtail or eliminate these substances, also known as persistent organic pollutants (POPs). Notably, the Economic Commission for Europe (ECE) is negotiating a protocol to the Long-Range Transboundary Air Pollution agreement on POPs;198 and, in 1998 negotiations for a global treaty will be held under UNEP's auspices.199 Similar actions are under way in the Mediterranean region, with extensive

197 That only one substance has been removed from PIC is hardly surprising since the standards for inclusion in PIC are stringent. In contrast with other international environmental accords, the swift removal of a substance is impressive. In contrast, it has proved very difficult to gain agreement to down list species that are included on Annex I of CITES and thus to allow some limited trade.


199 This action dates to Decision 18/12 (1995) of the UNEP Governing Council. That Decision requires that the UNEP action on POPs begin with the short list of POPs being considered by the
financial support from the European Union, and in the arctic. Most of the "dirty dozen" POPs, such as Aldrin and DDT, are already on the PIC list (e.g., DDT); most are already heavily regulated. Thus experience with PIC will probably aid participants in the POPs negotiations and, more importantly, will aid implementation of POPs commitments. If the PIC system had yielded more useful information on the production and trade of PIC substances, the synergies would be even greater. Far from leading to treaty congestion, as many observers and participants have feared, the global chemicals regime has yielded considerable synergy.

The main missing item in PIC's SIR is data on trading patterns and particular trades; thus while the SIR contributes to a more effective PIC system, it depends heavily on expert judgements based on poor and incomplete data. The programmatic commitments and activities conducted by UNEP and FAO are not reversing this problem. Moreover, there are few incentives for private actors to provide such data. Industry has consistently guarded that information as confidential. Public interest groups can neither afford nor benefit from data collection. Unlike trade in hazardous waste--where the only significant database of trading activities is maintained by the NGO Greenpeace--shining the spotlight on shipments of legal pesticides and chemicals offers little public benefit to NGOs. Where the public has been alarmed at all, it has been when confronted with the images of poisoned workers and, especially, the prospect that illegal pesticides are reimported as residues on food. Not surprisingly, NGOs have not undertaken the expensive task of tracking shipments or developing a systematic capacity to assess the adequacy of the PIC system.

Interests and Power

Although the choice of legal instrument and SIRs have influenced policy decisions and behavior, they explain only a small part of the variance. By far the most important factor has been the interests of the main stakeholders. The analysis here considers two aspects of this crucial variable--first, how interests have been organized into coalitions, and second how the interests have affected which of the many issues on the policy agenda have been selected for real action. At every turn, the main decisions have reflected mainly the interests of exporters in the main industrialized countries. However, coalitions and international institutions have allowed

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ECE, which will help to ensure coordination between the two bodies. UNEP negotiations are slated to begin in 1998.


201See Krueger, 1996, op. cit., ref. 73.
otherwise powerless actors to exert great influence. PIC-related issues rarely rose to the highest levels of government nor attracted widespread public concern, and thus entrepreneurs who built expertise in the area and used institutions and coalitions to their advantage have had a large impact on the design and effectiveness of the PIC system.

**Organization of Interests**

Few of the stakeholders have participated directly in the policy process, especially in the international negotiations and in the JMPIC sessions. Some large firms with a strong interest in the outcomes have participated by seconding representatives to the industry associations, but in general the views of industry and the "public interest" are presented by NGOs. That interest groups are needed organize diffuse stakeholders is hardly a surprise. The logic for collective action is especially compelling in the case of consumers who demand safe food and high environmental quality—they number in the millions and billions but are represented by public interest groups. However, the most influential research on the formation of lobby organizations suggests that assembling such collective efforts should be very difficult; diffuse stakeholders should find it especially difficult to organize themselves because each has a small interest in the outcome and small resources at its disposal; none can afford the monumental task of organizing all the others nor of effective lobbying on its own.202

Although theory predicts that diffuse interests will find it difficult to organize, this case shows that all of the major interests have, in fact, been well-organized. The reason is that none of the major associations of stakeholders was created de novo to handle this issue. Rather, the issue of regulating trade in chemicals and pesticides was added to the agendas of existing organizations; thus the barriers to organizing and presenting a common view were relatively low. The American and European chemical industry associations (CMA and CEFIC, and later ICCA) and the global pesticides association (GIFAP) were well-versed in the activities of international organizations, especially FAO. In the case of GIFAP, the association made substantive promises on behalf of its membership—which had committed to implementing the Code of Conduct—which probably also enhanced GIFAP's credibility and influence. These industry associations were sustained in part because industry participants knew the benefits of collective action. However, more important was that especially after Bhopal, these associations were a vital aspect of efforts to improve the industry's image—Responsible Care was designed by CMA, for example, and the Code of Conduct played a similar role for GIFAP.

Development, consumer and environmental interests—which were unified in their view that an extensive and effective PIC system was needed—were also expressed through existing associations. Their participation was organized through the Pesticides Action Network (PAN)—

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an alliance of local organizations that had been active on pesticides and development issues since the 1970s. Local PAN affiliates helped ease the conduct of field research, which in turn made it easier for PAN to provide new and influential information on pesticide hazards, in turn improving their influence in the PIC system. No nongovernmental organization has had substantial direct influence on the working of PIC while being outside of it; few have even tried.203

States also participated through existing associations, reducing the resources devoted to organizing themselves and increasing their ability to identify and press common interests. Members of the European Union were able to present an influential common position because, at least since the Sixth Amendment (1979), chemicals and pesticides policy has been dominated by the Union rather than member-states acting unilaterally. As the competence of the EC grew from the late 1980s through the early 1990s—a reflection of European integration in general and not a special effort only in the area of chemicals and pesticides—so did the extent to which EC positions were unified and influential. Each of the three major turning points in the PIC system—the adoption of the voluntary PIC system in 1989, the adoption of the initial PIC list in 1990, and the decision to pursue a binding PIC negotiation—were partially or wholly the result of a unified European position. No single member state—especially the small states of the Netherlands and Belgium which led the European effort—could have had such sway.

Developing countries also had a stronger voice because they were already organized under several banners, notably the NIEO. Trade in hazardous substances was easily added to the existing NIEO agenda, which focused on other injustices of trade, problems of low development (and capacity) in developing countries, and the activities of multinational corporations. That coalition led to little practical action through the middle 1980s, but when public interest NGOS and some exporting countries (notably the EEC) joined the coalition, PIC was soon adopted. The developing countries could vote as a bloc—which accounts for the bold UNEP resolution in 1977 that called for a system of prior consent—but had very low capacity to get things done beyond voting.

The voice of otherwise weak actors has also been enhanced by international institutions. After basic policy decisions were made, institutions gave voice to actors who might have otherwise had little influence during the complex process of implementation. JMPIC allowed developing countries a voice that they otherwise would not have had—half the experts in the FAO/UNEP Joint Group were from developing countries, and nearly all of JMPIC's work was

203 This statement is made with some caveats. Organizations that worked more generally on the hazards of pesticides have obviously increased public awareness and pressure for action; moreover, many groups (including Greenpeace, which is not part of PAN) have had some influence in pushing the general argument that the voluntary PIC system is not adequate. My statement here refers to the more detailed oversight and activity in designing and implementing the voluntary PIC system.
focused on ways to improve regulatory capacity in developing countries. JMPIC also allowed NGOs, especially public interest groups, to have influence that is rare in most international environmental agreements. Only in a few other areas of international environmental law—notably wildlife protection—do NGOs have such a large influence in setting the agenda, monitoring implementation, and contributing directly to key policy decisions.

The influence of interests on outcomes

Organizations and institutions gave small and often powerless actors a greater voice, but the main policy decisions and their influence on behavior have largely reflected the interests and power of major stakeholders—in particular, chemical and pesticide exporters. In the 1970s environmental groups pushed for bans on exports of domestically prohibited goods, but major exporting nations imposed no controls or minimal notification schemes. The only policy changes favored by industry were those that promoted harmonization—that agenda, in contrast to stalled efforts to regulate exports, led to swift and significant action. In the middle 1980s environmental NGOs pushed for PIC, but only a notification scheme that mirrored existing schemes and led to no change in national policy was adopted. PIC was finally adopted after the opposition was whittled down and once industry accepted that some stricter form of export regulation was inevitable.

Tables 2.3 to 2.5 summarize the interests of the major actors, as well as the policy outputs and actual changes in behavior by target groups, at three critical moments in the development of international trade regulations: the late 1970s, when the issue came on the agenda; the middle 1980s when harmonization was well under way and PIC had been extensively debated (but not accepted by industry); and the late 1980s when PIC was adopted. The outcomes match most closely with the interests of chemical and pesticide producers; no major action directly violated their interests.

[Tables 2.3 to 2.5 about here]

Although policy outputs and outcomes reflect the interests and capabilities of major stakeholders, the policy agenda does not. Rather, until the PIC system was adopted in the late 1980s, the agenda has consisted of a wide range of items. The agenda has narrowed over time only as some of those items have been repeatedly rejected (e.g., bans on exports of domestically prohibited goods, which was rejected in the 1970s and again in the 1980s when African nations put it on the GATT's agenda) and others have become widely accepted (e.g., IPM). That narrowing helped advocates of PIC focus their efforts, ultimately leading to the adoption of PIC.

In sum, the interests of the main actors explain the main contours of the policy agenda and substantive action to regulate trade in hazardous chemicals and pesticides. However, only by examining the institutions involved and the ways that the legal instruments have been adjusted over time it is possible to investigate PIC's actual influence on trade patterns. Industry's interests have mediated which issues have received substantive action, but they have not fully determined
Table 2.3  
The Agenda and Policy Action to Regulate Hazardous Chemicals and Pesticides:  
Interests of Major Actors and Consequences  
late 1970s

Column 1, the 9 major issues that have been on the agenda at some point from the late 1970s to  
the present; columns 2-4, the interests of the three major actors; columns 5-6, whether the issue  
was on the agenda (i.e., seriously discussed) and whether it was the subject of any significant  
policy action

<table>
<thead>
<tr>
<th>Main Issues</th>
<th>Main Actors</th>
<th>Consequences</th>
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<tbody>
<tr>
<td></td>
<td>Public Interest NGOs</td>
<td>Developing Countries</td>
</tr>
<tr>
<td>Ban on Production of hazardous products (e.g., to protect factory workers)</td>
<td>favored by most</td>
<td>no opinion</td>
</tr>
<tr>
<td>Ban on export of domestically prohibited goods</td>
<td>favored by most</td>
<td>strongly favored by most</td>
</tr>
<tr>
<td>Regulate &quot;circle of poison&quot; (reimport of pesticide residues)</td>
<td>favored by most</td>
<td>no opinion</td>
</tr>
<tr>
<td>Integrated Pest Management (IPM)</td>
<td>strongly favored</td>
<td>favored</td>
</tr>
<tr>
<td>Release of business information on trade and hazards</td>
<td>strongly favored</td>
<td>strongly favored</td>
</tr>
<tr>
<td>Export Notification</td>
<td>favored, if tighter export regulation was not possible</td>
<td>favored, if tighter export regulation was not possible</td>
</tr>
<tr>
<td>Voluntary PIC</td>
<td>no discussion</td>
<td>no discussion</td>
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<tr>
<td>Binding PIC</td>
<td>no discussion</td>
<td>no discussion</td>
</tr>
<tr>
<td>Harmonization of national regulations (e.g., testing)</td>
<td>no strong opinion, but wary</td>
<td>no opinion</td>
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Table 2.4  
The Agenda and Policy Action to Regulate Hazardous Chemicals and Pesticides: Interests of Major Actors and Consequences  
middle 1980s

Column 1, the 9 major issues that have been on the agenda at some point from the late 1970s to the present; columns 2-4, the interests of the three major actors; columns 5-6, whether the issue was on the agenda (i.e., seriously discussed) and whether it was the subject of any significant policy action.

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<td>no opinion</td>
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Table 2.5
The Agenda and Policy Action to Regulate Hazardous Chemicals and Pesticides: Interests of Major Actors and Consequences
1990

Column 1, the 9 major issues that have been on the agenda at some point from the late 1970s to the present; columns 2-4, the interests of the three major actors; columns 5-6, whether the issue was on the agenda (i.e., seriously discussed) and whether it was the subject of any significant policy action.

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the outcomes. IPM was advanced because of pressure from public interest groups, and the PIC system itself was adopted mainly because public interest groups, developing countries, and some industrialized countries pressed industry to regulate exports more stringently. Faced with tighter regulation, industry's interests changed to favor the most advantageous form of additional regulation—the nonbinding PIC system. As shown earlier, that system also happened to be effective—probably more effective than if a binding system had been pursued in the late 1980s.

Conclusions

In the 1970s, public interest NGOs and developing countries pressed for greater control of hazardous exports from industrialized countries. The result was a series of nonbinding resolutions in the UN General Assembly and the United Nations Environmental Programme. Those resolutions envisioned substantial controls on exports, but in practice had little effect on patterns of trade. In UNEP and the OECD, schemes were adopted that urged countries to supply information on exports—"notification systems"—but they merely codified what major countries were already doing and, also, had little effect on behavior.

In 1989 a nonbinding PIC system was adopted by FAO and UNEP; although industry and major exporting countries opposed PIC, once it was adopted they embraced the concept as an alternative to more onerous binding rules. The adoption of PIC was largely the product of entrepreneurial NGOs, a coalition of developing countries, and an increasingly active handful of European countries that favored tougher export controls, notably Belgium and the Netherlands. They had only modest success in tightening EEC rules, but through FAO and especially UNEP they created a global system which, in turn, all industrialized countries have put into practice. Since 1989 PIC has expanded to include more than three dozen substances; so far there has not been a single documented violation of the PIC system.

This chapter examines why PIC has generally worked well. It concludes that the nonbinding legal form allowed for high flexibility and learning by doing. Many of the key policy decisions for PIC were unresolved or unknown in 1989; a nonbinding instrument allowed those issues to be worked out along the way, without the stifling influence of extensive national review and ratification that accompanies binding legal instruments.

However, while PIC was nonbinding, so were the many failed efforts that preceded it. What set PIC apart was that it marked a pause in the efforts, especially by UNEP, to negotiate numerous legal instruments; instead, UNEP, FAO, and various NGOs (especially industry) focused on putting PIC into operation. In contrast, earlier nonbinding instruments were merely symbols—they marked aspirations that could not be attained at the time, or they merely reflected the lowest common denominator outcome of a negotiated process.

A shift to implementation was a necessary condition for PIC's success. However, learning by doing required extensive efforts to document and review implementation experiences
under PIC. Yet the PIC system included no provisions for collecting and analyzing the needed data—to this day, lack of data is a critical weakness. However, a Joint Group of Experts who met periodically to make PIC policy decisions, various international organizations that implemented projects to build capacity in developing countries (including capacity to implement PIC), public interest NGOs, and the industry formed a decentralized system for implementation review (SIR). These actors performed functions of implementation review, such as providing information on pesticides that were causing problems in developing countries and identifying needed changes to the PIC system, according to their interests and abilities. The formal provisions for implementation review were almost nonexistent; nonetheless, the SIR has supplied an extensive feedback of information, which this analysis shows was crucial to learning by doing in the PIC system.
The Operation and Effectiveness of the
Codex Alimentarius Commission

Chapter 3
Introduction

The *Codex Alimentarius* Commission is a joint activity of the Food and Agriculture Organization (FAO) and the World Health Organization (WHO). The Commission and its committees elaborate regional and worldwide standards for food safety. In principle, those standards are then adopted by national governments, leading to common food safety standards. Facing the need to comply with only one global standard rather than a patchwork of national regulations, exporters will find it easier to trade food products on world markets; trade will increase and with it the benefits of wider choice and economic growth. In practice, the adoption of common standards has not proved easy and their impact on trade, often, has been difficult to trace. This study examines the origins and operation of the *Codex* system and evaluates the ways that it has affected the behavior of national governments and the firms that grow, process, export and import food products.

A study on the adoption and influence of the food safety standards of the *Codex Alimentarius* Commission makes two contributions to this thesis, which investigates how the choice of legal instrument affects multilateral industrial regulation, how implementation review contributes to more effective regulation, and how mechanisms for responding to implementation failure contribute to more effective international agreements. One is substantive and the other methodological.

First, substantively, the *Codex* is a critical case. It is prominent among the many efforts to harmonize national regulations and thus reduce non-tariff barriers to trade. As the PIC case has shown, multilateral efforts to regulate industrial activity have intrinsically become interwoven with efforts, also, to harmonize and standardize national regulations. Although attention to harmonization rose prominently in the 1980s and 1990s--with the GATT Uruguay Round, the reinvigoration of the European Community, and the creation of other regional trade blocs--multilateral efforts to harmonize regulations date back much further. Throughout its history, from the early 1960s to the present, *Codex* has been an activity whose *raison d'être* is harmonization of national standards. Then and now the *Codex* system faces all of the major opportunities and challenges of harmonization, notably: how the goal of common standards is reconciled with wide existing differences, many of which reflect differences in national interests; how to obtain expert advice needed to make decisions concerning complex topics; and, the fear that industrial standards will be dominated by the interests and information supplied by large industrial enterprises, with little input by weaker firms and by other interest groups such as consumers. This study shows how such issues have been played out. It also examines why other concerns--including the review of implementation and handling of implementation problems, which are also investigated in this thesis--have remained on the sidelines. In short, Codex is a critical case because it has all the ingredients of a major aspect of multilateral industrial regulation--namely, harmonization of national regulations--and moreover the Codex itself is by far the most important organization working to harmonize regulations in a major area of international trade.
More empirical research on Codex is critical because existing studies are quite out-dated. The Codex system was the subject of two major studies in the middle 1970s—one, by David Kay, focused on Codex standards for pesticide residues; the other, by David M. Leive, focused on Codex commodity standards. Yet the Codex system had achieved little by 1974, when coverage in both of those studies stopped; and thus both studies could not much evaluate the influence of Codex. Both concluded by noting that acceptance of Codex standards was generally low but suggested that was, perhaps, merely a reflection that most Codex standards had been adopted only recently. Today, two decades later, such excuses are no longer valid. This study is the first independent and systematic analysis of the Codex system since those studies were published; it updates, but does not repeat those analyses. This is also the first study ever to compile systematic data on the rate of acceptances of Codex standards and to explain the different patterns for acceptance of the two main types of Codex standards—those that concern commodities, and those that set residue levels for pesticides. Moreover, a reassessment of Codex is opportune today (1997). Codex was incorporated into the WTO in 1994, and thus de facto the institutions that supervise Codex activities have changed significantly. Whereas the Codex system had no mechanism for implementation review and no means of responding to implementation failure prior to 1994; today it has at its disposal the WTO's dispute resolution system, which offers WTO members a means of responding to cases of alleged noncompliance. Already the first WTO dispute panel case involving a Codex standard has been handled (the BGH case, see below). This stricter supervision has affected the whole Codex system, which has had to adopt more consistent and rigorous procedures throughout the standard-setting process. Whereas previously Codex standards were marked by low (if any) influence; today the same can't be said.

Second, as with the other case studies in this thesis, the Codex experience can be parsed into several episodes that allow for quasi-controlled comparisons. In particular, the episodes allow analysis of how outcomes are affected by (1) the legal status of international standards (binding/nonbinding), and (2) the availability of an enforcement mechanism:

(1) The form of Codex standards is particularly well-suited to investigation of how legal form affects how governments adopt international standards and the influence of those standards on behavior. Standards that have been adopted by the Codex Alimentarius Commission are not binding under international law. However, all member-states are requested to indicate whether they will "accept" a Codex standards, which has the same practical effect as making them binding. Accepted standards undergo extensive domestic

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review, and countries pledge that by "accepting" standards they incorporate them into national law, thus superseding existing standards. Thus, for every member-state, every Codex standard can be either binding (i.e., "accepted" or non-binding (i.e., not accepted). This difference allows exploration of the hypothesis that binding standards will be accepted if they require little or no change in behavior whereas countries will prefer nonbinding standards if such standards require change. Moreover, some Codex standards allow acceptances to be lodged with deviations; by comparing the rate of "full acceptance" with acceptances that include deviations it is possible to trace how countries address conflicts between international and national standards--whether they adjust national standards to conform with international imperatives, or vice-versa. In short, the process of "accepting" Codex standards can be divided into two episodes--those standards that are accepted (episode #5 on table 1.1 in chapter 1) and those that are not accepted (episode #6).

(2) During the late 1980s it was widely acknowledged that Codex standards would be incorporated into the agreement to reduce sanitary and phytosanitary (SPS) barriers to trade, which were eventually adopted in 1994 as part of the agreement to form the World Trade Organization (WTO). In principle, doing so gave Codex standards greater weight because they could now be used to resolve disputes handled by the WTO's binding dispute panel system over allowable non-tariff barriers to trade under the SPS agreement. The BGH case is the first such formal dispute, but the role of Codex in other potential disputes has affected the entire operation of the Codex system. The "post WTO" life of Codex thus offers an important episode (#7 on table 1.1) for assessing how the availability of strict supervision and responses to noncompliance can influence the operation and influence of an international regulatory system.

These episodes help assess how the legal status of commitments and the availability of responses to noncompliance have influenced food safety standards and industrial behavior. However, the Codex case, even after incorporation into the WTO, provides no insight into the role of implementation review. Virtually no attention has been given to implementation, and in the WTO system implementation issues arise only when one party complains that it has been injured by failure of another to meet Codex standards. So far that has happened only in the BGH case, and that case could be easily identified without any implementation review. The Codex system has very limited capacity to identify whether its standards are adequate or whether they need adjustment. That situation may improve as Codex standards are added to the WTO's Trade Policy Review Mechanism, but so far those potential benefits are not evident.

In addition to the questions addressed in this thesis, the Codex system has several attributes that allow assessment of other questions of central importance to the operation and effectiveness of international institutions. These other questions will be addressed briefly in this case study, and other scholars may find it useful to investigate them more extensively. Notably:

- The process of elaborating most Codex standards attracts very little attention and thus often are elaborated with practically the exclusive interest of only those parties who have a large direct interest in the outcome--industry. In contrast, a few Codex episodes--notably the controversy between the U.S. and European Community over bovine growth hormones (BGH)--have attracted higher public
interest and thus wider participation, notably by consumer groups. Differences in these patterns of participation have affected the ways that Codex can be effective by altering the modes by which the Codex system can influence outcomes and by altering the importance of the legal status of Codex standards.

As noted, Codex standard-setting activities fall broadly into two categories. One concerns commodities themselves (e.g., what defines a "canned plum") and the other concerns additives to commodities (e.g., colors, emulsifiers) and contaminants such as pesticide residues. The decision-making processes for these two vary—in the former, decision-making is dominated by governments who sit on Commodity Committees and industry representatives who participate extensively. In the latter, expert committees are used more extensively and there are greater fire walls to protect the independence of the expert advisory process. The Codex system is one of the few examples of such institutionalized and independent advice, and thus the case is an important precedent in the international system. (The same expert "Joint Meeting on Pesticide Residues (JMPCR)" tapped by Codex to evaluate pesticide residues is also extensively used in the PIC system, with similar benefits.)

Finally, membership in the Codex Alimentarius Commission includes both industrialized and developing countries. The ways that the Codex system can influence the behavior of those different countries differs—for example, the information diffusion activities of the Commission are much more important for developing countries—and thus comparisons between the two types of countries and their rate of acceptances helps to reveal which modes of influence are greatest.

In short, from a methodological perspective although the Codex system is but one case, in practice it can be extremely powerful in evaluating the ways that international institutions and types of legal instruments influence behavior.

This chapter first presents an overview of the origins and mandate of the Codex system. Then it summarizes and illustrates the operation of the system, especially the process of elaborating Codex standards, and finally evaluates the influence of the system.

Background and Formation of the Codex system

A small handful of industrialized countries began to regulate food safety in the middle 19th century. By the 1930s a dozen had regulations in place; by the 1950s that number had doubled. Existing regulations, which focussed on labeling and minimizing disease were augmented to limit newly detected threats to food safety, notably the residues of pesticides, whose application rose sharply starting in the late 1940s. Existing regulations which focused on a handful of foods, such as meats, were extended in scope to cover an ever-growing array of food products. National differences were numerous and proliferated as regulation intensified. Standards differed widely
as did methods. Some countries--such as the United States--applied an increasingly detailed array of formal regulations while others--such as West Germany--allowed large discretion in the application of rules. Some controlled particular food hazards by regulating processes of production--such as the marketing and means of applying pesticides and the hygienic status of slaughterhouses--while others focused on the final products. These differences affected trade which, in the postwar recovery, rose sharply; especially intense was trading in Europe, especially among the 6 founding members of the European Economic Community.²

The Codex Alimentarius is result of increasing dissonance between national regulations and need for standardization to allow greater trade. However, Codex was hardly the only alternative, nor was its form purely a consequence of the functional need for harmonization. By 1960 there were several efforts to harmonize food safety standards--all were regional and/or limited to particular food hazards or commodities.

In Europe, at least two activities focused on the harmonization of some food safety standards. First, the Council of Europe--formed in 1949 and open to non-Soviet European nations--began a program on pesticide risks in 1956. By the early 1960s it had assessed some pesticide risks and began a program to disseminate information on pesticide toxicity. Although those activities continued until the late 1960s after the creation of the Codex system they were redirected to advertising and labeling standards, which the Codex (then) did not address.³ Second, a Codex Alimentarius Europaeus was established in 1958 to harmonize methods for testing food safety. It was the product of two standardizing bodies--the International Commission on Agricultural Industries and the Permanent Bureau of Analytical Chemistry but ceased existence in 1963 at the time the worldwide Codex Alimentarius was created.⁴ It embodied the principles of the Codex Alimentarius Austriacus whose founder--the Austrian guru of food law, Dr. H. Frenzel--declared that common standards set by experts and adjusted periodically were the best way to ensure that only food fit to eat would be on the market.⁵ Most of the practical activity to harmonize food safety standards took place in Europe.


FAO and WHO were themselves both active on related issues. In 1957 and 1958, under pressure from milk producers, WHO and FAO jointly established a committee to set guidelines for milk and milk products. Dominated by the International Dairy Federation (IDF), that committee reflected the interests of milk producers in harmonizing standards. More generally, since the early 1950s the WHO had monitored rising concerns about the health effects of food additives. In the middle 1950s WHO and FAO together convened a conference on food additives; ever since, the organizations have sponsored joint expert activities to evaluate the safety of food additives. In the late 1950s the two organizations also began their own activities specifically on the health effects of pesticides—each formed expert committees on the effects of pesticide residues, which were combined in 1961 to form a body now known as the Joint Meeting on Pesticide Residues (JMPR). That body is the UN’s premier expert advisory body on pesticide residues in foods; it works for the Codex system but, as has been shown in the PIC case, its advice is used elsewhere as well.

European activities and the existing programs led to a global approach for two complementary reasons. First, the European harmonization programs were only partial and immature, and from practically the earliest stages efforts were made to engage global organizations, notably FAO through the FAO regional conference for Europe. Second, because the regional activities focused on Europe, major food exporters outside Europe—notably Australia, Canada and the United States—feared they would lose influence over the setting and harmonization of standards and thus lose markets in Europe. These two factors and the existence of a nascent FAO/WHO cooperation on food safety issues made it relatively easy for governments to coordinate the adoption of a joint Food Standards Programme by FAO and WHO.

The Codex Alimentarius Commission was created through three coordinated decisions by international conferences in 1961 and 1962. The purpose of the Commission is to elaborate food standards for the purpose of "protecting consumers' health and ensuring fair practices in the food trade. ... [The standards are] intended to guide and promote the elaboration and establishment of definitions and requirements for foods to assist in their harmonization and in

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7 JMPR's creation is reviewed in David Leive, op. cit., pp. 378-379.

8 The FAO Conference resolved to create the Commission as a joint activity with WHO in 1961; WHO World Health Assembly resolved to do the same in 1962; also in 1962 a Joint FAO/WHO Conference on Food Standards recommended to create the Codex Alimentarius Commission to implement the Joint FAO/WHO Food Standards Programme.
doing so to facilitate international trade.\footnote{9} Following the precedent set by the *Codex Alimentarius Europaeus* and the FAO Milk Committee, the FAO/WHO *Codex Alimentarius* was given the mandate to shift as much of the process of elaborating standards to experts "in immediate contact with the products to be standardized" and to work with draft standards prepared by "specialist NGOs."\footnote{10} Standards are adopted by the governmental *Codex Alimentarius* Commission, but most of the work and influence is provided by industry experts, and their counterparts in government, that have specialized knowledge of the products and regulations to be standardized. The *Codex Alimentarius*—currently a 14 volume series weighing over 20 lbs—is the publication of standards and other texts adopted by the Commission, along with notifications of which standards have been accepted by member-governments. The processes by which standards are elaborated, and the implications of industry dominance, are examined in further detail below.

The Commission's activities are funded from the budgets of FAO and WHO (currently approximately 80% and 20% respectively).\footnote{11} From the outset, the *Codex* system has been marked by extensive involvement of the industries affected by *Codex* activities. In its first years, Commission activities were funded by a special trust fund which allowed industry, through member-governments, to contribute. The first two years of U.S. participation in the Commission—from 1962 to 1964—were funded by the U.S. food industry through this device.\footnote{12} Other than sitting in meetings—which one-third or more of member-countries routinely skip—the costs of participation in *Codex* can be extremely low and the benefits potentially high.\footnote{13} It is not


\footnote{10}Quotes from the *FAO Director-General's Note* prepared at the time that the Joint FAO/WHO Program on Food Standards (i.e., the Codex Alimentarius) was adopted by FAO. Cited in David M. Leive, *op. cit.*, p. 381.

\footnote{11}In 1974 FAO and WHO agreed to share costs 75% and 25%, respectively. A core two-year budget of $3.7m (1996-1997) is shared accordingly. In addition, FAO contributes resources for regional and national meetings totaling $1.8m over two years (1996-1997). Thus FAO pays approximately 83% and WHO the balance. These figures exclude costs borne by countries that sponsor particular Codex meetings (see below). See *Report of the 43rd Session of the Executive Committee of the Codex Alimentarius Commission* (Geneva, 4-7 June 1996), ALINORM 97/3.


\footnote{13}94 of 151 Member countries (62%) attended the 21st Session of the Commission (July 1995, Rome). Not surprisingly, a high fraction of OECD members attended (22 of 24—all but the tiny nations of Iceland and Luxembourg) whereas only 52% of non-OECD members attended (72 of 137). Delegations of OECD nations were large (45% of all governmental delegates were from OECD nations) and diverse, consisting of many national specialists and representatives from industry. Delegations of non-OECD were typically small and in a few cases consisted only of local
surprising, therefore, that membership in the Commission is high. In its first decade 100
countries joined Codex; today, Codex membership stands at 151.

Within a decade most of the other, competing, standard-setting activities had either
withered away or, in some instances, were integrated into the *Codex Alimentarius* system.
Whereas in 1963 an outside observer would find a bewildering and rapidly growing array of
efforts to harmonize food standards, by the early 1970s the food safety regime was largely
unified loosely centered on the *Codex Alimentarius* Commission. As will be shown, this was
achieved largely because the Commission's procedure for elaborating food safety standards
valued universal consensus, even when consensus came at the cost of standards that were modest,
vague or both. Similarly, the Commission was empowered to adopt regional as well as global
standards, but in practice the latter was consistently favored because the Commission's activities
were stamped with the purpose of promoting world trade; regional standards risked
discrimination. (Fears of protectionism from regional standards were well-founded, as illustrated
below with the European standard on bee honey.)

Such issues are familiar throughout debates on whether to "widen" or "deepen" to
integrate cooperation and trade—that is, whether cooperation is more effective when many parties
are brought into agreements, which are then made more rigorous, or whether rigorous
commitments are first pursued with a core group, which is then expanded. In the *Codex* case, the
"widening" strategy was successful in that it eclipsed alternative standard-setting activities and
allowed rapid progress in adopting standards. But poor attention to deepening also meant that
the influence of those standards on behavior was often low, especially in industrialized countries
where extensive existing standards have proved difficult to harmonize.

The wide expansion and dominance of Codex has resulted in some integration of those
food standard-setting activities that do not fall directly within the Codex system. Efforts by the
European Economic Community (EEC) to harmonize pesticide regulations, which began in 1964,
were motivated by the work of Codex. They stalled within a decade in part because of concerns
among new EEC members (Denmark, Ireland and the United Kingdom) that the EEC not
excessively standardize national policies; more importantly, by the late 1960s it was clear that the
Codex system was elaborating pesticide standards and, thus, other efforts would be duplicative.\(^{14}\)

Codex of course has not entirely supplanted other international efforts to regulate food
safety. Bilateral agreements regulate particular food safety concerns between some trading

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\(^{14}\)These assessments of the role and importance of Codex and the reasons for EEC
standardization are drawn from David Kay, 1976, *op. cit.*, pp. 33-34.
partners, such as agreements between the U.S. and France (on inspection of cheese for BHC contamination) and the U.S. and Mexico (on pesticide residues on produce). The pattern continues to the present, with recent examples including a US-Chilean program to ensure non-contamination of grapes following concerns prompted by detection of a Chilean exported cyanide-laced grape. It is no accident that many of the examples involve the U.S.--few other countries can demand such special schemes with their trading partners. This author finds little evidence that such bilateral arrangements strengthen or detract from Codex--they are simply separate.

This experience--the decentralized array of institutions at work by the early 1960s, followed by a concentration of activities around and within the Codex system--offers some insight into the often-cited fear of "treaty congestion." The Codex case illustrates that even when risks of congestion have been high, in practice the incorporation or decay of less active organizations, and coordination of other activities around the Codex core, has led to a more synergistic and less congested system. Although it has been argued in the introduction to this thesis that multilateral industrial regulation is unlikely to occur through purely tacit regimes, once a core regime such as Codex is established it is possible for somewhat tacit cooperation then to emerge around that formal (i.e. non-tacit) core. Examples, discussed in greater detail below, include the deference of the Codex system to the olive oil industry and, generally, the role of the Codex system in diffusing information to developing countries. These are not examples of fully tacit coordination--they are not purely the result of observing behavior but rather they do involve some formal codification--but the point is simply to underscore that the Codex activities have allowed, by their existence, substantial informal coordination of some national and international institutions.

Some other trends: environment and trade

By coincidence, during the 1960s, concern over the human health and environmental impacts of industrial food production also rose rapidly on the agenda, first in industrialized countries in the 1960s and then in many developing countries in the 1970s. This parallel development has posed several substantial challenges for the Codex system. Notably, new pressures for regulation caused existing differences in national regulation to widen and intensify just at the time when the Codex system began efforts to harmonize food safety standards. These differences were not much evident in Codex activities to define commodity standards, but they have become central to standard-setting on residues of pesticides and veterinary drugs. Many of the national differences in regulations to control such residues are technical, some of which have proved relatively easy to solve, but with the advance of environmental and consumer pressures many of those differences reflected differences in national interests. Moreover, efforts to harmonize

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international standards were met by suspicion, not least because Codex is dominated by industry. The involvement of public interest groups in the Codex system was virtually nonexistent in the 1960s and 1970s and, only recently, has risen slowly.

The coincidence of the environmental and consumer movements has thus posed large challenges to the Codex system, both because standards are more numerous and varied and because Codex has a gaping democratic deficit. Although the principle of the Codex system is to develop standards through extensive consultation, many of the stakeholders reflecting food safety and environmental concerns feel that they are not consulted. The deficit goes to the core purpose and logic of Codex and thus is stamped in the culture of most--perhaps nearly all--Codex participants. According to the logic of harmonization, national differences are a barrier to trade; consumer and environmental groups, on the other hand, view national differences as the only means to secure food safety and environmental protection. Public interest groups may have taken some solace in the fact that Codex has been largely ineffective in its mission to harmonize standards; as will be shown below, national standards have generally prevailed, especially in industrialized countries where public interest groups have achieved their greatest influence in tightening standards. Yet now there is evidence that Codex influence is rising as it becomes incorporated into the World Trade Organization (WTO).

The purpose in creating the Codex system was to minimize barriers to trade caused by differences in food safety standards. Inevitably, then, the work of Codex would intersect closely with other efforts to expand world trade, notably the GATT system. Perhaps most impressive is that the two regimes remained as separate as long as they did. In the GATT, through the 1960s tariffs were cut sharply, leaving various non-tariff barriers as the major impediments to trade, such as subsidies, differences in intellectual property rights, discriminatory rules for government procurement, and differences in national regulation. The GATT's Tokyo Round, concluded in 1979, included several side-agreements (codes) to limit some such non-tariff barriers. The code on technical barriers to trade (TBT) concerned most closely issues addressed by the Codex Alimentarius Commission. Yet, in practice, the definitions of allowable TBTs made it difficult to use the Code to limit such trade restrictions. And although the TBT included a dispute resolution system that was more stringent than the GATT's notoriously poor system, which allowed any party to block adoption of a dispute panel decision, the TBT system nonetheless shared many of the same failings. Notably, the EC was able to block formation of an expert panel requested by the United States to investigate whether the EC ban on the use of bovine growth hormones (BGH) was allowable under SPS. Scientific research showed BGH was safe; the EC had banned it in part in response to pressure from consumer groups, which argued that the risks of BGH were unclear. Moreover, EC members and farmers already faced expensive over-production of beef; allowing BGH would exacerbate the problem both because it would make existing production more efficient and because low-cost competition would further reduce the demand for European-grown beef. The BGH case still shadows the world trading system and, now, Codex.

Inadequacies in the Tokyo Round Codes has kept the need for stronger discipline on
technical barriers to trade on the trade agenda. The Uruguay round of trade talks, launched in
1986 and concluded in 1994, included explicit efforts to limit Sanitary and Phytosanitary (SPS)
barriers to trade.¹⁶ The SPS agreement requires that "...Members shall base their sanitary or
phytosanitary measures on international standards, guidelines or recommendations, where they
exist..." with some exceptions, notably if Members seek a higher level of sanitary or
phytosanitary protection.¹⁷ For matters related to food safety, "international standards,
guidelines and recommendations" are defined by the GATT 1994 Agreement as those of the
Codex Alimentarius Commission.¹⁸ Thus although the Commission's standards remain
voluntary--member states can choose which, if any, to "accept"--in practice Codex standards can
now be applied through binding measures backed by a means of enforcement. The GATT 1994
agreement, and several others, also created the World Trade Organization (WTO), which
includes a new, more rigorous mechanism for resolving disputes. At the first session of the
Codex Alimentarius Commission held after WTO's creation, the U.S. forced a vote and the
adoption of Codex standards for 5 bovine growth hormones, and shortly after that the U.S. filed a
WTO dispute against the EC.

The BGH case is one of a few instances where Codex activities have reached high
politics. In this study it is used to help explore the conditions under which the Codex system is
influential. However, it must be noted that the incorporation of the Codex into the GATT/WTO
system has not only potentially affected the influence of Codex but it also has affected how
Codex standards themselves are elaborated. At least by 1988, in the midst of the Uruguay Round
negotiations, it was widely agreed that a new and central role in setting standards for food trade
would be given to the Codex Alimentarius Commission. The author notes that at the same time
as (and justified by) the new prominence for Codex that all major procedures in the Codex
system were revamped. The process for elaborating and accepting codex standards was clarified.
The standards themselves have been simplified to make them more generally applicable. The
Codex Alimentarius was republished in a much more useful format, although some crucial
information--notably on which countries have accepted Codex standards--remains a mess.
Countries were asked to give fresh notifications on which residue limits for pesticides and
veterinary drugs they have accepted; although only 10% of Codex members have responded, the

¹⁶i.e. Measures employed by GATT Members to protect human, plant and animal health. This is GATT jargon for much of what is labeled "environmental" regulation.


¹⁸This incorporation of a standards organization into GATT 1994 is not unique. Similar
incorporation is done for the International Standards Organization (ISO), International
Electrotechnical Commission (IEC), the International Office of Epizootics, and plant health
guidelines developed by the Secretariat, and other organizations, under the International Plan
Protection Convention.
information provided is up-to-date. Whereas in the middle 1980s the Codex was marked by apathy and inaction, today it is active and aware of its potential relevance. In part this new relevance is a fiction--it has merely exposed several problems in the process of setting Codex standards and highlighted the need for more systematic application of risk assessment and food quality control standards. Moreover, the addition of Codex to the WTO has raised many thorny problems of the legal status of Codex standards; the acceptance process has been de facto abandoned, but still there is no guidance on which Codex standards are legal texts and which are actionable under the WTO.

Operation of the Codex System

The purpose of Codex is to adopt standards and other guidelines that help promote consistency in national food safety standards and thus greater trade in food products. Throughout its history, the Codex system has done this by adopting three types of standards:

(1) **commodity standards** that concern a particular commodity, such as fruit cocktail or butter. Such standards define the commodity, hygienic standards, labeling, and other relevant components;

(2) **general standards** that concern many or all commodities, such as labeling and food grade salt;

(3) **maximum residue levels (MRLs)** for (a) pesticides and (b) veterinary drugs. In practice these MRLs are prescribed for particular commodities, but the process of arriving at MRLs is substantially different and thus these standards are codified separately.

These standards are elaborated and then submitted to the Codex member governments, which then must decide whether to "accept" them, and thus make them binding under national law. In addition, the Codex system includes provisions to elaborate various advisory texts, such as codes of practice, which guide the member states and the Codex system generally but are not submitted for formal acceptance. In some cases such texts concern extremely broad issues for which formal standards would be difficult to agree (e.g. food hygiene and contaminants), although some of those general provisions are also incorporated into particular commodity standards; in some cases, the texts reflect failed efforts to develop formal standards (e.g. the code of practice on process of frog legs).

The process for elaborating these standards and advisory texts is discussed below. Also discussed is the process of accepting the three types of standards. Finally, the organizational structure of the Codex system is presented. All of these issues have been discussed in extensive detail elsewhere, notably in the Procedural Manual of the Codex Alimentarius Commission.

The purpose here is only to present the main features. Particular attention is given to differences between the types of standards, the types of allowable acceptances, and the organizational arrangements used to elaborate the standards. Those differences allow for many quasi-controlled comparisons which are crucial to unraveling when, and under what conditions, the Codex system has influenced behavior, which is addressed in the next section.
Elaboration of Standards

As noted, when the Codex system was created the existing standard-setting activities that were models for the Codex system relied heavily on experts and industry delegates (often the same) to propose and develop standards. The Codex system is more extensive than its precursors and thus its procedures and committee structure are more elaborate. But the principle is the same: develop procedures through expert committees, subject them to extensive review and revision to ensure consensus, adopt them as Codex standards, and then wait for countries and firms to accept them.

The general procedure for elaborating a Codex consists of 8 steps, shown in figure 3.1. In essence, a standard is drafted and then subjected to two rounds of review and comments by member-governments, with revisions to the draft standard during each round. When comments diverge or conflict erupts, draft standards have been often sent back to earlier steps for more extensive review. Conflicts over the definition of "fruit cocktail" and "corned beef" led the Commission to hold adoption of those standards for more review; absent consensus in the definition of a product it is difficult to agree on a standard. The corned beef case, for example, turned on whether true "canned corned beef" was only the South American style, or whether other types of corned beef, notably those produced in Europe where cereal fillers and other additives were often used, would also be included. Similarly, a long-standing conflict over the allowable fraction of butter in margarine has sent the Proposed Draft Standard for Fat Spreads back to step 3 for more revisions and consultation. The battle is a replay of efforts in the 1970s by the milk industry to limit the content of butter in margarine and limit the use of cows and other milk-like symbols on margarine labels. The International Dairy Federation (IDF) failed in most of its efforts to protect butter markets by restricting the definition of margarine. This time, it has helped to ensure that its influence is higher by getting Codex to agree that the Milk and Milk Products Committee--where IDF is sine qua non--retains control over butter standards and also that the Committee on Fats and Oils elaborate the new fat spread standard only with the cooperation of the Milk and Milk Products Committee.

[figure 3.1 about here]

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19It has also been termed a 10-step procedure, where step 9 entails member-governments indicating whether they accept a proposed Codex standard and step 10 is a decision by the Codex Alimentarius Commission that sufficient acceptances have been received to publish the standard, and acceptances, in the Codex Alimentarius. That 10-step process required a high subjective process of determining how many acceptances were sufficient, which was hampered by the fact that few standards earned many acceptances.

20See David Leive, op. cit., pp. 396-397 for fruit cocktail and corned beef stories.

Elaboration of Food Safety Standards and Other Guidelines by the Codex Alimentarius Commission (CAC) and its Subsidiary Bodies

Major milestones (in boxes) and the 8 steps by which standards are proposed (steps 1, 2), proposed drafts are reviewed and revised (steps 3, 4), adopted (step 5), reviewed and revised again (steps 6, 7), and finally adopted as a Codex Standard. Following adoption at step 8, member governments are requested to indicate whether they will accept the new standard. The standards and acceptances are published, together, as the Codex Alimentarius. A similar process is followed for the elaboration of advisory texts, such as codes of practice, except that they are not open for formal acceptance. In cases where the need for a standard is urgent or only one round of review and comments by member-governments and stakeholders will be necessary, the Commission can choose to omit steps 4-6 and operate an accelerated procedure. The Commission can also amend an existing standard, typically sending it back to step 2. Progression through the steps is not necessarily linear; the Commission often returns a standard to a previous step, e.g., to allow more time for comments and revision.
Consensus means that progress is often slow and standards often become broad, vague and more complicated as they are reviewed and revised. The standard for canned fruit, for example, began with definitions that allowed 2 types of sugar syrup (heavy and light). Some countries noted that their syrups met neither definition; the standard was thus changed to allow 4 types of syrup. Often the desire for simple standards conflicts with the desire for specific standards, which in turn conflicts with the desire to define standards broadly so that all relevant products are included. Typically such conflicts in the Codex system are resolved by finding the standard that meets the widest array of industrial interests—the lowest common denominator. Even when interests are represented only in the final stages of elaborating a standard they can easily result in delay or return of the standard to an earlier step. Thus even developing country participants who may not attend meetings to elaborate standards can voice their views; at present, standards on alternatives to Ghee have been returned for revision because they do not address Indian concerns voiced in the final stages. For example, the portion of standards that concerns food contaminants often offers little more guidance than the product should have the correct appearance and be free from "objectional matter." Conflicts over numerical standards are often resolved by substituting qualitative standards. Often standards allow countries to choose among several options; thus standards are written such that producers can comply, though the mission of harmonization may only be marginally advanced. At most every juncture where the Codex system has faced a choice it has tried to avoid a decision that excludes an existing interest, especially if it is one of industrial exporters. The result has been a patchwork of standards and procedures that only now, in light of the incorporation of Codex into the WTO, is being repaired.

Standards which have gone through this process are then considered for adoption by the Codex Alimentarius Commission. Most are adopted without debate or controversy; in the few instances where consensus is not possible, a majority of the votes cast is needed for adoption.

The Acceptance Process

When the Codex Alimentarius Commission adopts a standard it merely reflects that the standard has been through an extensive review process and adopted by the Codex Alimentarius Commission. It is not binding under international law. When the standard is finally adopted by the Codex Alimentarius Commission (step 8) it is published in the Codex Alimentarius. Governments are requested to review those standards and to submit "notifications" of whether, and under what conditions, they accept those standards. Acceptance means that the country makes the standard binding within national law and that both imported and domestically produced goods will meet that standard.

From the outset it was obvious that if countries were requested to indicate only a binary choice—whether or not they fully accepted Codex standards—that acceptances would be few. Thus various schemes have allowed countries to make exceptions, which has substantially increased the rate of acceptance. Knowing that such variations are allowed, they have also affected the standard-setting process by making countries and industries less sensitive to many
details. Moreover, those schemes are a boon to researchers because they allow ready comparisons between the exceptions and national laws, making it easier to determine whether acceptance has led to changes in national law. The next section--on the influence of Codex--evaluates what can be learned from the types of acceptances used under different conditions. Here only the process of acceptance is reviewed.

Members are allowed three options when accepting Codex standards. First, they may indicate "Full Acceptance" by which they agree that all products--domestically produced and imported--that conform with the standard can be distributed in the country without barriers caused by food standards.

Second, countries may indicate an "Acceptance with Specific Deviations" in which it unilaterally declares which aspects of the Codex standard it does not accept and why, typically because of differences with national regulations. What types of deviations are allowable has been a subject of debate practically since the inception of the Codex system. Early renditions of this provision allowed for "minor deviations," although the criteria for minor were vague. In principle the Codex Alimentarius Commission could vote not to honor an "Acceptance with Specific Deviations" if the deviations were so substantial as to constitute non-acceptance. That has never happened. Deviations are allowed for general standards and for commodity standards because such standards are typically complex; failure to accept one (often minor) component would require governments to not accept the entire standard. In contrast, MRLs for pesticides and veterinary medicines are only a single number--governments either accept that number or not, and no "Acceptance with Specific Deviation" is allowed for such standards.

Third, countries may indicate that they do not accept a standard but that they will allow "Free Distribution" of products that meet that standard. This provision allows the main benefits of the Codex system--reduction of trade barriers caused by differences in standards--without requiring a country to change its national regulations and thus change the standards for domestically-produced goods. For example, a Codex standard that is more stringent than a national standard can earn "Free Distribution" for compliant product.

Countries that do not accept standards are requested to explain why. As the Codex system includes no mechanism for reviewing implementation and acceptance of standards--unlike, for example, the International Labour Organization--there is no incentive for governments

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In addition to the potentially wide scope of unilaterally-declared deviations, some commodity standards include options that countries can exercise to tailor to standard to local conditions and regulations; technically these are not "specific deviations" because they are built into the standard during the process of elaboration, with the awareness that countries will then employ them.
to explain why they don't accept standards; consequently, few do.\textsuperscript{23} Before the Codex procedures were revised in the late 1980s, countries that intended to adopt a Codex standard at some specific point in the future--after the time-consuming process of adjusting national standards was completed--would indicate "Target Acceptance" and thus explain why acceptance was not immediate. That process no longer exists because, despite the promise, many target acceptances were never converted to full acceptances.

**The Codex Committee Structure**

Like most organizations faced with a large number of specialized tasks, the Codex system has distributed its functions among many bodies. At the top sits the *Codex Alimentarius* Commission which meets every other year to make decisions, but the work is done by many others.\textsuperscript{24}

Many other studies have described the Codex Committees in great detail.\textsuperscript{25} Attention here is given only to the basic structure and to the features which are particularly important to explaining the influence of the Codex system. Figure 3.2 presents an organizational chart showing all committees that exist, or have existed, within the Codex system.

![figure 3.2 about here]

The organization of Codex work directly reflects the types of standards adopted. The primary aim of Codex has been to adopt standards that facilitate trade in particular commodities. Thus the largest group of Codex committees is focused on particular classes of commodities. Each is sponsored by a country with special expertise and interest in the work of that committee. Thus, for example, the Committee on Fish and Fishery Products is sponsored by Norway, the Committee on Milk and Milk Products is sponsored by New Zealand, and the Committee on Cocoa Products and Chocolate is sponsored by Switzerland. Some committee's face an expanding list of commodities and thus meet for many years. The Committee on Milk and Milk

\textsuperscript{23}On how the ILO system of reports and review leads countries to explain when and why they deviate from ILO standards, and the experience with mechanisms to address such deviations, see Romano, C.P.R., 1996, *The Effectiveness of the ILO System of Supervision*, ER-96-1, International Institute for Applied Systems Analysis.

\textsuperscript{24}In fact, the Commission is subservient to the supreme decision-making bodies of the FAO and of WHO and to the Director-General of each of those organization. In practice, the Commission itself makes the decisions.

\textsuperscript{25}For a particularly lengthy account see David M. Leive, *op. cit.*, 1976. See also the Procedural Manual of the Commission.
Products addresses issues that can be traced back to the FAO Milk Committee, which predates the Codex system. Others are created for specific tasks, after which they disband. The Swiss-sponsored Committee on Soups and Broths met only twice in the 1970s, after which it had completed all of its work.\textsuperscript{26}

In addition to commodity-specific committees the Codex system includes many "general committees" which elaborate standards that apply generally throughout the Codex system. Two of these committees work mainly by developing their own standards—the Committee on Pesticide Residues and the Committee on Residues of Veterinary Drugs. Those standards are elaborated through the standard codex elaboration procedure (below). In both cases, the standard consists of an acceptable daily intake (ADI) of the residue as well as the Maximum Residue Limit (MRL) for the substance. The ADI is expressed in the quantity of the substance, per kilogram of body weight, which is safe for humans to ingest. Estimates of consumption of different food products allows computation of the MRL for each food. Thus, for example, the Codex standard for the veterinary drug Benzylpenicillin contains one (higher) MRL for liver, kidney and muscle meat and another (more stringent) MRL for cow milk. Similarly, MRLs for the pesticide Cyhexatin (which featured in the PIC case study) are listed for 12 different commodities—some where consumption is low and thus MRLs are higher (e.g., apples) and others where lower MRLs are needed in order to meet the ADI (e.g., milk and milk products). By the middle 1990s MRLs had been adopted for 2387 combinations of pesticides and products and 21 combinations of veterinary drugs and products.\textsuperscript{27}

One area where the Codex system has clearly led to some standardization, at least internally, is in creating common usage of ADI and MRL. When Codex work on setting pesticide residues began, American and European regulatory systems set consumer "tolerances" for pesticide consumption in different ways. In the U.S., tolerances were set according to products that entered into commerce (i.e. at the farm gate or national border); European regulations applied to tolerances at the consumer's plate. In principle, consumer tolerances could

\textsuperscript{26}A listing of all committee meetings is in the Codex Alimentarius Commission, Procedural Manual. Virtually all active committees submit a separate report to each session of the Commission.

\textsuperscript{27}In an effort to ensure that these figures are comparable with statistics on acceptances presented later in this chapter, the figures do not include MRLs adopted after 1993 for which it would be unreasonable to expect that countries had time to consider and notify their acceptance. Pesticide MRL combinations are summarized in Codex Alimentarius Commission, Progress Report on Acceptances of Codex Standards and Codex Maximum Limits for Pesticide Residues, and Implementation of the Code of Ethics for International Trade in Food, ALINORM 93/5 (Agenda Item 5, 20th Session of the Commission, 28 June - 7 July 1993). Veterinary Drug MRL combinations computed from Codex Alimentarius: Residues of Veterinary Drugs in Foods, volume 3, 2nd edition (FAO/WHO, 1993).
more directly reflect human consumption; in practice, they were nearly impossible to enforce and inconsistent with trade regulations applied to products only at borders. After a brief period of attempting to sustain both methods, the Codex system adopted the trade (i.e., U.S.) system of tolerances in 1968. In 1972 the term "tolerance" was abandoned in favor of MRL, a concept which applied directly to the attribute of the commodity in trade and thus most consistent with Codex's mission of reducing barriers to trade. Codex work on residues of veterinary drugs, which began only in 1986, adopted the system of ADI and MRL already in use by Codex for pesticides. Absent such a standardized approach it is unlikely that Codex could be influential—indeed, although it will be shown that acceptances of MRLs is low, for many countries the Codex system nonetheless dispenses much useful information on hazards, safe intakes, and reasonable trade standards. Certainly countries have focused regulatory controls on trade rather than consumer tolerances, but that probably reflects the logic of the situation—trade can be regulated only with trade controls—rather than the Codex system. Moreover, the system has not resolved persistent differences in the administration of national regulations. In the administrative law system of the United States, failure to obey limits such as MRLs can lead directly to sanctions; in the continental European system civil servants have greater authority to negotiate with regulatory targets when they administer standards. Different styles of enforcement mean that practical harmonization would require changing the style of administration and/or adjusting standards to reflect differences in their practical effect. The Codex system has made some efforts to adopt common systems for analysis and sampling, but (as discussed below) those have largely failed. Such harmonization "behind the border" is difficult to achieve.

Other general committees set standards mainly by working with the Codex commodity committees. In part they do this by working on appropriate aspects of commodity standards—for example, in specifying allowable contaminants a commodity committee may consult with the General Committee on Food Additives and Contaminants. More important, however, is that the general committees elaborate general standards and advisory texts which are then employed within particular commodity standards. For example, the Codex general committee on Food Labeling has elaborated a standard on labeling of prepackaged foods which is, in turn, employed in Codex standards on particular commodities, such as the standards for processed and quick frozen fruits and vegetables. Every commodity standard typically refers to the General Principles of Food Hygiene, an advisory text elaborated by the Codex general committee on Food Hygiene. In some cases, Codex has not adopted a standard for a commodity, but a similar commodity-specific advisory code of hygienic practice has been recommended—for example, codes on the hygienic production of eggs and on the hygienic processing of frog legs. The Codex regional committee for Europe has elaborated a standard for mineral water (see below); worldwide, only a code of hygienic practice for processing mineral waters had been in place until 1997. In principle, the general committees working on issues that cut across the commodity-specific

committees constitute a single, integrated system--the Codex system. In practice, as in much of
the Codex work, it remains unclear whether the work of these general committees--by itself or
incorporated into commodity standards--has much influence on behavior.

The Codex system also allows two types of regional committees. One is for regional
coordination. Today such committees are justified by the need for regional outreach in order to
promote the influence of Codex standards and to increase participation in Codex work even when
government officials can't attend the worldwide Codex meetings. Many activities of specialized
UN agencies include regional committees for exactly such purposes. In the Codex system the
existence of regional committees reflect also the regional European origins of Codex. Until the
middle 1970s the only regional coordinating committee was in Europe, which was merely a
direct continuation of the Council of the Codex Alimentarius Europaeus. Now such regional
coordination committees exist for all 5 UN regions.

The Codex system also allows regional committees to elaborate standards for particular
commodities. Here the European dominance is also evident. The only such committee concerns
standards for mineral waters. Regional standards can be elaborated by the Codex General and
Commodity Committees. Again the dominance of Europe is evident; by the middle 1970s both
of the two regional standards were for Europe. One was the most controversial regional standard
adopted--for honey. Although European nations imported 80% of the world's traded honey and
most producers were located outside Europe, the standard was written to favor European-
produced honey could comply. 29 (Ironically, that regional standard is the only Codex standard
that Austria has accepted, although the origins of the Codex can be partially traced to Austria's
Dr. Frenzel, the patron of international food standards and president of the Codex Alimentarius
Europaeus.)

Although the discussion here has underscored the problems with gaining consensus in the
Codex system and has alluded to the dangers of protectionism, it is important to underscore that
rarely is industry unified in their views on standards and thus perhaps only rarely can worldwide
standards that are based on consensus be used to achieve protectionist goals. Indeed, the
emphasis of Codex on consensus--which causes many problems to the clarity of standards--may
be most responsible for what generally appears to be minimal protectionist use of Codex
standards. It is remarkable that there is not more use of regional standards given that (1) regional
industry interests are more likely to be unified and thus such standards can be more easily tuned
to the interests of that industry, and (2) Codex rules allow proposals for, and adoption of,
regional standards by a simple major vote of the members of the given region. Thus while one
must be suspicious of industry intentions in a forum where they dominate in setting the
standards, the anti-protectionist culture in the Codex system probably accounts for much less
protectionism than might be expected.

29 The debate, much of it focused on fierce US opposition to the Regional honey standard, is
presented in David Leive, op. cit., pp. 409-412.
In addition to regional standards, the Codex system can also elaborate regional advisory texts. For example, texts on hygiene for street-vended foods in Africa and in Latin America are currently under preparation by the Codex General Committee on Food Labeling.

*Participation by Industry, Experts and Public Interest Groups*

The process for elaborating standards is designed to allow extensive participation not only by member governments but also by other stakeholders. In practice, those other stakeholders have occasionally been other international organizations with expertise on a particular standard, but participation by non-state actors has been predominantly industry. Industry participation, as expected, has offered benefits and costs to regulation. The benefits are predominantly in the form of information. The conflicts over syrup strengths in fruit cocktail, the definition of corned beef, and other technical issues that arise in virtually every standard are predominantly the reflection of industry involvement. In one case—the role of IDF in milk standards—Codex rules of procedure give an industry association the formal right to propose and draft standards.

The risk of extensive industry participation is that standards will reflect industry interests, especially those of powerful firms and countries, and will not reflect other public objectives, such as protection of consumer health, environmental quality, and maintenance of free competition—in other words, regulatory capture. It is difficult to prove that industry tunes regulations to its advantage; however, that outcome is likely, especially in a regulatory system such as *Codex* where industry participation is extensive. Some illustrations suggest the range of behavior. As already noted, milk standards begin with proposals from the IDF, and thus the range of choices for milk-related standards is highly constrained by the interests of the milk industry. IDF membership and influence is determined by national production; large producers dominate the association's work. IDF does not dominate all aspects of milk standard-setting; for example, IDF has no consensus view on the use of bovine somatotropins (BST), a hormone that increases milk production, because its members have divergent views. In that case, IDF sits on the sidelines as BST standards slowly make their way through the 8-step process. In other cases, IDF views are unified and the organization acts to defend the industry's interests, as in the defense of butter standards and the sanctity of butter images against margarine.

The dominance of industry is also evident when industry, on its own, is setting standards and regulating behavior. For example, the Codex Alimentarius Commission has considered updated the Codex standard for olive oil. But it has deferred the matter until after the International Olive Oil Council meets to consider the same topic. Having set its own standards, the industry association can then ensure that the Codex standards are compatible or identical.30

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Some problems of regulatory capture can be offset by participation and influence of stakeholders that have other interests. In part, industry influence can be offset by participation of scientists and other experts. Many Codex delegations from industrialized and developing countries contain university professors with expertise in topics related to food standards. Many delegations also include authorities from national standards bureaus. Even more important is that in the areas where health and environmental interests are at greatest risk--namely food additives, contaminants, and drug and pesticide residues--the Codex system makes extensive use of several expert committees that offset the supply of information from industry with their independent reviews of scientific literature. The consequence is that standards in these areas are based heavily on science. The history of Codex is replete with examples of these committees erring on the side of caution. Many commodity standards have been held up while the safety of food additives and contaminants are considered. MRLs for pesticides and veterinary drugs have been delayed by expert advisory committees for more evidence; while the decision whether to propose a standard is not made by experts but rather by governments--in particular, the appropriate Codex committee and ultimately the Codex Alimentarius Commission--in practice there is no significant case where government bodies have overtly ignored the advice of the expert committees. When there is strong pressure or need for a standard, even in the absence of firm evidence of hazards, the typical approach is to adopt a provisional standard which is slated for early revision. Moreover, recourse to a provisional standard typically raises the need for review to a higher priority in the workload of the expert committees, leading to faster objective evaluation. This approach is especially evident in residues for veterinary drugs whose presence in meat products is growing but the risks are poorly understood. The weak base of scientific information in that field is illustrated by the fact that often the Codex standard is based on a single national study (typically one published by the U.S. Department of Agriculture--the U.S. has made the most extensive analysis of these food hazards and also chairs the Codex general subject committee on veterinary drug residues. In short, science can and does offset industrial interests.

The other hope for offsetting industry participation has been through participation by consumer groups. Codex is boasted to be the only international organization in the food field that "brings together government regulators, scientists, technical experts, consumers and industry representatives in both official and advisory capacities to help develop standards." In practice, consumer participation is highly limited. Among the few studies on this topic, Rosman noted that of 197 participants in the April 1991 meeting of the Codex Committee on Pesticide Residues (CCPR), which is the general committee that has responsibility for drafting and revising pesticide residue standards, only two participants were identified with consumer interest groups and 50

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were with agrichemical companies.\textsuperscript{32} That trend is consistent in other committees and persistent. At the 1995 meeting of the Codex Alimentarius Commission only 5 of 429 delegates were observers affiliated with consumer interest groups.\textsuperscript{33} 43 observers came from industry associations.\textsuperscript{34} More observers from the beekeepers and seaweed industry attended than from all consumer groups combined. The picture is even more stark when examining the composition of national delegations. A small handful of delegations from industrialized countries included one representative from a public interest group (3-4 total observers, depending on the definition used). No developing country included any delegates from public interest groups. In contrast, developing and industrialized countries alike included many industry representatives on their delegations. Nearly half the 27-member U.S. delegation was from industry; 1 was from a consumer group.\textsuperscript{35}

Interest in participation by public interest groups is not a new topic. At the national level the environmental and consumer movements of the 1960s aimed to destroy cozy relationships between government and industry by increasing the transparency of regulation and increasing many modes of participation by public interest groups. For two decades the entire U.N. system


\textsuperscript{33}4 from Consumers International and 1 from the International Diabetic Foundation. Research on interests by noting the affiliation of delegates is intended to be suggestive, but readers should be aware that it is imprecise. In some cases, the names of associations do not reveal their interests. Where possible, interviews have been used to identify the activities of the organizations. The problem is more severe if attempts are made to distinguish advocacy from research organizations as both consumer and, especially, industry organizations also have significant scientific activities. Thus that has not been done here.

\textsuperscript{34}The Codex system does not distinguish international organizations, intergovernmental organizations, and nongovernmental organizations. The only distinctions are between member countries (which have voting rights) and observers from non-member countries and international organizations (which do not have voting rights). This appears to reflect that in practice such observers participate extensively in the work of Codex. In contrast, in many environmental regimes distinctions are made among: member governments, non-member governments, bodies of the United Nations, international organizations, and two types of nongovernmental organizations (industry and environmental). The two types of NGOs are each offered a specific time to make statements. Floor rights are reserved for member and non-member governments, with others allowed to speak when time and the disposition of the chairman permits. That the Codex system remains a consensual club is reflected in the lack of distinction among types of observers and the low barriers to their participation.

\textsuperscript{35}Figures tabulated from data in the Report of the 21st Session of the Codex Alimentarius Commission (3-8 July 1995), ALINORM 95/37.
has focused on the need to increase participation of public interest groups. Since the late 1970s participation by such interest groups in many international fora has grown dramatically; many press for even greater expansion. The same pressures are now focused on Codex. Change will not be easy. While many focus on formal barriers to participation, such as access rules, in practice those are low in the Codex system (and also low and declining in many nations and international fora). A telephone call followed by an email is all that is needed to accredit an organization to be an observer at most Codex meetings. Rosman has lamented that consumer organizations do not have observer capacity at meetings of the Codex Executive Committee, but actually no organizations have such privilege—only Codex officials and representatives from FAO and WHO attend.36

Consumer organizations do not participate much in the Codex standard-setting process because they have little influence on the outcomes. Increasing their influence would require building up extensive expertise—to counter that of industry—which is expensive. To a smaller degree, the industry-dominated Codex system is hostile to participation of these outsiders who organize boycotts and other seemingly-irrational actions that affect profits. This pattern is changing, but slowly. Consumers now participate and voice their views in a few areas where consumer interest is high—generally in the area of pesticides, food additives and contaminants, standards for food safety inspection systems, and especially on the politically salient topics of bovine growth hormones and bovine somatotropins.

In short, the basic patterns of participation largely reflect costs and benefits calculated by participants themselves. Industry participates extensively because it has a direct stake in the outcomes and it has unique information that allows industry to have a strong influence on the standards. The style of Codex decision-making—which promotes consensus—has also enhanced the influence of industry because there is some assurance that industry views will be reflected in the final standards, especially when the differences are merely technical. In cases where technical specifications conflict, the Codex system typically tries to include all different views. In cases where conflicts may be protectionist—as in the case of bee honey or margarine/butter—all industry views can't be accommodated and the Codex system in principle leans towards its principles: harmonization and reduction of trade barriers. But both the bee honey and margarine/butter cases show that protectionist instincts do not then wither away. Whether that matters will be considered in the next section. Consumer groups also participate according to their basic interests. They focus on topics that are important for their constituency, and in general they do not participate extensively because they have low influence. Unlike PIC, there are no examples in the history of the Codex system where public interest groups have provided critical information or perspectives that led to additional regulation or changes in standards. However, that does not mean that such groups are irrelevant. Rather, their greater influence is at the domestic level in shaping the national regulations of major countries. As will be shown below, in practice the Codex standards, when they apply at all, heavily reflect national standards.

These patterns of participation by nonstate actors are reflected also in the participation by representatives from government agencies. It is difficult to use food regulators as a proxy for any particular interest group because they typically have close ties to both consumer and industry groups. But the pattern is stark when participation by agriculture ministries (which typically reflect the interests of agriculture producers) and environmental ministries (which reflect public interest concerns on some aspects of food production, notably pesticides). At the 1995 meeting of the Codex Alimentarius Commission, of 328 governmental delegates only 2 came from ministries or agencies charged with environmental protection—both were from Singapore, where food regulation is part of the Ministry of the Environment. In contrast, a typical delegation will include at least one, and sometimes 3 or 4, representatives from agriculture ministries. A similar pattern is evident in participation at meetings of the Codex Committee on Pesticide Residues—the Codex subsidiary body with responsibility for pesticide standards. Of 163 government delegates, 4 were from environment ministries or Agencies (Japan, The Netherlands and 2 from the U.S.). 1 representative from a public interest NGO attended; 33 representatives from GIFAP, the pesticide industry association showed up. (Many other industry representatives were also present on national delegations.) Counting numbers of delegates and inferring their interests and influence is imprecise. But these figures underscore that Codex is a forum that exists for the producer industry; changing its culture and patterns of practice will not be easy.

Influence of the Codex System

As should be clear by now, the complicated Codex system has undergone many changes, is subjected to many influences, and thus it is difficult to evaluate. Moreover, the Codex system includes no provision for evaluating implementation. Other than acceptances, which the Codex Alimentarius Commission devotes little attention to evaluating, the system devotes little attention to implementation issues. There is no procedure for defining or handling cases of inadequate implementation. Except for data on acceptances, which member-countries supply themselves and is not verified, there is no supply of information on whether and how Codex standards actually influence national regulations and trade, although that is the raison d'être of the Codex system. Thus evaluating the influence of Codex is difficult.

The approach taken here is first to outline the major pathways by which Codex could have influence on behavior. Then the analysis examines the evidence in several ways—first, systematic evidence from the acceptances of Codex Standards, and second, evidence from several episodes within the Codex history. A short discussion and table at the end of this section summarize the extent to which evidence suggests particular modes of influence have been valuable.

\footnote{In addition, approximately 10 came from public health ministries.}
How Codex Could be Influential

The Codex system could have influence on behavior in six ways. These form propositions which, where possible, will be tested with evidence. They are drawn from an analysis of the stated purpose of the Codex Alimentarius, various claims made by enthusiasts and analysts of the Codex system, and theory concerning the ways that international institutions affect national behavior:

- Forum for negotiating common standards. When standards are complicated and many parties are involved—which is typical of multilateral industrial regulation, the topic of this thesis—some forum is typically needed to reduce the transaction costs of considering alternatives and negotiating common standards. If that forum has some official status, if consensus is high, and if alternatives do not exist, governments may be particularly likely to accept its products as universal standards. The Codex system meets all of these conditions and thus is likely to yield a high output of standards that are widely recognized by governments which, in turn, will be translated into national legislation. However, this hypothesis is broad and imprecise, and thus the following hypotheses examine particular modes of influence in more detail.

- Need for common standards leads to their adoption. The Codex system is built on the premise that common standards are needed and, therefore, once they are negotiated they will be adopted. This approach assumes that the incentives to defect from standards will be small and that parties will recognize the benefits of a coordinated and unified set of standards. This proposition suggests that the legal form of the standards matters less than their sheer existence.

- Handling problems of poor implementation. Many international institutions include devices for addressing poor implementation, whether caused involuntarily or willfully. If the Codex system includes such devices, when they operate they should lead to greater influence of codex standards on behavior.

- Empowering Actors. The existence and operation of an international institution may disproportionately empower some actors. In particular, the Codex system may empower:
  - actors that favor harmonization, such as major exporting firms and countries, thus leading to more harmonization of standards;
  - experts who influence the content of standards according to scientific criteria, such as whether evidence exists to support a particular standard for pesticide residues;

Empowerment is a relative concept, and thus it is important to evaluate not only which actors have a stronger hand as a consequence of the operation of the Codex system but also which are weaker.

- Diffusion of Information. Finally, institutions might be effective if they help to diffuse useful information, especially to those who lack such information. The generally low rate of acceptances has not led many observers to declare Codex a failure but rather to claim that even when Codex standards are not accepted that
they still have an influence—they help to signal appropriate standards, coordinate behavior, and stabilize trade. Though difficult to assess, modes of influence are plausible. Similarly, when standards are accepted they provide not only criteria for international trade but also domestic food safety, and thus Codex standards may be particularly important in countries with low capacity.

Participatory process leads to better information and "buy-in" and thus more effective standards. The Codex system reflects the principle that a highly participatory standard-setting process will lead to standards that have two attributes, both of which will plausibly lead to more effective standards: (1) when participation is high, standards are more likely to reflect the wide range of local and technical conditions which will affect whether standards are accepted and whether they are influential; and, (2) participants will "buy-in" to the standards that they produce.

These propositions cover a wide range of modes by which the Codex system could be influential. Below some evidence is presented; first evidence from the rate and patterns of acceptances is analyzed; then, because data on acceptances may not illustrate the full influence of and modes by which Codex influences behavior, analysis focuses in more depth on the episodes and on the role of expert advice.

Acceptances

The starting point for evaluating Codex must be acceptances. The stated purpose of the Codex system is to reduce--ideally eliminate--barriers to trade caused by national differences in food safety standards. The stated means of achieving that goal is to adopt standards which are then accepted by Codex member-governments. Thus acceptances are, in principle, crucial to the success of the Codex system. Analysis of those acceptances leads to three conclusions.

Low Rate of Acceptances

First, the number of acceptances is strikingly low. Studies in the middle 1970s noted that acceptances of Codex standards was low, but that disappointing trend was excused by the fact that the Codex system did not adopt many standards until the early 1970s. As Kay noted, it took Codex Alimentarius Commission 12 years—from 1962 to 1974—to adopt the first 140 standards. While that excuse was plausible two decades ago, today there are fewer excuses for low acceptances. Adoption of Codex standards has continued unabated, but acceptances have remain low.

The low rate of acceptances is evident in all forms of Codex standards. Table 3.1 shows acceptance rates for all commodity and general standards—that is, standards which allow member countries to distinguish between full acceptance and acceptance with special deviations. The
overall acceptance rate is merely 11%. Virtually no OECD has given a full acceptance of a Codex commodity or general standard—the few full OECD acceptances are all from Portugal. By far, most acceptances of all types are from developing countries.

[table 3.1 about here]

The low rate of acceptances is particularly striking given that the provisions to allow "Acceptance with Specified Deviations" and "Free Distribution" make it easy even for countries whose national regulations differ significantly from Codex standards to accept those standards. Moreover, the consultation-oriented process of setting Codex standards systematically broadens (and often weakens) standards precisely to increase their acceptability. Yet in practice that cost has not led to many acceptances.

The same pattern is evident for acceptances of MRL standards—which do not allow countries to accept with specific deviations. The data are incomplete because only 10% of Codex members have bothered to indicate which, if any, MRLs they accept (table 2). In 1976, Kay noted that half the proposed Codex MRLs would require some changes in U.S. domestic regulations to allow acceptance. Today the fractions are comparable.38 Consequently, it is hardly surprising that U.S. acceptance of standards has been low. The U.S. has given full acceptance to 240 (10%) of the 2387 MRLs recommended by Codex, allowed free distribution for 222 (10%), and explicitly declared that it will not accept 1290 (54%) of the recommended MRLs. (See table 3.2.)

(The acceptance rates for MRLs are not directly comparable with those for commodity and general standards. MRLs are extremely simple—they consist of one number—and thus a country faces only a binary choice. In contrast, commodity and general standards are often highly complex and thus there are many dimensions on which they can vary with national standards. Significant differences on any of those dimensions may result in non-acceptance. Thus, as expected, for those countries that have indicated acceptances of MRLs the acceptance rate is systematically higher than for commodity and general standards.)

[table 3.2 about here]

There is some suggestive evidence that the rate of acceptances has slowed markedly since approximately 1990. The author speculates that this reflects much greater scrutiny being given to standards as they now can be used to initiate disputes under the SPS agreement in the World Trade Organization. The benefit of accepting a Codex standard has not changed, but the risk that

<table>
<thead>
<tr>
<th>Type of Acceptance</th>
<th>Developing Countries (114 in 1993)</th>
<th>OECD Countries (24 in 1993)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full Acceptance</td>
<td>1,215</td>
<td>10</td>
<td>1,225</td>
</tr>
<tr>
<td></td>
<td>(44%)</td>
<td>(0.3%)</td>
<td>(5%)</td>
</tr>
<tr>
<td>Acceptance with Specific Deviations</td>
<td>228</td>
<td>252</td>
<td>480</td>
</tr>
<tr>
<td></td>
<td>(8%)</td>
<td>(9%)</td>
<td>(2%)</td>
</tr>
<tr>
<td>Free Distribution</td>
<td>732</td>
<td>207</td>
<td>939</td>
</tr>
<tr>
<td></td>
<td>(27%)</td>
<td>(8%)</td>
<td>(34%)</td>
</tr>
<tr>
<td>Total Number of Acceptances</td>
<td>2,175</td>
<td>559</td>
<td>2,734</td>
</tr>
<tr>
<td></td>
<td>(80%)</td>
<td>(20%)</td>
<td>(100%)</td>
</tr>
<tr>
<td>Total Possible Acceptances</td>
<td>18,682</td>
<td>3,912</td>
<td>25,594</td>
</tr>
<tr>
<td>Acceptance Rate</td>
<td>12%</td>
<td>14%</td>
<td>11%</td>
</tr>
</tbody>
</table>

Source: Compiled from 1989 Acceptances, volume 14 of the Codex Alimentarius and updates.
Table 3.2
Acceptances of Codex MRLs for pesticide residues
(source: "Progress Report on Acceptances of Codex Standards and Codex
Maximum Limits for Pesticide Residues, and Implementation of the Code of Ethics
for International Trade in Food," ALINOM 93/5, CAC 21st Session, July 1995)

<table>
<thead>
<tr>
<th>Country</th>
<th>Full Acceptance</th>
<th>Free Distribution</th>
<th>No Acceptance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Argentina</td>
<td>14</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Bulgaria</td>
<td>887</td>
<td>72</td>
<td>0</td>
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<tr>
<td>Cuba</td>
<td>56</td>
<td>91</td>
<td>6</td>
</tr>
<tr>
<td>Egypt</td>
<td>1</td>
<td>1815</td>
<td>141</td>
</tr>
<tr>
<td>Israel</td>
<td>394</td>
<td>771</td>
<td>822</td>
</tr>
<tr>
<td>India</td>
<td>490</td>
<td>0</td>
<td>1805</td>
</tr>
<tr>
<td>Mexico</td>
<td>10</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Malaysia</td>
<td>681</td>
<td>349</td>
<td>1018</td>
</tr>
<tr>
<td>Mozambique</td>
<td>1140</td>
<td>71</td>
<td>254</td>
</tr>
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<td>444</td>
<td>1944</td>
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</tr>
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<td>0</td>
</tr>
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<td>Singapore</td>
<td>1208</td>
<td>1121</td>
<td>53</td>
</tr>
<tr>
<td>Thailand</td>
<td>4</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>United States</td>
<td>240</td>
<td>222</td>
<td>1290</td>
</tr>
</tbody>
</table>
accepting a standard will constrain a country's freedom of action has risen.39

**Codex Standards Fill an Information Gap**

Second, although acceptances are in general quite low, acceptances by developing countries are notably high. Developing countries accounted for nearly every acceptance lodged through the late 1970s and have continued to grow during the 1980s.

Not only have developing countries been active acceptors of Codex standards, they also account for nearly all _full_ acceptances of Codex standards (see table 1). This pattern reflects that many developing countries had few existing food safety regulations and thus it was relatively easy for them to accept Codex standards fully. While it remains unclear whether developing countries--or indeed countries of any type--actually ensure compliance with Codex standards, it does appear that the Codex system represents perhaps the largest scale transfers of useful regulatory information from North to South. Codex is influential because nothing exists in conflict--Codex standards fill a gap. In other words, Codex standards are adopted--often in full without deviations--because the regulatory systems in developing countries are a "clean slate." Indeed, the informational value of Codex standards has been recognized by the World Bank, which applies Codex standards as "best practice" in its pesticide-related projects.40

In contrast, industrialized countries almost always lodge only acceptances that include specific deviations or a notification of free distribution. In cases where there is a significant deviation, industrialized countries simply do not accept the Codex standard. For example, U.S. standards for milk chocolate require a minimum of 3.66% milk fat; the Codex standard calls for 3.5%. Because of this and many other differences, the U.S. has not accepted the Codex chocolate standard.41

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39The only exception to this general rule is where a WTO dispute is anticipated and a country may want to accept the standard to underscore that such standard is the appropriate world standard. So far, only one such case is imminent—that of bovine growth hormones—and the standards were adopted only in 1995 and thus it is too early to see if, as expected, countries that benefit from the dispute (i.e. from removal of the ban on BGH) are accepting the standard at a high rate.


The markedly low rate of acceptance does not mean that Codex standards necessarily have no influence on industrialized countries. Indeed, there is anecdotal evidence that developing countries are not the only countries that benefit from the information on hazards made available by the Codex system. For example, U.S. standards for the fungicide procymidone in wine reflect mainly the Codex standard because no U.S. standard existed when, in 1990, procymidone residues were detected in French and Italian wines imported into the United States. The petition from the fungicide manufacturer suggested that absent another standard, the Codex standard be used. Although that situation may be comparatively rare in the United States, where regulatory capacity is high, the U.S. has no standard for 30% of the pesticides for which Codex has adopted MRLs. To different degrees, all countries can derive clean slate benefits from Codex.

More difficult to evaluate from the data on acceptances is which types of information are most useful. If, as is likely, developing countries fully accept Codex standards without close and systematic evaluation of their content nor without the intention to apply those standards fully, then one learns little about which aspects of the standards are most useful. There is some indication from the Codex system itself that perhaps the most useful forms of information have been the simplest--highly quantified data that is easily adapted to local conditions. Reports from the two Joint expert groups (IMPR and JEFCA), and the standards of the corresponding Codex committees, offer highly useful information in compact form in the allowable daily intakes and MRLs. In principle, it might be useful for these countries to be able to import Codex standards on topics such as sampling, testing, labeling, assessing, and advertising food products. But in practice such standards have proved quite difficult to adopt--only two standards on labeling have been adopted by Codex (one of those has been accepted by only two countries), the provisions for labeling and sampling which are part of most Codex standards are even more vague. The Codex Alimentarius devotes an entire volume (#13) to methods for analysis and sampling--in principle, such methods are crucial to the operation of the Codex system because the acceptance of a Codex standard obliges a country to ensure that such standards are enforced. Yet in practice it seems that the Codex methods have had little influence. At present those methods are provisional and, by necessity, highly complex.

Thus the evidence suggests that Codex information which has diffused most readily and usefully has been that which is simple, quantified, and has filled a particularly important niche--in short, the core aspects of the Codex standards. Indeed, Codex began work in that area--the Committee on Pesticide Residues, for example, has focused on adopting ADIs and MRLs and, until recently, has given much less attention to other aspects of the use and distribution of pesticides. It is a fortuitous coincidence that the Codex standards became available just at the time when many developing countries were becoming aware of the need to adopt regulatory standards. To some degree this has contributed to the Codex mission--to reduce barriers to trade-

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- but the greatest benefits have probably been in improving domestic regulation of food hazards within developing countries.

(The patterns of acceptances also show that there are substantial national differences in the extent to which Codex obligations are taken seriously. The author believes that they mainly reflect differences in national administration and, in some cases, factors such as whether special committees exist to evaluate Codex standards and submit notifications. Such factors are difficult to model and are not important to the main analysis here. Some countries such as Argentina, Canada, Cuba, Singapore, Switzerland and the United States have been relatively diligent in submitting notifications, even when they are simply notifying that are not accepting a Codex Standard. Some such have had periods of submitting many acceptances, surrounded by dormancy (e.g. Bahrain in the early 1970s and Bulgaria recently).)

Little "Buy-in" is Evident

Third, the rates of acceptances allows some investigation of whether Codex standards lead to "buy-in". Although the concept of "buy-in" is wooly and imprecise, it nonetheless is at the core of much of what international institutions do. Devices such as national sponsorship of committees are built, in part, on the idea that national sponsors will develop a stake in their products, helping to ensure their effectiveness. Extensive participation may be beneficial, even if it leads to some regulatory capture.

The most likely cases for buy-in should be acceptances by countries that chair particular standard-setting committees—countries that chair committees should systematically have higher rates of acceptances. That expectation is not evident in the data. Norway has accepted none of the standards for Fish and Fishery Products, although Norway chairs the Committee that elaborates such standards and Norway is a major exporter of fish products. The United Kingdom chaired the Codex Sugars Committee, but it accepted only half the sugar standards. Other countries—including Argentina, Bahrain, Canada and Switzerland—accepted as many or more sugar standards as the U.K. In other Committees, the argument for "buy-in" may be stronger. Switzerland has accepted all Codex standards for Cocoa Products and Chocolate, which are elaborated by a Swiss-chaired committee. The only other countries that have accepted as many standards as the Swiss are some developing countries (e.g., Argentina and Cuba), which have accepted nearly all Cocoa and Chocolate standards; their behavior can be explained by the clean-slate hypothesis.

While some buy-in is evident in the acceptance rates, on closer look, however, there is little evidence that sponsoring countries are much affected by the standards that they help set. All U.K. acceptances of sugar standards and all Swiss acceptances of cocoa and chocolate standards are not full acceptances but rather acceptances with specific deviations—both countries have unilaterally exempted those parts of the Codex standards which do not conform with domestic law. The high rate of Swiss acceptances reflects attributes of the Swiss and not
necessarily evidence of "buy-in". No other industrialized country accepted as many standards--the high Swiss acceptance rate reflects, in part, that the Swiss are diligent about incorporating international standards, not necessarily that their participation in the Codex system leads them to "buy-in" to the process.

In-depth analysis: Codex Standards that are Reviewed by Experts

The patterns of acceptances reveal much about where and how the Codex system has been influential, but they also leave many gaps. In particular, the acceptances data are unable to reveal whether the Codex system has empowered certain groups, notably experts, which has affected the quality of standards that are adopted. Moreover, the acceptances data reveal nothing about how the Codex system has been altered through incorporation into the WTO. The first of those unanswered questions is considered here. The second is addressed in the next section.

As expected, there is considerable evidence that the Codex system has empowered experts. Many national delegations include food safety experts; the Codex rules of procedure require that governmental representatives on general committees and commodity committees--which, together, do most of the work in elaborating Codex standards--be experts in the relevant field. Nearly all the work of Codex requires participation by delegates who have some expertise in the field. Together, these factors give experts the upper hand. But there are many types of experts, and the more important question is what type of expertise is empowered. Indeed, Codex was created because one type of expert information--often highly technical food safety standards--can be used as a barrier to trade. Indeed, when standards are highly technical and expertise mainly resides in the industries that benefit from protection, there are many risks that regulatory capture will result.

Indeed, industry has had a large influence on Codex standards. Perhaps industry influence on trade standards has been increased by the existence of Codex. Without Codex, industry would need to focus exclusively on national processes of setting food safety and trade regulations, where public interest groups clearly have greater influence. To date, Codex has conferred little additional influence to consumer groups.

However, in a few areas the Codex system has unambiguously increased the influence of independent scientists on the standard-setting process, which has probably offset the dangers of regulatory capture by industry. This is evident where Codex standards committees have explicitly sought expert advice and have done so by turning to independent expert committees. Doing so has kept the function of expert advice separate from the more political process of negotiating and adjusting draft standards. Such separation is evident in three areas: (1) the setting of maximum residue limits (MRLs) for pesticides, (2) setting MRLs for veterinary drugs, and (3) those aspects of commodity standards related to food additives and contaminants. In these areas, the relevant Codex Committee has deferred technical advisory questions to a corresponding expert committee--for food additives and residues of veterinary drugs, the Joint FAO/WHO Expert Committee on Food Additives (JECFA), and for pesticide residues the Joint
FAO/WHO Meeting on Pesticide Residues (JMPR).

The expert committees consist of independent experts chosen for their qualifications and expected to represent their views rather than those of their organization or government. They do not conduct additional scientific research but rather evaluate existing evidence. Of particular importance, they make recommendations for acceptable daily intake (ADI) of the residue or contaminant in question, and the maximum residue limit (MRL) for pesticides and veterinary drugs. Making such recommendations is not a robotic process—it requires judgements, decisions for safety margins, and evaluation of conflicting or incomplete evidence. But standards have evolved for that process, and in general the questions asked of these committees—in particular, recommendations for ADIs and MRLs—are technical questions that can be answered by applying scientific methods of review and evaluation of evidence.

Other, more political functions are separated from JMPR and JEFCA. The standards elaborated in the Codex system are not mere reproductions of JMPR and JEFCA recommendations. Rather, the standards are adjusted to reflect current practices, economic necessities, and other factors that are difficult to quantify and assess scientifically. Such issues are addressed by the Codex general committees, where government representatives rather than individual experts hold power. Those government-controlled committees also largely set the priorities for JMPR and JEFCA which also could be a politicized process since it requires determination of which standards and commodities are more important. Ultimately standards are adopted by the Codex Alimentarius Commission, which also is composed of government representatives. The Commission even occasionally votes on standards, and the majority prevails. In contrast, the Codex independent expert committees do not vote. In highly controversial cases the Codex Alimentarius Commission can adopt a standard; in contrast, when scientific evidence is controversial, JEFCA and JMPR typically do not make a recommendation or make only a provisional recommendation.

In-depth analysis: The BGH Episode

The incorporation of the Codex into the WTO is one of the clearest cases where an existing regulatory system has been vested, almost overnight, with new institutional capacity and powers. Thus the episode may reveal how those powers—notably, the capacity to respond to instances of implementation failure—influence the effectiveness of multilateral industrial regulation. So far, those powers have been exercised in one instance: the important case of bovine growth hormones (BGH), which concerns Codex standards for five veterinary drugs in meat.

On the surface, the new powers have influenced the Codex system as expected. Before the incorporation into the WTO the U.S. and its allies were powerless to respond to the EU ban on BGH-produced beef—a case that has been simmering in trade politics since the early 1980s. After incorporation, the US successfully pursued a case, which will probably result in either a lifting of the ban or compensation for the trade damages by the EU.
Beyond the simple conclusion, several attributes of the case are worth careful attention. First, this is an example of willful violation of international standards. The EU has known that the BGH standards had little basis in science; as scientific assessments improved, even the thin basis for the EU ban disappeared. Even the EU-sponsored assessment of BGH science confirmed that BGH was safe.\footnote{Maddox, J., 1995, "Contention Over Growth Promoters," \textit{Nature}, 378, 553.} The ban was kept because it helped ameliorate problems of excess beef production (which would be exacerbated by BGH, which makes cow production even more efficient) and because consumer groups vocally opposed this and other food "contaminants." (The same forces explain EU reluctance to allow imports of genetically modified foods, which is a topic that is now on the Codex agenda although there are not yet any Codex standards for such foods.) No amount of legal clarification, capacity-building, or reasonable flexibility in the standard would have altered the EU position. The "management" approach to this problem of noncompliance would not work.

Second, while this appears to be a successful example of regulatory standard-setting by Codex, in fact the Codex system had little to do with setting the standard, other than physically existing as a forum. The science was easily reviewed and yielded a clear answer, unlike many other food contaminant issues where risks are uncertain and a reasonable case can be made in favor of a wide range of standards. Codex scientists merely reviewed and assessed science which all the stakeholders already knew. Moreover, the Codex adopted MRLs for bovine growth hormones only after a vote--not by consensus--which was won mainly because of U.S. coalition-building and pressure. The case illustrates that international institutions that provide functions such as information exchange and lowering transaction costs may be superfluous in those few cases of cooperation that attract high-level political attention. In those cases, stakeholders at the national level will provide most of the functions that international institutions supply, and many will do better.

Thus the BGH case shows that enforcement powers can change behavior, as expected. But it does not offer much guidance for other cases. Indeed, the relevance of the BGH model has been tested in another very similar case: standards for bovine somatotropins (BST), which are used to increase milk production. The science is similarly clear; yet Codex has twice held similar votes on BST standards (in 1995 and 1997), and both times it has failed to adopt BST standards. The industrial coalitions in favor of BST use are not as strong in the case of BGH--dairy products are not as actively traded as meat, and thus the interests of exporters in securing BST standards are not as strong.\footnote{One exception is cheese, but the BST prohibition is in place in Europe which is a major cheese exporter. In contrast, major beef exporters were located in countries that allowed BGH, such as Argentina, Australia and the United States; all of those countries supported the BGH standard strongly.} The International Dairy Federation (IDF), the dairy industry association, might have played a role in building a coalition for BST standards; but it is internally divided on
the matter as IDF members come from both Europe and from regions where BST is allowed.\footnote{Interviews.}

Conclusions

What does this case imply for the three questions addressed in this thesis--the influence of legal status, the role of implementation review, and the influence of different mechanisms for responding to implementation failure?

Regarding the first question, regardless of their legal form, Codex standards appear to have had little influence on behavior. Countries have lodged acceptances, thus making Codex standards binding, mainly when the standards have entailed little or no change in behavior. Where provisions have existed to deviate from standards they have been used to opt-out of those parts of standards that would require behavioral change. Countries have not accepted standards that require significant changes in behavior, and thus those standards remain nonbinding and probably irrelevant. Until it was incorporated into the WTO, the Codex system did not include any incentive structure to induce countries to adopt standards. There was no penalty for failing to accept a standard. Moreover, there were few benefits that flow from accepting a standard. Acceptance of Codex standards does not confer access to export markets; it merely limits the ability to restrict imports and, in the case of full acceptance, can require complicated changes to existing regulations. Thus it is not surprising that there are virtually no full acceptances of commodity and general standards by countries that already have extensive national regulatory systems.

The ambition of the Codex system was to tackle mixed-motive problems, but in practice it seems to have influence only in cases where there has been no strategic interaction and no incentive not to adopt standards. The influence of Codex standards appears to be especially low in the industrialized countries, whose regulatory differences originally motivated creation of the Codex system. Codex standards have been accepted when they require no change in national standards, which is especially evident in the extensive use by industrialized countries of the "special deviations" allowed when accepting commodity and general standards. In contrast, the use of "full acceptance" is relatively high in developing countries, which in part reflects that standards are never implemented in practice and in part that Codex standards provide useful information for regulatory systems that do not already have standards. So far, no study has assessed whether adding to a "clean slate" has, in practice, led to better food safety management in developing countries; probably it has.

Regarding the second question, the Codex system offers no insight. No effort has been made in the pre-WTO history of the Codex to engage in implementation review. The author
speculates that fact probably helps to explain why the Codex system has been largely ineffective. Codex activities were focused on adopting and revising standards, not their practical effects. Attention by the Codex institutions to implementation has not increased since incorporation into the WTO, but the WTO's mechanisms for implementation review—notably the Trade Policy Review Mechanism—might fill some of the gap.

Regarding the third question, the BGH case clearly shows that the availability of responses to noncompliance has influenced the behavior of the regulatory targets. In that case, management efforts were attempted under the mandatory consultations that precede a WTO case; but the EU's ban is an example of a willful violation, and it has been addressed only with tougher, enforcement measures. That case also symbolizes that after three decades of obscurity, Codex may now be relevant. The consequence has been increased seriousness inside the Codex system where procedures have been revamped and efforts are being made to increase the utility of standards. That has produced a crisis for Codex because it must now behave in a manner similar to domestic standard-setting bodies. It is under pressure to be transparent, participatory, and objective; the legal status of the wide array of Codex texts is now under scrutiny. In addition, there is a noticeable conservatism in the adoption of Codex standards—diplomats are making special efforts to ensure that standards are written carefully and narrowly so that unintended noncompliance does not result.

While much of the Codex history is one of failure, some bright points should be highlighted. One is the use of expert committees, which appear to have kept their objectivity despite political pressures. In the Codex system, it has proved possible to separate technical/scientific issues from the more political tasks of weighing costs and benefits. Another point of surprising success, perhaps not by design, is that the global consensus-oriented system appears to have severely decreased the risks of regulatory capture. Industry interests are rarely unified behind a global standard that could serve protectionist goals. The Codex system allows for regional standards than can, and have been, protectionist. But remarkably few such standards have been adopted, although the origins of the Codex as a regional standard body and its rules of procedure which are permissive of regional standards. A sober observer in 1962 would have predicted that the Codex system would adopt many regional standards that would have added to global protectionism; that has not happened, and the world trading system has benefitted as a result.
The Operation and Effectiveness of the Montreal Protocol's Non-Compliance Procedure

Chapter 4
I. Introduction

Many international environmental agreements have developed systems for implementation review (SIRs): procedures for gathering data, reviewing implementation, handling cases of noncompliance, and adjusting commitments. Nearly all agreements have at least a rudimentary SIR; none has an extensive system for implementation review, and the extent to which SIRs have contributed to making agreements effective has varied. Often even basic functions, such as data reporting, are performed poorly. In general, the least developed function of SIRs is the most controversial: handling of specific instances of noncompliance.

This chapter concerns the system for implementation in the international regime to protect the stratospheric ozone layer and its relationship to the regime's main legal instrument, the Montreal Protocol on Substances that Deplete the Ozone Layer. The analysis focuses on the main institution within the Protocol that is formally charged with reviewing implementation and

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1This chapter is excerpted from a longer version: Victor, D.G., 1996a, The Early Operation and Effectiveness of the Montreal Protocol's Non-Compliance Procedure, ER-96-2, International Institute for Applied Systems Analysis, Laxenburg, Austria. A version is forthcoming in: Victor, D.G., 1997, "The Operation and Effectiveness of the Montreal Protocol's Non-Compliance Procedure," in: The Implementation and Effectiveness of International Environmental Commitments: Theory and Practice, edited by D.G. Victor, K. Raustiala, E.B. Skolnikoff, Cambridge, MIT Press. The author thanks Gilbert Bankobeza, Hugo M. Schally, and Patrick Szell for interviews and comments on that manuscript. Thanks also go to Abram Chayes, Winfried Lang, Cesare Romano, Peter Sand, Jacob Werksman, and two anonymous reviewers for many helpful discussions and comments, and to Ellen Bergschneider, and Cara Morris, and Lilo Roggenland for their help in the preparation of the manuscript. The Ozone Secretariat (Nairobi) was extremely helpful and provided many documents. The author thanks Kal Raustiala for editorial support in producing this shorter version. Another excerpt, with additional analysis applied to possible designs of noncompliance procedures in other legal regimes (notably the Framework Convention on Climate Change), is published as part of the proceedings of a workshop held in conjunction with the Seventh Meeting of the parties to the Montreal Protocol on Substances That Deplete the Ozone Layer, 4 December 1995, in Vienna, Austria. See Victor, D.G., 1996b, "The Montreal Protocol's Non-Compliance Procedure: Lessons for Making Other International Environmental Regimes More Effective, in The Ozone Treaties and Their Influence on the Building of Environmental Regimes, edited by W. Lang, Austrian Foreign Policy Documentation, Austrian Ministry of Foreign Affairs, Vienna, Austria.


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responding to implementation problems, the Non-Compliance Procedure (NCP). The NCP is one of the few formal mechanisms in international environmental law for identifying and handling problems of noncompliance. It consists of two interlocking components. The "regular" component is managed by a standing committee, the Montreal Protocol Implementation Committee (IC). The IC reviews specific cases of noncompliance, debates general matters related to implementation of and compliance with the Protocol, makes recommendations to other bodies, and issues a publicly available report after every Meeting. The Committee also operates a second, "ad hoc" component that allows parties to the Montreal Protocol to file "submissions" about alleged noncompliance by other parties or about problems with their own compliance.

Although SIRs often consist of many institutions that are not formally dedicated to implementation review, where formal dedicated procedures do exist they can play a special role of focusing the wide array of implementation review activities. Because the NCP is one of the few examples of this type of formal procedure in operation, close analysis of the specific ways that it has contributed to the effectiveness of the Montreal Protocol is especially important. Indeed, although only in operation since 1990, the Procedure is already the leading model for similar procedures in other multilateral environmental agreements. Yet the literature on the NCP is limited; this study is the only analysis of how all aspects of the NCP's operation have

3In addition to the Montreal Protocol's Non-Compliance Procedure, Sand's comprehensive review of international environmental agreements mentions two other systems with similar functions: the infractions system under the Convention on International Trade in Endangered Species (CITES) and the European Union's enforcement of the Single European Act. Each procedure is substantially different from the Non-Compliance Procedure. See P.H. Sand, 1992, ed., The Effectiveness of International Environmental Agreements, Grotius Publishers, Cambridge, UK. The 1994 (Second) Sulphur Protocol of the Convention on Long-Range Transboundary Air Pollution also includes a non-compliance procedure, modelled on the Montreal Protocol's procedure and designed by many of the same people (notably Patrick Széll), who chaired the design groups in both the Montreal Protocol and the 1994 Sulphur Protocol; however, the Second sulphur protocol is not in force and its procedure has not yet been used.

4One study documents the origins and design of the Procedure. See Széll, P., 1995, "The Development of Multilateral Mechanisms for Monitoring Compliance," in Sustainable Development and International Law, edited by W. Lang, Graham and Trotman, London, UK. See also Széll, P., 1996, "Implementation Control: Non-Compliance Procedure and Dispute Settlement in the Ozone Regime," in The Ozone Treaties and Their Influence on the Building of Environmental Regimes, edited by W. Lang, Austrian Foreign Policy Documentation, Austrian Ministry of Foreign Affairs, Vienna, Austria. Other studies discuss aspects of the early experience under the Procedure as well as legal issues. For reflection on the early experience under the Non-Compliance Procedure by the president of the Implementation Committee, see Schally, H.M., 1996, "The Role and Importance of Implementation Monitoring and Non-Compliance Procedures in International Environmental Regimes," in The Ozone Treaties and Their Influence on the Building of Environmental Regimes,
contributed to the effectiveness of the Montreal Protocol.

The study assesses whether and how the NCP has influenced the behavior of parties that are not complying with the Protocol—whether it has been effective. It finds that the Procedure alone has been influential mainly when it has handled instances where parties have found it relatively easy to comply. In more difficult cases—such as the persistent failure of some countries to report data and of Russia to comply with the Protocol's regulatory commitments—the Procedure has induced parties to comply with the Protocol only when it has been able to connect a country's performance with rewards and penalties provided by other institutions. Especially important has been funding from the Protocol's Multilateral Fund (MLF) and funding from the Global Environment Facility (GEF). By itself, the NCP is relatively powerless.

Because the NCP is a pioneer, it offers one of the few mechanisms for examining how noncompliance problems are addressed in international environmental regimes. This study explores whether the NCP's Implementation Committee "manages" noncompliance problems—a process that relies on dialogue and diplomatic pressure and providing positive incentives for countries to comply—or whether tougher "enforcement" approaches, such as sanctions, are necessary. Advocates of the management approach, such as Abram Chayes and Antonia Chayes, underscore that most noncompliance problems are unintentional, and sanctions are often not available under international law. Advocates of the "enforcement" approach, such as George Downs and colleagues, argue that when international commitments require costly changes in behavior, incentives to violate commitments will be high and tough sanctions will be needed to influence the behavior of parties that consider defection. In this view, the unavailability of sanctions is both the cause and consequence of the fact that international cooperation has not been demanding.5

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5On the management versus enforcement approaches, see Chayes, A., and Chayes, A.H., 1995, The New Sovereignty: Compliance with International Regulatory Agreements, Harvard University Press, Cambridge, MA, USA. They argue that the enforcement approach is typically not feasible. For a critique from the "enforcement school," see Downs, G.W., Rock, D.M., and
This study demonstrates that the IC has been most effective when it blends the two approaches. Management avoids the most severe and unproductive antagonism, but the credible threat of tougher actions, including sanctions, helps ensure cooperation, especially when dealing with parties who are unswayed by management alone (e.g., Russia's noncompliance). So far the only "stick" wielded under the procedure in response to noncompliance has been the threat to cut off MLF and GEF funding. Tougher measures, such as trade sanctions, have been ambiguously threatened but never clearly applied in any of the instances of noncompliance handled by the IC.

Although a leading model for other agreements, the Procedure operates in a special context. It reviews compliance with highly specific commitments to report data and eliminate consumption of major ozone-depleting substances (ODS). Thus whatever the Procedure does to improve compliance is largely synonymous with greater effectiveness of the Montreal Protocol and of cooperation to limit depletion of the ozone layer. In contrast, when assessing the effectiveness of international agreements that manage pollution and resources—rather than eliminate environmental problems—compliance and effectiveness are not necessarily the same. Indeed, as shown in the cases of regulating North Sea and nitrogen oxide (NOx) pollution (reviewed in the conclusion to this thesis), compliance and effectiveness need not be related. This relationship makes it difficult to draw general lessons about how such noncompliance procedures contribute to the effectiveness of all types of legal regimes. If a noncompliance procedure leads to more compliance it may not enhance effectiveness if commitments are weak or inappropriate. Even in the Montreal Protocol there is evidence, as Patrick Szell has argued, of an inverse relationship between the stringency of the Procedure and the commitments the parties have been willing to adopt. In other words, any assessment of whether noncompliance procedures enhance an agreement's effectiveness must examine how the existence and operation of such procedures influence the standards that are adopted. That topic is considered in the conclusion, which speculates on how such institutions can be designed to avoid some of the conservatism that has made parties hesitant to adopt both stringent procedures and stringent commitments.

This chapter reviews the origins and legal basis of the Procedure and evaluates the experience with the two components of the NCP. The regular component has actively addressed many general and specific issues of noncompliance. The ad hoc component has already dealt with a few formal submissions of noncompliance concerning five countries in economic transition (Belarus, Bulgaria, Poland, Russia, and Ukraine—BBPRU). The chapter also provides a systematic and quantitative analysis of trends in the Committee's work load; the analysis demonstrates that over its short life the Committee has evolved from a body that considers only general issues to one that handles specific problems of noncompliance faced by specific parties. By handling specific cases, the Procedure supplies a unique and important function that has increased the effectiveness of the Montreal Protocol.

II. Origins and Modalities of the Montreal Protocol's Non-Compliance Procedure

The Montreal Protocol's negotiators knew that the treaty would probably face problems of noncompliance and might need a procedure for handling them. The USA proposed an elaborate noncompliance procedure in the final stages of the negotiations. With neither time nor consensus to work out the details, the Protocol was adopted in Montreal in 1987 with only a short and loosely worded Article 8 that deferred the formation of a noncompliance procedure until later. The first Meeting of the Parties (MOP) of the Montreal Protocol, in 1989, established an ad hoc Working Group of Legal Experts to develop proposals for a noncompliance procedure. The Working Group developed a procedure, which was adopted only on an interim basis in 1990 because some parties, led by Norway, thought a tougher system for noncompliance would be needed. In 1992 an expanded (but similar) final procedure was adopted. The procedure that the Working Group developed was designed, from scratch, to perform the function of handling noncompliance problems; no particular precedent was used as a model.

Most countries were not heavily involved with the design of the NCP, which probably benefited from their benign neglect. Australia and a few European participants (Austria, the European Commission, the Netherlands, Norway, and the UK) led the negotiations. The USA participated actively, but in 1990 it became less supportive of a strong NCP as it was also fighting battles on the MLF and did not want a procedure that could find the USA in noncompliance with the delicate agreement for industrialized countries to contribute to the MLF, which would help compensate developing countries for the costs of complying with the

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6 Background interviews.

7 Article 8 states, "The Parties, at their first meeting, shall consider and approve procedures and institutional mechanisms for determining noncompliance with the provisions of this Protocol and for treatment of Parties found to be in noncompliance."

8 Decision I/8.

9 Széll, interview with author, London, 20 June 1995. To allow continued consideration of the issues, both the Second and Third Meetings of the Parties gave the ad hoc group a mandate to keep working on a revised, final Non-Compliance Procedure (Decisions II/5 and III/2).

10 Decision IV/5.


12 ibid.
Protocol. A few active developing countries, primarily from Latin America, were active in the negotiations and suspicious of a stringent process. The participation of the countries that were concerned about their ability to comply with the Protocol weakened the Procedure that was ultimately adopted.

The deliberations and thoughts behind specific elements of the NCP and its overall legal context are discussed in more detail elsewhere. The objective was to create a multilateral mechanism that would build confidence through nonconfrontational discussion rather than adjudication. Considerable effort was made to ensure that amicable solutions would be sought "on the basis of respect for the provisions of the Protocol" (paragraph 8 of the NCP). The procedure was developed to be completely independent of the Protocol's dispute resolution system (which has never been used).

The NCP that was finally adopted consists of two major components, each of which is managed by the IC. First, in what is referred to here as the regular component, the Committee meets on a regular basis even when it has no formal submissions on its agenda. The Committee also acts as a standing body to hear compliance-related issues that parties to the Protocol, the Secretariat, other institutions of the Montreal Protocol, and Committee members think are important.

The second component is a system for handling "submissions" about noncompliance. A party may submit its concerns about another party's implementation. A party may also enter a submission about itself if it cannot comply with the Protocol. The Secretariat has an ambiguous obligation to inform the IC if it becomes aware of possible noncompliance. The Procedure

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13 Background interviews.


16 The Montreal Protocol does not have its own dispute resolution system but rather relies on that in the Vienna Convention—the parent agreement of the Protocol. All parties to a protocol to that Convention must be parties to the Convention (Article 16 of the Convention); the provisions of the Convention that relate to its protocols apply to the Montreal Protocol (Article 14 of the Montreal Protocol); and the Convention's dispute resolution system applies to its protocols (Article 11.6 of the Convention).

17 The Secretariat does not have a strict obligation to report possible noncompliance. If the Secretariat becomes aware of possible noncompliance, it may request the party concerned to furnish necessary information about the matter. If there is no response from the party concerned within three months or such longer period as the circumstances of the matter may require... then the Secretariat
includes basic instructions and timetables for communicating information about such submissions to the parties, the Secretariat, and the IC. Collectively, these procedures are referred to here as the ad hoc component.

The Committee consists of 10 members who serve as representatives of their countries (i.e., not in their personal capacities). Membership is roughly balanced between industrialized and developing countries. Participants who represent developing countries are offered assistance from a trust fund for travel and local costs associated with the meetings.

The Procedure's rules explicitly allow only three groups to participate in the Committee's deliberations: members of the Committee, the Secretariat, and any party involved in a submission. The Committee invites other participants as needed. Because funding is often important for addressing problems of noncompliance, representatives from the MLF and its implementing agencies are regularly invited to attend IC meetings. The IC's president also attends the meetings of the Executive Committee of the MLF. A representative of the GEF or the World Bank (which is the GEF's implementing agency in the BBPRU countries) has attended every meeting of the IC since the ad hoc system was first invoked for the BBPRU cases. None of the BBPRU countries are eligible for MLF funding; thus they rely on the GEF to provide the financial assistance they need to comply with the Protocol.

There are no provisions for attendance at the Committee's deliberations by other international organizations, countries that are not parties to the Protocol, or nongovernmental organizations (NGOs). However, several non-parties—including Armenia, Georgia, and Kyrgyzstan—have been invited to discuss their situations with the Committee because they would be affected by the handling of Russia's noncompliance, with whom they have close trading relationships. But participation largely remains controlled and limited. A request from an environmental NGO to attend an IC meeting was denied on the basis that confidential, delicate, and sensitive information might be discussed and the presence of an NGO could limit frank discussion. Although they currently do not participate in meetings, in principle, NGOs can

shall include the matter in its report to the Meeting of the Parties ... and inform the Implementation Committee accordingly.

The Secretariat has never formally asked a party for information about its noncompliance under this paragraph of the Non-Compliance Procedure. Thus, although the Secretariat (and everyone) is aware of some noncompliance, it has never requested the "necessary information"; therefore, the Secretariat has not been compelled to initiate the Procedure.

Paragraph 2 of the Non-Compliance Procedure.

No party involved in a matter being considered by the Committee may participate in the elaboration and adoption of related recommendations by the Committee.

Background interviews.
raise issues for discussion by working through the Secretariat or sympathetic members of the Committee; so far, however, this has never happened.

III. Operation and Effectiveness of the Regular Component

During its first five years, until 1995, all work of the IC was done under the regular component. This section answers two central questions about the operation of the Committee: How do issues reach the agenda? Once an issue is on the agenda, how is it handled?

The Committee's Agenda

The issues that can arrive on the Committee's agenda reflect the primary responsibilities and benefits of membership in the Montreal Protocol: reporting of data, operation of the MLF, and regulation of ODS.

Data Reporting

All parties to the Montreal Protocol are required to submit baseline and annual data on production, imports, and exports of each controlled substance.21 Until 1995 most of the Committee's work load concerned inadequate reporting of baseline data and problems related to assessing and revising reported data. Placement of most of these issues on the Committee's agenda was due to the Secretariat's efforts to compile all reported data and identify parties that have failed to supply the required data.22 The Secretariat identifies problem cases, some of which the Committee handles in detail.

Problems with data reporting have arisen in all types of countries—rich industrialized members of the Organisation for Economic Co-operation and Development (OECD), countries with economies in transition, and developing nations. Problems in OECD nations have been minimal. The European Union (EU), which is a party along with each individual member of the

21 Most of the Protocol's control measures apply to a group of substances (e.g., Group I of Annex A), but data are required for each controlled substance individually because compliance with the group target is computed by weighting consumption (production, imports, and exports) of each controlled substance according to its ozone-depleting potential. Parties are also required to submit data on the amounts used for feedstocks, amounts destroyed by approved technologies, imports from and exports to parties and non-parties, and imports of some recycled substances.

22 At present, the most recent of the Secretariat's annual reports on data (required by Article 12.c of the Protocol) is UNEP/OzL.Pro.7/6, 25 September 1995.
EU, had difficulty compiling data on consumption of ODS because of trade between EU members and the desire to protect confidential business information.\textsuperscript{23} Italy encountered severe bureaucratic problems in preparing its data reports. In the countries in economic transition, especially in the former Soviet Union (FSU), data-reporting problems have been severe. The FSU republics only recently became independent countries and immediately faced the need to develop statistical systems that account for production and trade according to new political borders. Poor data reporting by Belarus, Russia, and Ukraine has often been on the Committee's agenda, especially because these countries have also been in front of the IC for failure to comply with the Protocol's regulatory commitments (see ad hoc cases below).\textsuperscript{24}

Problems of missing data have been most extensive in developing countries. For example, by 1994 baseline data were overdue from 51 developing countries and only 1 OECD member.\textsuperscript{25} Data are especially important for determining eligibility for the two major benefits that developing countries receive under the Protocol: financial assistance from the MLF and lenient provisions for controlling consumption of ODS, such as a 10-year delay in the requirement to phase out major chlorofluorocarbons (CFCs) and halons.\textsuperscript{26} Article 5, which determines eligibility for those benefits, requires that a party must both be a "developing country" and have consumption of ODS below certain per capita thresholds.\textsuperscript{27} There is no single definition of a "developing country," but in 1989 the MOP adopted a list that has since been adjusted slightly.\textsuperscript{28} The other half of the Article 5 definition is its most innovative part, but it is

\textsuperscript{23}The Protocol was amended in 1990 to allow the EU and other "Regional Economic Integration Organizations" to report only imports and exports between the Organization and states that are not members of the Organization.

\textsuperscript{24}Data reporting by Belarus, Italy, and Ukraine was discussed at the seventh meeting. See UNEP/OzL.Pro/ImpCom/7/2, 16 November 1993, pp. 2-5.

\textsuperscript{25}See UNEP/OzL.Pro.6/5, 15 July 1994.

\textsuperscript{26}Article 10 mentions financial assistance from the MLF for developing countries. Article 5 mentions lenient provisions for controlling consumption of ODS.

\textsuperscript{27}The main definition is in paragraph 1 of Article 5. The paragraph sets a consumption threshold at 0.3 kg per capita for the core five CFCs and three halons (listed in Annex A and weighted according to ozone-depleting potential) on the date of entry into force for that particular party or any time thereafter until 1 January 1999.

\textsuperscript{28}Decision I/12 E. This list consists of all countries of the UN minus OECD members (in 1989), minus a few special cases (e.g., Israel, Liechtenstein, Monaco, and South Africa), and minus all the economies in transition (except Albania, Romania, and Yugoslavia, which are perhaps economies in transition from central planning but are also included on the list). Georgia, which is considered "developing" by the OECD and the World Bank, was added to the list in 1996 (Decision
impossible to implement without population and ODS consumption data. Initially, the Secretariat estimated which countries would qualify for Article 5 status, but that only temporarily delayed the need for actual data from the countries. Thus, the obligation of all countries, especially developing countries, to report data has often been a topic on the Committee's agenda.

Attention to data reporting has focused exclusively on missing data rather than suspected inaccuracies in the data. The Secretariat or any party can formally raise concerns about the veracity of reported data. However, none has done so. Nor has the Committee sought to check the veracity of any data, although it has the mandate to do so if it wishes. Many parties have also submitted estimates of their data, a practice that is explicitly allowed under the Protocol. Presumably estimates could be manipulated, but this issue has not been addressed directly by the Committee. In practice there have been some contradictions between data that Parties report to the Ozone Secretariat, data available from other international sources (e.g., UN statistical agencies), and data that MLF recipients are required to report to the MLF Secretariat and to MLF implementing agencies. The Ozone Secretariat attempts to resolve these data conflicts informally. So far, only one case of conflicting data has formally been resolved by the Committee: Lebanon has submitted population data that are significantly different from UN figures; the IC has ruled that the data supplied by the party must be used.

VIII/29). Turkey, an OECD member but classified as a developing country by the World Bank and the United Nations Development Programme (UNDP), was added to this list in 1991 (Decision III/5). Mexico and South Korea are on the list although they have since joined the OECD. The Meeting of the parties requested that a working group further define criteria to determine what is a "developing country" (Decision III/5). That group made little progress, and the MOP has decided to handle requests for developing country status on a case-by-case basis (Decision IV/7).

Population data are mid-year estimates derived from the UN (UNEP/OzL.Pro/ImpCom/4/2, 6 October 1993, pp. 2-3). UN data are drawn from reports submitted by UN member countries.

Parties that do not have actual data for a year may use "the best possible estimates" (Articles 7.1 and 7.2).

However, the "sense" that data had been manipulated for the purpose of putting a country below the threshold identified in paragraph 1 of Article 5 led some members of the IC to argue strongly that rules about data correction be established to protect against such manipulation, especially where changes in data would modify the status of a country under Article 5. See UNEP/OzL.Pro/ImpCom/8/3, 4 July 1994, p. 10.

Twelfth Meeting of the Implementation Committee, UNEP/OzL.Pro/ ImpCom/12/3, 1 December 1995, advance copy, p. 9. The Lebanese challenged the UN data by presenting alternative population estimates from the World Bank (Decision VII/20). That precedent may be applied in the still unresolved case of Kuwait, which has also challenged its population data (see UNEP/OZL.Pro/ImpCom/15/3, 18 November 1996, p. 6.)
The Committee's attention to data reporting has also helped to implement a key provision of the Protocol: trade restrictions against non-members. The specific trade restrictions in Article 8 have been expanded in tandem with the addition of new controlled substances in the 1990 and 1992 amendments to the Protocol. Thus the specific application of the trade restrictions depends on the specific substance as well as the applicable amendment.

The MOP is responsible for making a final determination of which parties are exempt from the trade restrictions, but it has asked the IC to review the data submitted by states seeking such an exemption. In this capacity, the Committee has considered data from 22 states; it has accepted 13 as sufficient to qualify for an exemption.

*Multilateral Fund Issues*

Because MLF resources help developing countries comply with the Protocol's commitments, the work of the IC and that of the MLF are linked by a common objective: promoting compliance by developing countries. So far, the only significant commitment for developing countries has been to report data. The failure of many developing countries to supply data is due mainly to low administrative capacity and can be addressed only with projects to gather baseline data and to build capacity to report data on an annual basis. The MLF funds such projects, and thus MLF representatives are uniquely able to supply the IC with precise information about projects and problems encountered in developing countries.

Although representatives of the MLF and its implementing agencies are responsive to requests for information on their projects, they have never brought particular instances of noncompliance before the Committee, nor have they actively sought the Committee's advice. This may reflect that the MLF and its implementing agencies are primarily concerned with disbursing funds and often take the perspective of the recipient and the need for stable funding of projects rather than that of the enforcer of compliance. Insofar as the MLF and its implementing agencies review party performance, they do so through their own review procedures and not through the Protocol's dedicated NCP and IC.

The Committee has played a role in introducing the principle of conditionality to MLF funding. Prompted by many MLF donor countries, in 1994 the MOP adopted a decision to cut funding to MLF recipients that do not report baseline data within one year of approval of their MLF country program and the implementation of projects to strengthen institutional capacity.

33The specific trade restrictions in Article 8 have been expanded in tandem with the addition of new controlled substances in the 1990 and 1992 amendments to the Protocol. Thus the specific application of the trade restrictions depends on the specific substance as well as the applicable amendment.

34This formal exception is listed in Article 4.8 and elaborated in Decision IV/17 C.

35UNEP/OzL.Pro/ImpCom/6/3, 26 August 1993, p. 5.

36Decision VI/5.
Since country programs typically include funding to collect and estimate baseline data, a task often performed by outside consultants, in principle this conditionality should not be too onerous. This is the first explicit linkage between compliance by the parties and the benefits provided under the Protocol, in this case, funding. No such unambiguous conditionality exists for the annual data that parties are also required to report; these data are chronically late and incomplete, and thus it seems likely that some form of conditionality between MLF funding and reporting of annual data will also be adopted in the near future. For now, application of the 1994 MOP decision is a central element of the IC's success in getting the most dilinquent and resistant developing countries to report data.

The obligation to pay funds into the MLF is the only significant commitment under the Montreal Protocol that has never been on the agenda of the IC. This illustrates that flexibility in setting the agenda has allowed the Committee to avoid politically sensitive issues. The legal status of MLF contributions is purposely vague. Most donor countries interpret the obligation to contribute to the MLF as binding; the USA treats it as voluntary. The text of the MLF agreement specifies neither. None of the donor parties want to raise the issue formally as it may unravel the delicate MLF agreement, which survives through a combination of differing interpretations and the fact that the MLF appears to be working well. Indeed, all major contributors have paid their shares. The only OECD members that have persistently failed to pay their contributions are Italy and Portugal. Clarifying the status of MLF contributions might even be counterproductive. Of the US $119 million outstanding (22 percent of total "agreed" contributions), half is due from Belarus, Russia, and Ukraine. These countries are now also addressing their failure to comply with the Protocol's ODS controls and will themselves require financial assistance to achieve full compliance. The issue of their delinquent MLF contributions has been informally set aside and is not part of the resolution of their ad hoc submissions (see discussion below). Facing scrutiny on their MLF contributions while in front of the IC because of failure to implement the Protocol's control measures may have deterred these countries from volunteering to discuss their noncompliance.  

The Committee's flexibility in setting its agenda is probably not absolute—presumably it must hear any case brought before it under the ad hoc procedure.

Regulation of Ozone-Depleting Substances

The NCP and the IC may ultimately be judged primarily on their ability to improve compliance with the Protocol's main regulatory commitments:  

37The status of fund contributions is derived from the report of the MLF's Executive Committee: UNEP/OzL.Pro/ExCom/18/75, 24 November 1995, Annex I.

38The provisions are given, respectively, in 1. Article 2B and Group II of Annex A; 2. Article 2A and Group I of Annex A (the core five CFCs), Article 2C and Group I of Annex B (an additional list of 10 CFCs), Article 2D and Group II of Annex B (carbon tetrachloride), and Article 2E and
the elimination of the three controlled halons by 1994;
the elimination of 15 CFCs, carbon tetrachloride, and methyl chloroform by 1996;
the elimination of transitional partially hydrogenated chlorofluorocarbons (HCFCs) by 2030;
the elimination of partially hydrogenated bromofluorocarbons (HBFCs) by 1996; and,
a freeze on methyl bromide by 1996.

There are timetables for these phaseouts in most cases, some additional limits within each category, and some exceptions, notably for "essential uses." For developing countries operating under Article 5, each requirement is relaxed, mainly through longer timetables for limiting ODS.

The countries to which these obligations apply fall broadly into three categories: developed countries without economies in transition (mainly members of the OECD); countries with economies in transition; and developing countries that exceed Article 5 thresholds. Each category is considered here. Developing countries that are still operating under Article 5 do not yet face stringent requirements concerning the control of ODS, thus their compliance with these regulatory commitments has not been addressed by the IC and is not discussed here.

First, all OECD developed countries appear to be complying with the Protocol, and thus it is unlikely that they will be a source of noncompliance issues to be handled by the IC. Most OECD countries are phasing out ODS more rapidly than is required by the Protocol's commitments. Nonetheless, it is unclear how compliance will fare as the control levels decrease to zero and the list of allowable "essential uses" is pared down. The Secretariat and the IC are aware of some potential cases of noncompliance; however, these cases are not on the Committee's agenda because they are already being handled elsewhere. For example, the United States is prosecuting several cases of illegal trade in ODS. Many similar cases worldwide underscore that the commitments under the Montreal Protocol have made some ODS as valuable as illegal drugs, leading to similar problems of smuggling and enforcement of border controls. Even if the IC wanted to address this issue it would be difficult to do so since it involves the very complicated internal administrative and legal systems of countries. The IC offers no special resource for addressing such problems.

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Group III of Annex B (methyl chloroform); 3. Article 2F and Group I of Annex C; 4. Article 2G and Group II of Annex C; and 5. Article 2H and Annex E.

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40Ibid.

Second, several countries in economic transition are encountering significant problems of noncompliance. None of these countries except Albania, Georgia, Romania, and the former Yugoslavia is considered to be a "developing country," and thus none is eligible for Article 5 status, even though some have very low consumption levels of ODS. Five such countries have invoked the NCP's ad hoc component (the BBPRU cases). However, several parties in economic transition had their compliance problems on the Committee's agenda before the ad hoc component was invoked in 1995. Poland forecast its inability to meet domestic demand for CFCs because its supply from the EU was being phased out; it sought from the Committee (but was denied) special treatment that would have allowed CFC imports during 1994 and 1995 in excess of the Protocol's limits in order to meet Polish domestic needs after the EU's 1995 phaseout. Romania sought to transfer some of its production quota to Greek firms, which might have affected Greece's compliance. Russia, followed by Ukraine, predicted its noncompliance with the 1994 halon ban and announced through the IC that it would need additional financial transfers, access to halon banks, and/or lenient treatment from the MOP to remain in compliance. Even after the BBPRU cases were initiated, the IC regularly considered ODS compliance problems in other transition countries. In a letter to the Ozone Secretariat, the Lithuanian prime minister sought a five-year delay in implementing some controls on ODS; late in 1996, Latvia and Lithuania's noncompliance became the second set of cases to be initiated under the NCP's ad hoc component. The Czech Republic recently reported data that showed it violated the halon ban in 1994 but has since complied. In short, nearly all the issues on the Committee's agenda concerning compliance with the Protocol's regulatory commitments have pertained to countries with economies in transition.

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42 UNEP/OzL.Pro/ImpCom/9/2, 5 October 1994, p. 7.

43 Romania thought that it potentially possessed excess quotas, in part because it was treated as a developing country under Article 5 and thus had lenient controls on ODS and found it easy to overcomply with the Protocol's regulatory commitments. The case was deferred, but it was never raised again by Romania or Greece and has not yet been resolved. See UNEP/OzL.Pro/9/3, pp. 6-7.

44 UNEP/OzL.Pro/ImpCom/7/2, p. 5.

45 In 1995, when the Prime Mister made his request, the IC requested more information from Lithuania and pointed out that Lithuania would not gain assistance from international financial institutions for projects concerning ODS unless it ratified the London Amendment. The GEF has made membership in and compliance with relevant international agreements a condition for receipt of GEF money. See UNEP/OzL.Pro/ImpCom/12/3, 1 December 1995, pp. 9-10. The Latvian and Lithuanian cases are being handled in the same manner as Belarus, Russia, and Ukraine. (See below and see Decisions VIII/22 and VIII/23 of the Meeting of the Parties.)

46 The IC recommended, and the MOP decided, that no significant response was needed because the Czech Republic was now in compliance. Decision VIII/24 of the Meeting of Parties.
Third, developing countries on the borderline of Article 5 status could face sudden problems of formal noncompliance if their consumption of ODS exceeds Article 5 allowances, as well as loss of MLF funding that many need to comply with the Protocol. So far, the issue has not arisen. One reason is the ability of Parties to correct their data. For example, in 1995 five developing countries were classified with per capita consumption above the Article 5 threshold in 1994. Two of them (Kuwait and Lebanon) corrected their data, bringing themselves back below the threshold, and thus avoided the problem of sudden noncompliance. Kuwait claimed that there had been a typographical error in its halon data. Lebanon challenged the population statistics used to calculate per capita consumption (see discussion above). Two of the remaining countries (Cyprus and Slovenia) intend to comply with the Protocol without the need to involve their eligibility for Article 5 status (both also want to join the European Union, none of whose members are "developing countries"). The last of these five countries (the United Arab Emirates) eventually claimed that there had been a mistake in its data; in 1996 it submitted corrected figures that showed it below the Article 5 threshold starting in 1994. It and other parties that return to Article 5 status after a year or more above the threshold are urged not to seek MLF funding in the future. That could limit these countries' ability to comply with the Protocol's commitments in the future, but so far the extent of this potential problem is unclear.

In sum, the issues that have been placed on the Committee's agenda have reflected all of the main obligations of the Montreal Protocol except the requirement to contribute to the MLF. All parties are required to report data; the failure of many to supply the required data has continuously been on the Committee's agenda. Requirements to phase out ODS went into full effect in 1994 (halons) and 1996 (CFCs), and increasingly the Committee's agenda has included the failure of a few parties to fully implement such controls.

Virtually all issues related to data reporting have reached the Committee's agenda at the initiative of the Committee itself or the Secretariat. In contrast, all the issues related to compliance with the Protocol's obligations to phase out ODS have been put on the Committee's agenda by the affected parties themselves. This style of volunteering to discuss noncompliance may set a pattern for the Committee's work and distinguishes the NCP from accusatory dispute resolution systems. The volunteer method of agenda setting has ensured that, today, most of the Committee's agenda directly reflects the issues that the parties themselves want to address.


48 UAE was also requested to pay its MLF contribution for 1994. The policy of urging reclassified parties not to seek MLF is based on MOP Decision VI/5. For the application to UAE, see UNEP/OzL.Pro/ImpCom/13/3, 18-19 March 1996, p. 13.
How the Committee Handles Issues on Its Agenda

The IC has only a limited number of tools available to address issues placed on its agenda. Formally, it is empowered only to discuss issues, make recommendations to the MOP, and make transparent which parties are in compliance.\(^9\) These three interrelated tools—discussion, recommendations, and transparency—are often described as elements of a "management" approach to noncompliance. While soft, these tools may nonetheless be influential, especially as stronger enforcement techniques, such as sanctions, are often not available or effective under international law.\(^50\) The IC has played a central role in mobilizing other institutions—the MLF and the GEF—to apply stronger responses to noncompliance; thus, in practice, the IC also applies some techniques of the "enforcement" approach to noncompliance. Those stronger responses are also discussed here and, especially, in the next section on the BBPRU cases handled under the ad hoc component.

Discussion and Recommendations

Like any efficient subsidiary body, the ability to discuss issues and make recommendations allows the Committee to serve as a "first-stop" forum for handling matters that ultimately go to the MOP for formal decision. The Committee has increased the efficiency of the Montreal Protocol by preparing some draft decisions for the MOP and efficiently resolving many detailed issues, such as the reclassification of Article 5 countries and the correction of data. It has probably helped to dispose of some potentially cumbersome issues before they grew too large: for example, the question of whether developing countries can transfer production quotas to industrialized countries.

Beyond the benefits of an efficient subsidiary body, there is only limited evidence that discussion about general issues of compliance has influenced the behavior of particular parties. For example, the IC and the Secretariat have stressed that parties that are unable to provide real baseline data can comply with the requirement by supplying estimates. Many parties have now done so, and a few may not have known about that possibility before. However, in the case of the Russian Federation, where the need for some data was extremely urgent because the country is a large producer and consumer of controlled substances, repeated requests even for estimates were not rewarded with data. Russia complied with the request for baseline data only later, when its noncompliance was being handled under the ad hoc system and the IC demanded the data before it would approve the Russian compliance plan; the IC's approval, in turn, was essential to unlocking GEF funding for Russia. Even then, Russia supplied the data only reluctantly. Only

\(^9\) The Committee also makes recommendations to the Executive Committee of the MLF, the only other body within the Montreal Protocol that has decision-making authority.

\(^50\) These arguments are developed at length in Chayes and Chayes, 1995, op. cit., note 5.
in late 1996--more than a year after the BBPRU cases were initiated and after some GEF funding was already flowing--did Russia supply all of its baseline data.

As recently as 1993 the role of the IC within the Montreal Protocol was unclear. Today, it is increasingly accepted as the first forum in which to air compliance issues before other avenues are pursued. For example, Romania asked that its request to transfer production quotas to Greek firms be addressed by the MOP in 1994, but the issue was sent to the IC first. The BBPRU cases began as a Russian appeal submitted on behalf of all five countries to the MOP, but the request was rerouted through the IC. In this role, the Committee has substantially improved the overall efficiency of the Montreal Protocol's system of institutions. If these cases had gone directly to the MOP they might have been more politicized and handled less strictly according to the letter of the Montreal Protocol; the net effect might have been greater production and atmospheric release of ODS.

The IC's recommendations, when adopted, have helped address some problems of noncompliance and have also set precedents that may deter others from noncompliance. Notably, the IC has played the central role in making MLF financing conditional upon reporting of baseline data by implementing the 1994 Decision by the MOP (which the IC helped draft) to terminate funding to developing countries that fail to report data. In the first application of this conditionality, the IC noted Mauritania's persistent failure to supply baseline data and recommended withdrawal of the country's Article 5 status.\footnote{UNEP/OzL.Pro/ImpCom/12/3, 1 December 1995, p. 2, with reference to Decision VI/5.} Within days of that recommendation, with a decision drafted by the IC and ready for imminent adoption by the MOP, Mauritania submitted the necessary data.\footnote{See the report from the Seventh Meeting of the Parties: UNEP/OzL.Pro.7/12, 27 December 1995, p. 23.} Following that precedent, a year later the IC noted that 17 countries would lose their Article 5 status for failure to report data; with 2 months all 17 had complied.

\textit{Transparency}

The ability to make transparent which parties are in compliance might be influential because delegates and other national officials may fear the embarrassment of representing noncompliant countries and thus be more inclined to do what is necessary to comply. Some officials and NGOs may not even be aware of their nation's noncompliance until a report or official query from the Committee makes the problem transparent; upon learning to noncompliance, these actors might have the power to change the situation.

Of the Montreal Protocol's institutions, the Secretariat plays the most important role in
making compliance transparent, notably through its compilation of baseline and annual statistics on the consumption of ODS. These statistics reveal (albeit with self-reported data) which countries are complying with the obligations to limit ODS and to supply data. The Committee and MOP indirectly contribute to these activities by visibly supporting the Secretariat's efforts; when the Secretariat queries delinquent parties about why they have not reported data, the missive has more weight because it refers to the specific mandate given by the IC and MOP. Moreover, because continued MLF funding is conditional upon providing baseline data, as demonstrated first in the case of Mauritania, developing countries that seek MLF funds presumably have a strong incentive to respond to the Secretariat's requests.

The Committee has directly increased transparency of compliance in several cases of egregious failure to report data. It publicly invited nine parties to appear before it in 1993 to explain their persistent failure to report baseline data. Six of the countries did so;\(^5^3\) five brought the data with them or submitted the information shortly before the meeting.\(^5^4\) Some parties have still persistently failed to report baseline data. The IC repeated the exercise a year later and invited seven countries to explain their situations. Of the five that attended, three reported that they had recently submitted the necessary data. The remaining countries discussed the problems they had encountered and offered timetables for the full reporting of their data.\(^5^5\) By inviting these delinquent parties to explain their behavior, the Committee provided a strict deadline that helped speed the provision of data.

In none of these cases did transparency alone cause significant changes in the behavior of governments. At the minimum, transparency was backed by critical discussion, which increased pressure on countries to comply. But these tools have only limited influence—they have been effective only when the country and its delegates have been responsive and have found it relatively easy to comply. Some have neither complied nor cooperated with the Committee. For developing countries, the MLF-funded country programs, which include grants for gathering baseline data as well as capacity building to improve the ability of countries to provide data, have had a much greater influence than the increased transparency provided by the IC.\(^5^6\) In those few

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\(^5^3\)The Maldives did not appear, but a representative from the United Nations Environment Programme (UNEP, one of the MLF-implementing agencies) reported that the relevant data had just been submitted to the Secretariat through a country program in the Maldives. Trinidad and Tobago did not appear, nor did Togo.

\(^5^4\)Belarus, Iran, the Maldives, Ukraine, and Syria. UNEP /OzL.Pro /ImpCom/7/2, 16 November 1993, pp. 2-5.

\(^5^5\)These discussions are excerpted from UNEP/OzL.Pro/ImpCom/9/2, 5 October 1994, pp. 2-3.

\(^5^6\)GEF-funded projects in countries with economies in transition have played a similar role in building capacity to report the required data.
cases where MLF funding has not rapidly improved the reporting of baseline data, the 1994 Decision of the Meeting of the Parties to terminate funding has helped to induce compliance. The direct effect of this action was evident in the cases of Mauritania and 17 other countries. Every developing country with a long-standing MLF-funded country program has now reported its baseline data. Nonetheless, in 1995 the baseline data for the main CFCs and halons were more than two years overdue for 15 parties, all of them developing countries.\(^{57}\) An encouraging sign is that most of the delinquents eventually report their data. Only three countries on the list in 1995 had been on the list in 1994.\(^{58}\) Only two of the parties that the Committee queried about missing data in 1993 needed to be invited back for another face-to-face inquiry in 1994.

These cases of non-reporting of baseline data are extreme examples. The Montreal Protocol regime faces a much larger, chronic problem of incomplete and late annual data. For example, in 1994 one-third of the parties had not reported the required annual data for 1992.\(^{59}\) In 1995 about half had not reported data for 1993; in 1996, one-third had not reported for 1994.\(^{60}\) Developing countries account for most of the missing annual data, but several industrialized countries have also failed to report their annual data on time. If the past is a guide, MLF funding will be most important in the general improvement of data reporting by developing countries. The Secretariat and the IC may play a role in the most delinquent cases; so far the Committee has not been active on this issue, but it is playing a role in harmonizing the data-reporting system which could make data reporting easier. At present, most parties submit up to three regular reports--to the Protocol Secretariat, the MLF Secretariat, and to the relevant MLF implementing agencies.

In at least one case, Committee discussions have made compliance problems transparent to officials who otherwise might be unaware of them--in 1997, data submitted by Russia and ensuing discussions in the IC exposed some problems of illegal exports to Poland. Whether trade controls will change as a result is still unclear.

The limited effectiveness of discussion, recommendations, and transparency is evident in

\(^{57}\)See the Secretariat's annual data report for 1995: UNEP/OzL.Pro.7/6, 25 September 1995, p. 2. This report also lists Russia's data for Annex A substances as being more than two years overdue, but Russia provided these data as part of its deliberations with the IC and its name was removed from the list of delinquents. See UNEP/OzL.Pro/ImpCom/12/3, 1 December 1995, p. 8.

\(^{58}\)The list referred to here is that of countries with Annex A baseline data that are delinquent more than two years. For the 1994 list (which contains nine countries-seven developing and two industrialized), see UNEP/OzL.Pro.6/5, 15 July 1994, p. 2.

\(^{59}\)UNEP/OzL.Pro.6/5, 15 July 1994, p. 3.

\(^{60}\)UNEP/OzL.Pro.7/6, 25 September 1995, p. 4; UNEP/OZL.Pro.8/12, 19 December 1996, Decision VIII/2.
the handling of noncompliance of countries in economic transition. Belarus, Russia, and Ukraine had discussed their impending noncompliance with the Committee before the ad hoc system had been invoked.\textsuperscript{61} The result was some airing of views, but there was no change in behavior. Those countries sought an extension for their obligations, but the IC repeatedly underscored that it was a deliberative forum and could not tailor the commitments of the Protocol to the circumstances of particular parties. Thus the IC's deliberation and discussion offered few benefits, nor could it impose many costs on noncompliant parties. The IC's power was enhanced only after the ad hoc system was triggered and GEF funding was made conditional upon the IC's endorsement (see below).

The influence of the IC's efforts to induce compliance could be multiplied by pressure from environmental nongovernmental organizations (ENGOs). Unable to gather timely information about noncompliance on their own, ENGOs that want to pressure governments to comply with the Protocol's commitments must rely substantially on the transparency of official information. ENGOs are excluded from the Committee's deliberations, which may inhibit their activities. However, there is little evidence that such pressure groups have been closely observing the Committee's actions or reading its reports. Thus, when the Committee or the Secretariat makes cases of noncompliance transparent, the ENGOs typically are not waiting in the wings to seize on the information and use it to pressure governments to comply.

The lack of ENGO activity in tandem with the NCP reflects that the Committee has not engaged a single significant issue in a country where ENGOs are active domestically on the stratospheric ozone problem (for example, Germany, the UK, and the USA). The Committee's most difficult cases have concerned countries where ENGOs are not influential or active on the ozone-depletion issue (for example, Russia, Ukraine, and several developing countries). The Committee has handled some data-reporting problems in the EU and Italy, where interested ENGOs may be more abundant, but these problems reflected difficulties in integrating the EU into a common market and in overcoming domestic bureaucratic obstacles, which are now mostly resolved. Attention from ENGOs probably would not have been very helpful. Italy has also persistently failed to pay its contributions to the MLF; ENGO pressure might have helped

\textsuperscript{61} The statement of the Russian Federation in the eighth meeting (UNEP/ OzL.Pro/Imp Com/8/3, 4 July 1994, p. 12) indicates that Russia intended to request from the MOP a special status until 1998. At that same meeting, Ukraine also sought flexibility in applying the Protocol. At the seventh meeting (UNEP/OzL.Pro/ImpCom/7/2, 16 November 1993, p. 4), Belarus reported that it would have problems meeting some of the requirements of the Protocol, especially the rapid phaseout of halons. Poland's compliance problems, which were also discussed by the Committee long before the BBPRU cases were an issue, related to supply of CFCs after an early phaseout by the European Union. In 1995, Russia submitted its request for leniency to the Open-Ended Working Group that was preparing for the MOP; that request was declared a "self-submission," and the BBPRU submissions were formally under way by the tenth meeting of the IC (UNEP/OzL.Pro/ImpCom/10/4, 30 August 1995, p. 6).
the IC change Italy's behavior in that instance, but the IC has never handled any compliance problems related to MLF contributions. Further, compliance with data reporting is hardly the type of issue typically championed by ENGOs, especially those that are keen to make public images that attract dues-paying members. Some ENGOs within industrialized countries have been active in the dramatic issue of illegal trade in ODS, but this issue has not been addressed by the IC. In short, the Committee's influence on state behavior has not been multiplied by ENGOs, which is a reflection of the countries and issues that have dominated the agenda thus far and not a suggestion that this mode of influence is ineffective or unavailable.

In sum, when countries have found it relatively easy to reverse their noncompliance, the Committee's regular procedure has been effective in inducing them to do so simply by informing them of their noncompliance with their obligations. In some instances, the embarrassment of being identified and questioned as a noncompliant party by the Committee has probably resulted in countries' reporting data more quickly and completely than they would have otherwise. These powers are limited, but they have grown as the stature of the Committee has grown, especially since 1993 when it began to address specific cases of noncompliance and (since 1995) the difficult BBPRU cases. Its place in the Montreal Protocol has been strengthened by the fact that the decisions adopted by the MOP have never substantially deviated from the IC's recommendations.

Nonetheless, its tools are limited and the Committee can only contribute to improving overall compliance with the Protocol in special ways. Its successes in the most difficult cases—such as inducing Mauritania and Russia to report data—reflect the combination of transparency with political or economic pressure. This history points to the important role of transparency, discussion, and nonconfrontational approaches, but it also underscores the role of critique, confrontation, and even threats. The "soft" mode of compliance management is made more effective by availability of a harder approach for difficult cases.

In addition to its direct and indirect influences, the Committee may have some additional influence by deterring noncompliance. The Mauritania case shows that the threat of applying conditionality is serious. The decisions concerning exemption of trade sanctions show that the Montreal Protocol system is serious about implementing such sanctions against countries that stay outside the regime and do not comply. These examples presumably send credible signals that deter others, but assessing the deterrent value is extremely difficult. A procedure that is never used may be completely ineffective because nobody bothers to use it, or completely effective as a deterrent and thus is never used because it is never needed. Procedures that are used frequently may be ineffective and thus face many undeterred violations, or effective because they often catch minor problems before they become more severe.

By itself the Committee does not have stronger powers to penalize noncompliance or

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62 UNEP/OzL.Pro/ExCom/18/75, 24 November 1995, pp. 4-7.
reward compliance. The Procedure includes an "indicative list of measures that might be taken by a meeting of the parties in respect of noncompliance with the Protocol," which mentions strong actions such as sanctions. However, the list has had no effect on the behavior of parties, nor will it in the future. Some parties have referred to it, but only when it serves their interests.63 The reasons why stronger techniques are not directly available to the Committee are considered elsewhere.64 The Committee can, however, mobilize other bodies inside and outside the Montreal Protocol to apply stronger response to noncompliance. That has been evident in the role of the IC in making funding from the MLF conditional upon data reporting, and it is especially evident in the handling of the first cases under the ad hoc component of the Non-Compliance Procedure.

IV. The First Cases under the Ad Hoc Component

The IC, with the same tools at its disposal, also handles cases under the ad hoc component. In 1995 that component was invoked for the first time to deal with formal submissions of noncompliance with the Protocol by five countries with economies in transition: Belarus, Bulgaria, Poland, Russia, and Ukraine (the BBPRU submissions). Some observers suspected that prior to 1995 some of these countries, notably Russia, were not complying with the Protocol's interim reduction targets and ban on halon consumption and were also trading in illegal ODS. However, data submitted by all five showed that they were in compliance. Thus the formal submissions applied only to these countries' failure to comply with the Protocol after 1 January 1996, when they were to have eliminated essentially all consumption of 15 CFCs, carbon tetrachloride, and methyl chloroform.

The five parties, led by Russia, originally intended to submit a request for a special five-year grace period directly to the MOP.65 Instead, their request was rerouted through the IC, which separated the request into individual "submissions" under paragraph 4 of the procedure, which allows a party to make submissions concerning its own noncompliance. In other words,

63 Notably, Russia referred to the list when complaining about the trade sanctions imposed against exports of Russian-produced ODS. It argued that the milder measures on the list--such as financial assistance and the issuance of cautions--should be employed before harsher measures (i.e., sanctions) are effected (UNEP/OzL.Pro.7/12, 27 December 1995, p. 53). For the full context, see the next section on the BBPRU submissions.


65 The request, in the form of a statement by Russia on behalf of all five BBPRU countries, as well as three countries that intend to become parties to the Protocol (Armenia, Georgia, and Kyrgyzstan), is reproduced in Annex II of the report of the eleventh meeting of the IC (UNEP/OzL.Pro/ImpCom/11/1, 14 September 1995, pp. 13-14).
the five countries "accused" themselves of noncompliance. The BBPRU submissions have not yet been fully resolved, but they are receiving an evenhanded assessment based primarily on an objective evaluation of the facts and circumstances of each country. A nonpartisan review might not have been possible had the matter been handled entirely within the more political MOP, as Russia had originally intended.

The IC's approach has been to focus on ways that the countries can achieve compliance with the Protocol as rapidly as possible. Rather than tailor the Protocol to the party, the party is expected to bring its performance back to the Protocol's standards, with periodic reviews along the way. Late in 1995 each party presented its case to the IC. Two of the parties (Poland and Bulgaria) were already on track to comply with the Protocol in 1996; the IC recommended that their cases be reviewed later if the parties actually fail to comply. The other three parties (Belarus, Russia, and Ukraine) were instructed to develop plans to achieve compliance with the Protocol and by early 1996 each country had submitted a plan. However, the IC has deemed each compliance plan inadequate and has asked each party to provide more details on technical aspects and to confirm its political commitment to comply with the Protocol. In all three cases, the IC's requests for further information have been heeded, though Russia took considerably longer. Russia supplied its baseline data only after strong pressure and many delays; the data supplied were only for 1990 although 1986 data were requested and several other former Soviet states had demonstrated that it was possible to make useful estimates for 1986, as the IC had requested Russia to do.

The BBPRU submissions and the planned reviews of each party's situation involve technical issues beyond the competence of the members of the Committee. For these submissions the Committee has received advice from a special Technology and Economic Assessment Panel (TEAP) on countries with economies in transition. TEAP experts have actively participated in the IC's deliberations on these submissions. This panel is one of several expert groups that provide legitimate, useful, and timely advice to the ozone regime.

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66The formal basis for this determination is the declaration by Russia, on behalf of the five parties, that they were unable to meet their obligations under the Protocol. Later, that declaration and a similar letter to the Executive Director of the United Nations Environment Programme were formally defined as "submissions."


The IC recommended the plan and review approach to the MOP, which adopted three formal decisions concerning Belarus, Russia, and Ukraine that almost exactly followed the IC's recommendations. The one significant exception involved restrictions on some exports of ODS from Belarus, Russia, and Ukraine. Belarus and Ukraine, with no domestic production of ODS or recovery and recycling facilities, agreed to stop exports. However, as permitted by the Protocol, Russia intended to continue exports to developing countries for "basic domestic needs" and to develop an ODS recovery and recycling industry. Some developing countries, concerned about competition with Russian ODS exports in lucrative markets in the developing world, sought to ban all Russian ODS exports. But the result of their revisions to the decision has been more ambiguous wording that bans the re-export of Russian production through other members of the Commonwealth of Independent States (CIS), including Belarus and Ukraine. Trade among CIS member states is allowed; CIS economies remain closely interlinked, despite the collapse of the Soviet Union.\footnote{The final decisions are reported in Decisions VII/15-VII/19 (Poland, Bulgaria, Belarus, Russia, and Ukraine, respectively), UNEP/OzL.Pro.7/12, 27 December 1995, pp. 31-36, 51-54. For the IC proposals, see UNEP/OzL.Pro.7/9/Rev.1 draft decisions circulated at the MOP.}

The decision does not explicitly ban Russian exports for the "basic domestic needs" of developing countries. Russia must still submit information on recovery and recycling facilities if such production is to comply with the Protocol's requirements, but this information is required of any party that engages in recovery and recycling. Indeed, the IC (in 1996 and 1997) has recommended that Russia expand its recovery and recycling so that production of new ODS by Russia can be reduced.

These three decisions set a framework for handling likely submissions of noncompliance by other members of the CIS if they become parties to the Protocol. Already the model is being used for noncompliance by Latvia and Lithuania. Estonia has also raised its noncompliance before the IC, but that case has been postponed until Estonia ratifies the Montreal Protocol (and thus is formally in noncompliance). GEF funding for ozone projects in all the transition countries is conditional upon ratification of the London (1990) amendments to the Protocol, which added many ODS to the Protocol's regulatory commitments and also requires all non-developing countries to pay into the MLF. Many transition countries have hesitated to ratify because of this additional cost, although their MLF contributions would be smaller than the funding they will receive from GEF. For now, as in the cases of Belarus, Russia, and Ukraine, the problem of MLF contributions has been informally set aside in favor of ratification.\footnote{UNEP/OZL.Pro/ImpCom/13/3, 28 March 1996, pp. 8-10; UNEP/OZL.Pro/ImpCom/14/4, 26 August 1996, pp. 2-6.} It is important to note that the work of the IC and funding from GEF concerns only the fraction of ODS production and consumption that remains after each country has made substantial efforts to comply with the Montreal Protocol on its own. In Lithuania, for example, 80% of CFC consumption (compared with 1986 base year) had been eliminated before Lithuania raised its noncompliance with the IC and sought funding from the GEF to help eliminate the remaining
Although the BBPRU cases are examples of self-accusation, in none of the countries was the submission an entirely voluntary act. Funding needed for those countries to comply has been allocated by the GEF. However, before the GEF would approve additional projects in Belarus, Russia, and Ukraine, it sought broad approval of these countries’ compliance plans by the IC and the MOP. Although the GEF has no official role within the Montreal Protocol’s system of institutions, in general it sees its role as supporting the funding of projects that contribute to the compliance and effectiveness of relevant global environmental agreements. Because the countries with economies in transition are not considered developing countries, they are not eligible for MLF funding. Thus, the GEF has identified these countries as fitting into its funding niche for stratospheric ozone protection.

Although the GEF provides the funding, the IC continues to play the central role by regularly reviewing progress and dealing with compliance issues as they arise. The decisions pertaining to Belarus, Russia, and Ukraine state that,

in case of any questions related to the reporting requirements and the actions of Belarus, Russia, or Ukraine, the disbursement of the international assistance should be contingent on the settlement of those problems with the IC.72

Speaking to the IC, when the IC developed its recommendations for handling the BBPRU cases, a GEF representative underscored that “GEF funding was subject to the formal processes of the Montreal Protocol for noncompliance.” In the case of Russia, which only reluctantly supplied the information requested, the representative added that the “GEF was awaiting the advice of the IC as to the quality of the Russian Federation’s submissions ... before proceeding with a project for the Russian Federation.”73 Thus, in practice the system of institutions that reviews implementation and handles problems of noncompliance extends beyond the formal boundaries of the Montreal Protocol. The Committee serves as the arbiter of conditionality between these countries’ compliance and the supply of GEF funding. This model is promising, but it does not indicate how compliance problems will be handled in developing countries, which are suspicious of the conditionality and will draw their funding from the MLF, not the GEF.

By far the most difficult of the BBPRU cases has been that of Russia. Many observers are privately skeptical of the accuracy of the Russian data, but there are no independent means to

71 UNEP/OzL.Pro/ImpCom/14/4, 26 August 1996, p. 5.

72 Decision VII/17 (paragraph 7), Decision VII/18 (paragraph 9), and Decision VII/19 (paragraph 7), UNEP/OzL.Pro.7/12, 27 December 1995, pp. 32-36.

73 UNEP/ImpCom/12/3, 1 December 1995, pp. 5-6.
verify them. An additional concern is that Russia will not implement the full phaseout. But most important is the problem of trade. Russia is the only major CFC producer of the FSU, and it had been planning to recover, recycle, and sell ODS in foreign markets to earn hard currency. The decision by the MOP may limit that lucrative trade. Russia's strong objections to that ban led to the unusual outcome that the decision was adopted "by consensus" with one unnamed party (Russia) dissenting. Whether Russia's dissent matters is unclear. While the decision instructs Russia to control these exports, it might also legitimate efforts by other countries to ban imports from Russia. Given the already lax Russian export controls, it may be the import controls that matter most.

Interestingly, depending on how the ambiguous decision is interpreted, this may be the first time that substantial trade sanctions have been applied within the Montreal Protocol regime. If an importer applied those restrictions, and if Russia were a member of the World Trade Organization (WTO), Russia might initiate a WTO dispute to challenge the trade restrictions. That scenario has long been feared by those who advocate using trade sanctions to enforce compliance with environmental agreements because compatibility of such measures with the free-trade-oriented WTO rules remains unclear. However, this thorny problem does not arise when sanctions are applied against countries that are not WTO members.

By the middle of 1997 the plan and review approach to handing Belarus, Russia, and Ukraine appeared to be working well—all three countries were moving toward compliance. Most problematic has been the Russian case, in part because Russia has delayed the provision of data and in part because external funding, while substantial, has been partially delayed. By the end of 1996, the GEF had cleared about US $40 million for projects to eliminate ODS in Russia, with a similar amount of funding to be paid by Russia using domestic resources. However, the supply of viable projects to cut Russian ODS production and consumption still exceeds the available external financing; the GEF and the World Bank are attempting to raise the additional needed money. Nonetheless, progress in Russia has been measurable. Russia's planned ODS production for 1996 was only one-quarter of its production capacity in 1990. Since 1995, when the Russian case under the Non-Compliance Procedure was initiated, production has fallen about 40%. Russia has implemented a quota system to regulate production and plans to eliminate all production of new ODS by 2000.

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74 UNEP/OzL.Pro.7/12, 27 December 1995, pp. 52-54.

V. Systematic Analysis of the Work of the Committee

In the previous sections the regular and ad hoc components were assessed; arguments were illustrated with particular issues that the IC has handled. Here, an effort is made to analyze the Committee's work systematically and to answer two classes of questions. First, how has the IC divided its attention between the two main types of commitments that are adopted in international agreements: Programmatic commitments (mainly reporting of data because the commitment to pay MLF contributions has never been addressed by the IC) and regulatory commitments (controlling consumption of ODS)? Second, to what degree has the IC focused on specific, as opposed to general, problems of noncompliance. Answers to the first question help assess whether the IC has been responsive to the types of potential noncompliance--programmatic commitments have been in full effect since the IC began operation, but the most stringent regulation commitments took hold in 1994--1996. Answers to the second question are especially important because the NCP has a unique role when handling specific cases of noncompliance. The handling of specific instances of noncompliance is the least developed aspect of systems for implementation review in international environmental law.

Discussion of substantive matters in each of the reports from the 18 meetings of the Committee--December 1990 to June 1997--was coded into one of four categories:76

Matters related to compliance with programmatic commitments:
1. General discussions;
2. Country-specific discussions or deliberations initiated by the situation of a specific country;

Matters related to compliance with regulatory commitments:
3. General discussions;
4. Country-specific discussions or deliberations initiated by the situation of a specific country.

The number of lines from each report devoted to each category has been tabulated and the results are charted in figure 4.1. (Reports from meetings that were separated by only a few days were combined.)

[figure 4.1 about here]

76"Substantive matters" excludes all portions of the report concerned with rules of procedure, officers, reorganization of the Committee, and formalities in opening and closing the meeting. Coding was done manually by the author; copies of the coded Committee reports are available for inspection. The number of lines in Committee reports devoted to each category were then counted and tabulated. Raw data for meetings 1-12 are reported in Victor, 1996a and 1996b, op. cit., note 1.
Results and Implications

Although it is difficult to identify robust trends after only seven years of operation, three findings are evident from the data (see figure 4.1). First, the bulk of the Committee's work has been general and has concerned programmatic commitments (i.e. mainly data reporting). Since the third meeting, the attention given to general matters of data collection has been relatively constant. Most meetings of the IC include a section (of fairly constant length) in which the Secretariat gives the IC a summary of the state of data reporting. The bulk of the Secretariat's report is general; specific countries are mentioned, usually in lists, but most of the discussion does not focus on particular countries or result in an explanation of why countries have not reported their data. The abnormally high totals for the 8th and 17th meetings reflects the committee's debates on how to handle the general problems of data revisions and reclassification of developing countries (8th meeting) and to streamline the Montreal Protocol's three partially separate data-reporting requirements (17th meeting).

Second, whereas general attention to data reporting has been continuous since 1992, attention to country-specific aspects of data reporting has increased (see figure 4.1). The Committee began with a loose mandate; it started by addressing those issues of noncompliance that were most immediate for the Protocol, data reporting, and did so in a general way. But that system has evolved, and the Committee now increasingly handles specific issues as well. This shift to case-specific issues took place in 1993 and 1994, under the regular system and before any formal cases of noncompliance were raised. It is plausible that the substantive experience during those two years was useful preparation for handling the more difficult cases under the ad hoc component.

Third, since late 1993 the Committee has increasingly addressed matters of potential noncompliance with the Protocol's regulatory commitments. Nearly all of this attention has come in the form of country-specific discussions, primarily concerning countries with economies in transition. Since 1995, the majority of the Committee's attention has been devoted to actual or potential cases within the ad hoc component. In sum, today the IC devotes most of its time to its most unique function in international environmental law—handling specific compliance problems. In 1990, when the Committee began operation, it was hardly clear that it would evolve to fill this niche and play a useful role.
VI. Conclusions and Implications for International Cooperation

Until 1993, the NCP did not have a clear position within the Montreal Protocol's system of institutions.\textsuperscript{77} Now its legitimacy and influence are growing. In the past its relative obscurity gave it control over its agenda, but more and more the Committee is being asked by other bodies of the Montreal Protocol system to consider issues. Increasingly, parties also seek the Committee's advice on compliance problems. Today the Committee is the legitimate first-stop forum in any formal discussion within the Montreal Protocol on matters related to compliance.

This study shows that the Committee by itself has had some influence in getting countries to report data as required by the Protocol. But its influence has been most evident when countries have found it relatively easy to comply. Because its powers are quite limited, the Committee has had less success in inducing compliance in cases where gathering and reporting data have been difficult, primarily in developing countries and a few countries with economies in transition, notably Russia. Regarding data reporting from developing countries, the MLF and its implementing agencies now have many projects under way to help these countries improve their capacities to report. Essentially all efforts to identify and manage these projects are made within the MLF, its implementing agencies, and the parties. The IC plays almost no role. The MLF, implementing agencies, and Committee exchange information, but there is little if any change in the projects that the MLF and agencies support as a consequence of the issues brought before the Committee.

Increasingly, the Committee has addressed issues beyond data reporting, notably, compliance with the Protocol's obligations to regulate ozone-depleting substances. Nearly all have consisted of specific concerns about compliance by a particular party. All of those issues have been put on the Committee's agenda by the affected party. The Committee has also addressed some general issues related to compliance with regulatory commitments, such as drafting the reviewing decisions for the MOP, which has contributed to the efficiency of the Montreal Protocol, as would any well-organized subsidiary body. But the Committee has played a unique role and has had its greatest influence on compliance by handling specific cases.

In 1995 the Committee heard the first cases lodged under the ad hoc component by Belarus, Bulgaria, Poland, Russia, and Ukraine. To handle those cases, which are still unresolved, the Committee has adopted a pragmatic, problem-oriented approach. It has focused on ways to achieve compliance, requiring each party that is not in compliance (currently only Belarus, Russia, and Ukraine) to document its plans for complying with the Protocol. The Committee has periodically reviewed these plans and handled issues that have arisen. The plan and review approach demonstrates a useful role for the Committee. However, the parties, especially Russia, have cooperated with the Committee mainly because the GEF, which provides the funds to comply, has made funding conditional upon the IC's approving each party's plan.

\textsuperscript{77}Hugo M. Schally, interview with author, Vienna, Austria, June 1995.
While the Committee applies mainly the soft management approach to noncompliance, it has been effective in its most difficult cases of noncompliance only because it has access to slightly "harder" tools of conditionality.

The Committee does not interpret (legally or politically) the provisions of the Protocol. Such a quasi-judicial function could lead to a body of "case law" on the application of the Protocol. However, the Fourth Meeting of the Parties (1992) reaffirmed that interpretation of the Protocol "rests with the Parties themselves." In particular instances where it would have been extremely efficient to delegate detailed decision making to the Committee, the Meeting of the Parties has underscored its final authority. In practice the Committee has been developing this quasi-judicial function, as evident in its handling of the threat to cut off MLF funds to Mauritania, its strict application of rules governing the revision of data and reclassification of Article 5 countries, and the "plan and review" approach to handling the cases of noncompliance by Belarus, Russia and Ukraine. This role has increased the stature and influence of the Committee, which will presumably continue so long as the Meeting of the Parties (which holds all final powers in the Protocol) follows the Committee's advice.

This essay analyzed the regular and ad hoc components separately in order to explore their differences and to focus on detailed policy-relevant lessons that can be learned from the two separate approaches to addressing compliance problems. However, there are many commonalities. Both the ad hoc and regular components have the same basis in law (the NCP) and are managed by the same institutions (the Implementation Committee and Secretariat). The tools that the Committee uses to handle both its regular work load and ad hoc cases are the same. These commonalities have been important--the Committee's work as a standing body over five years built legitimacy and competence that improved its ability to handle the first ad hoc submissions. In the future, the Committee's work as a standing body may be more legitimate and influential because it has handled the first ad hoc submissions well.

Throughout its history, the Committee's approach has been pragmatic. Its aim has been to cooperate with parties to find ways to achieve compliance, rather than to adjudicate and apportion blame. This approach is one way it differs from traditional dispute resolution and is part of the reason the Committee and Procedure have been active. They improve compliance by operating in the realm between mere peer pressure (which is often ineffective in ensuring compliance) and abrasive dispute resolution (which is never used). The pragmatic approach raises many questions about traditional concepts of state responsibility for compliance under international law. So far, however, the approach seems to improve the ability of the Procedure

78 Schally, 1996, op. cit., note 4, p. 90.


to influence the behavior of noncompliant parties.

Some implications for policy--applying lessons learned to other regimes

If the designers of other noncompliance procedures intend to create mechanisms capable of efficiently handling difficult cases of noncompliance, they should use caution in drawing lessons from the operation of the Montreal Protocol's experience. The Protocol's NCP has not often been used to handle difficult problems of noncompliance; experience with its system for ad hoc submissions is limited. Efforts to give it more extensive powers that might be needed to handle difficult cases have been rejected. Links between the Committee and the MLF and its implementing agencies, which could give the Committee more influence and leverage, are relatively weak (but growing stronger). The decision to cut off MLF funding to parties that persistently fail to report data demonstrates one of the Committee's toughest tools at work, but this decision applies only to baseline data, which are relatively easy to report once an MLF program is in place.

This history suggests some detailed lessons for the design of similar procedures in other regimes. Among these is the value of a standing committee that can handle issues even without a formal submission of noncompliance. Backed by an active Secretariat, the committee can operate a regular review procedure that handles easy cases of noncompliance. Moreover, such a committee can build expertise and legitimacy, which are useful assets once difficult issues of noncompliance reach its agenda. Other detailed lessons are discussed in other essays based on this study (see note 1).

Furthermore, this analysis speculates on how review mechanisms improve international cooperation. Most observers see the Protocol's stringent targets for abatement of ODS, wide participation of industrialized and developing countries, prohibition against reservations, and the inclusion of trade sanctions as reasons why the Protocol has been effective. Yet these strong commitments may be directly responsible for the weakness of the IC's mandate. Patrick Széll, chair of the ad hoc group that designed and elaborated the NCP, suggests that the experience of the Montreal Protocol illustrates an inverse correlation between the strictness of supervision and the stringency of its substantive obligations. The analysis here supports that claim. The weak NCP stems mostly from the participation of countries that were unsure whether they would be able to implement the substantive obligations, and thus were wary of adopting a stringent supervision mechanism. The commitments and institutions that countries are willing to accept must be seen as a package.

This inverse relationship need not repeat itself in other regimes: strong commitments can and often must go hand in hand with strong compliance controls. For example, over four

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decades the General Agreement on Tariffs and Trade (now the WTO) has evolved a more stringent supervision system alongside more detailed commitments that require greater changes in domestic policy. But so far the experience in environmental agreements is limited, and the results have been mixed. Although weak, the Procedure has played an important and unique role in handling specific problems of noncompliance—without the Procedure, many problems would go unaddressed, although other institutions could informally or formally handle them.

Some institutional reforms might help limit the inverse relationship that has been evident in the case of the Montreal Protocol. First, the Montreal Protocol has established a pattern of agreeing to simple legal texts (in this case Article 8 of the Montreal Protocol) and deferring nearly all of the debate over the function and form of such procedures until later. In the spirit of viewing commitments and institutions explicitly as a package, it might be more useful to develop the form of review mechanisms alongside the commitments and not to defer institutional design until after commitments are accepted. When dealing with regimes that manage pollution, such a reform may be especially important because it is likely that there will be significant trade-offs and synergies between the stringency of commitments and review mechanisms that require a more integrated negotiation.

Second, when the NCP was negotiated, parties seem to be especially wary of untested compliance mechanisms that could find them in noncompliance but offer few ways out. In the case of the NCP, such wariness has abated over time because the Committee has been responsive to the interests of the parties and has mainly applied positive incentives to handling cases of noncompliance such as funding and technical assistance. But wariness remains. If the NCP model is used in other regimes, it might be valuable to allow some form of relief from commitments once the implementation committee has gone through a series of direct exchanges with the relevant party. Such an arrangement may increase the willingness of parties to expose their problems of noncompliance and to adopt stringent noncompliance procedures by offering an ultimate escape for parties. To some degree, "temporary relief" has been the IC's pragmatic approach in the BBPRU submissions. As long as the parties are implementing their agreed plans to comply with the Protocol as soon as possible, less attention is being focused on whether the parties are formally in compliance and apportioning blame for the failure to comply. Such an approach partially deflects the most onerous cases of noncompliance; it is not a recipe for gaining the most from law and compliance supervision, but it seems to work.

Implications for this thesis

Finally, what does this study imply for the three questions that are the focus of this thesis? Regarding the first question—how the choice of regulatory instrument influences outcome—the Montreal Protocol has employed almost exclusively only binding instruments. Thus, by itself, the case offers little direct insight into the relevance of instrument choice. The case, and episodes of noncompliance within the case, are useful when compared with episodes in other cases where nonbinding instruments have been employed; such structured comparisons are taken up in the
conclusion to this thesis.

Nonetheless, the case does offer three partial insights into how instrument choice influences outcomes; all are consistent with the argument has been outlined in the introduction and will be developed in the conclusion. First, the Protocol has made one or less binding commitment—the requirement to pay into the MLF is ambiguous but probably not strictly binding under international law. Nonetheless, nearly every OECD country has complied. This appears to reflect mainly that the OECD nations put the stratospheric ozone issue on the agenda and face strong public pressure to address the problem. Nearly all of the missing MLF contributions are from countries in transition; their failure to comply reflects that the OECD nations are, also, paying for some of the costs of compliance in those nations; forcing them to pay (smaller) sums that they owe to the MLF would be counter-productive to the main objective, which is to minimize production and release of ODS to the atmosphere. More MLF funding is increasingly needed to help developing countries phase out ODS, but the transition countries are unlikely to provide that money even if pressed hard. The reluctance of the Baltic states to ratify the London amendments to the Protocol, which would require them to pay into the MLF, illustrates the general fear of these countries to undertaking any commitments that require disbursement of already scarce state revenues. Thus, delinquent MLF contributions have not been pursued by the Implementation Committee and the NCP because doing so would not contribute to the Protocol’s objective and, more importantly, the NCP’s mandate and the IC’s operation have been narrowly construed; they consider only strict violations of the Protocol (see below). The nonbinding nature of the MLF commitments has allowed this delicate issue to be acknowledged but largely set aside, without threatening the integrity of the Protocol’s binding regulatory and programmatic commitments.

Second, the experience with the NCP underscores the obvious point that the legal mandate of such a procedure strongly affects how it operates. The NCP is charged with pursuing matters related to compliance with the Protocol, not more broadly all matters related to the Protocol’s objectives. Thus great care has been taken to compare a country’s performance with a strict reading of the binding commitments in the Protocol. Hence the Bulgarian and Polish cases were not pursued because those countries were not strictly in noncompliance; the Czech case of noncompliance with the halon ban was formally noted and documented, even though the Czechs had already complied by the time they submitted data to show that earlier they had not been in compliance. The Latvian and Lithuanian cases were pursued conditional upon those countries ratifying the London amendments and thus becoming both formally in noncompliance with the Protocol and formally members of the relevant international agreements, which would thus allow the GEF to unlock funds for those countries pursuant to GEF guidelines. In the conclusion to this essay it will be suggested that nonbinding agreements can be used to adopt ambitious commitments, but the Montreal Protocol experience (among others reviewed in chapter 5) points to the importance of carefully written and detailed commitments when matters of noncompliance turn on detailed interpretations. It is plausible that such careful and detailed commitments are more likely to emerge when they are binding and thus diplomats pay special attention to their specific and possible implications.
Third, the Montreal Protocol case underscores that binding commitments engender special efforts by diplomats to ensure that their countries can comply. Other studies have shown that a crucial element of the Protocol was the "essential uses" exemption, which allowed countries to agree to strict limits (elimination of the most potent ODS) while minimizing fear that a specialty ODS use for which substitutes are not yet available (e.g., metered dose inhalers, or the solid rocket motors of the US space shuttle) will not force a country into noncompliance.\footnote{Greene, op cit., note 68.} In addition, this study has shown that \textit{de facto} the "plan and review" approach is a temporary exemption that has encouraged noncompliant countries to come back into line. In all countries, with the exception of "essential uses", the technological changes needed to achieve phaseout of ODS are sufficiently predictable that countries could adopt strict commitments and know that they would be able to comply. In developing countries, that predictability depends heavily on the supply of external resources from the MLF; those countries have thus already signaled that they interpret the MLF as a quid pro quo for their compliance—if MLF funding falls short, so will their compliance. Thus, in the OECD countries that have led this issue—where public pressure to address the problem and confidence of the ability to comply is high—it has been possible to gain acceptance for the use of instruments that are strict and binding. In other countries, the acceptance of binding commitments has been made conditional on other factors, which have reduced the exposure of countries to potentially being found in noncompliance with the binding instrument while not having a good excuse.

Regarding the second and third questions addressed in this study—on the operation of systems for implementation review (SIRs) and, in particular, the handling of instances of poor implementation—this study offers many insights. The protocol's NCP is one of the most advanced examples of a mechanism for handling noncompliance in multilateral industrial regulation. Only the dispute resolution mechanisms in trade agreements—in particular the GATT/WTO dispute panel system—provide more elaborate examples with a longer history.\footnote{Also relevant is the WTO's Trade Policy Review Mechanism (TPRM). The author intends to conduct a case study on that mechanism prior to publishing this thesis as a book.} This study points to four important findings related to SIRs and the handling of poor implementation. First, the SIR depends heavily on the availability of data. As in all major international regulatory regimes, the Montreal Protocol's main formal source of data is self-reporting by states. Contrary to the widely held belief that environmental NGOs, competing industries and other interested actors would act as watchdogs and supply alternative data, self-reporting has been nearly the exclusive source of data in the Montreal Protocol. Gathering alternative data is expensive, and the benefits to nonstate actors of doing so are probably very small. In handling the cases of Belarus, Russia and Ukraine, the regime vested a special expert body to gather and assess additional information—potential donors wanted an accurate assessment of resources needed for these countries to comply, and self-reported data had been incomplete or potentially inaccurate. Similar detailed assessments are managed by the MLF's
implementing agencies for projects in developing countries. However, the final authority over
which data are submitted rests with the individual parties—-in every case where a country has
insisted upon revising its data, the Protocol (via the Implementation Committee) has accepted the
new figures, even when they entail a change in Article 5 status and thus significantly alter the
party's regulatory commitments. No case of noncompliance with regulatory commitments has
been pursued without a country having reported at least some data that show its situation of
noncompliance. The central importance of data explains why the Montreal Protocol institutions,
including the IC, have devoted considerable attention to improving data reporting. In addition to
the conditionality of MLF funding on reporting of data, the Protocol has sought to discourage
revision of data by urging countries whose data revisions allow them to regain Article 5 status
not to seek funds from the MLF. Whether data quality is a problem is unclear; failure to report
data at all has been a problem, which is being partially addressed through MLF conditionality.

Second, the IC has employed a wide range of techniques for inducing countries to comply
with the Protocol. Most of its work is squarely in the "management" style of handling
noncompliance—its holds discussions, makes diplomats who represent noncompliant states feel
uncomfortable, and aims to make noncompliance transparent. Those techniques have been
effective in many cases, but mainly when noncompliant countries have found it easy to comply.
Tougher measures that are more characteristic of "enforcement," including some such as
threatening to cut off funding and apply trade sanctions, have been needed to make an impact in
cases where compliance is more costly and countries have stronger intentions not to comply.
The effectiveness of both techniques has risen because both are employed. Notably, the IC's
influence was limited when all that it had employed were management strategies. After the first
demonstration of enforcement techniques in 1995—the conditionality of MLF funding
(Mauritania episode) and conditionality of GEF funding and possible trade sanctions (Belarus,
Ukraine and especially Russian cases in the BBPRU episode)—all of the IC's work has become
more effective. It is easier to manage when tougher measures can be credibly threatened for
parties that don't submit to management.

Third, whether a noncompliance procedure can influence behavior and contribute to the
objectives of a regime requires assessing the procedure in the context of the regulatory
commitments that it supervises. The Montreal Protocol's IC has improved the effectiveness of
the ozone regime because the commitments that it supervises will, if complied with, contribute to
the objectives of the regime. Noncompliance with the Protocol's strict commitments is more or
less synonymous with implementation failure; thus the IC is triggered precisely in those
circumstances (noncompliance) when the actions of countries fail to meet the Protocol's
objectives. In other cases, simply transplanting the NCP model will not have the same effect. If
binding commitments are weak or totally inconsequential, which is often evident in regulatory
regimes, then the NCP will never be triggered. If the most important regulatory commitments
are nonbinding, but the NCP is part of only a binding agreement, then it also will not be
triggered.
Major Conclusions

Chapter 5
The studies in this thesis have explored a wide range of factors that influence the effectiveness of multilateral industrial regulation. This concluding chapter returns to the main issues raised in the introduction. First, it reviews and answers the main research questions, illustrating the arguments with episodes from each of the three case studies. Second, it reviews whether the schematic model has been useful as well as the implications of that model for theory and research. Third, it briefly presents evidence from cases conducted by other scholars to explore whether the main conclusions from this thesis are applicable in other settings.

I. The Main Research Questions: Some Answers

What do these studies imply for the three research questions posed in chapter 1? This section summarizes the main answers.

Type of Legal Instrument

This study falsifies the simple hypothesis that binding commitments are more effective than nonbinding ones. The case on regulation of trade in hazardous chemicals and pesticides through a system of prior informed consent (PIC) suggests that nonbinding instruments can lead to substantially more effective regulation when the environmental problem at hand is marked by uncertainty but parties nonetheless want to start the process of cooperation. When the nonbinding PIC system was adopted it was neither clear which substances should be included in PIC nor how PIC should work in practice. None of the important rules was formalized in the nonbinding PIC system, and thus all could be adjusted easily and rapidly by the expert group that managed the PIC system. Participation in the nonbinding PIC system has been high--more than 100 countries regulate imports and/or exports of hazardous chemicals and/or pesticides under the PIC system. Nearly all producers of hazardous chemicals and pesticides participate actively through industry organizations; several environmental and consumer groups have also participated, such as by conducting field surveys and supplying other information on these hazardous substances. All of these participants "learned by doing," and the PIC system evolved on the basis of their experience. Where administrative capacity to regulate these hazards has been poor when PIC was launched, active training programs have been implemented with considerable effect.

In 1989, when PIC was adopted, advocates of tight trade regulation saw the adoption of a nonbinding system as a setback--they favored a binding alternative. In retrospect, wide participation and learning by doing have led to a regulatory framework that would not have been as extensive or influential if PIC had been binding. It is remarkable how far and rapidly the PIC system advanced since 1989 in light of the fact that neither of the instruments that formally establish PIC--the FAO Code of Conduct on the Distribution and Use of Pesticides and the UNEP Amended London Guidelines--gives much guidance on exactly how the PIC system
should operate.

In the PIC case, the more effective nonbinding approach certainly reflected that industry was highly supportive—it supported the nonbinding scheme because it feared a legally binding alternative. Because industry support was assured, the nonbinding instrument yielded remarkably effective international environmental governance at the early learning stages of the regime to control trade in chemicals and pesticides. Studies of domestic regulation have shown that often nonbinding measures are effective when backed by the credible threat of binding law. The PIC study suggests that, relative to binding measures, the benefits of a nonbinding approach may be even greater at the international level because the effectiveness of international regulation is more dependent upon earning the consent of the regulated entity, and that consent is more forthcoming when regulatory instruments are nonbinding.

At this writing (late 1997) the PIC system is being converted to a binding instrument. Negotiations have proceeded for nearly two years because the representatives from governments that might sign a binding "PIC Convention" want to be sure that they can comply with the rights and obligations specified in the agreement that they draft. Thus close attention is being paid to procedural details. Interestingly, at nearly every point in the drafting process where negotiators have been uncertain how to proceed they have referred to the procedures that have evolved through the nonbinding PIC system. National interests are shaping the negotiation of the binding PIC Convention, but in large part the negotiation process is an effort to codify what is already being done (quite well) under the nonbinding system—since those procedures are already in operation, governments are confident that they can sustain compliance under a binding convention.

The other studies in this thesis confirm the expectation that parties tend to join only those binding commitments that they are relatively sure they can meet. This is most starkly evident in the Codex case, where countries have been able to accept or reject (and thus make binding or nonbinding, respectively) any commitments (Codex standards). The case study shows that patterns of acceptance appear to match interests, and that practically all countries have been conservative in their acceptance of Codex standards—thus the overall acceptance rate is very low. Moreover, commodity standards allow "acceptance with deviation," which has been used extensively by countries to unilaterally tune their international commitments to match existing

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1The author is mindful that a firm determination of the effectiveness of nonbinding PIC is severely hampered by the lack of relevant data, which is a major failing of the nonbinding PIC system. It underscores the need to build data systems and self evaluation for nonbinding and binding regimes alike (see below). Moreover, as in all research on complex phenomena, a definitive judgement on the counterfactual—what would have happened if PIC had been binding—is impossible to make. The discussion here focuses on suggestive and likely conclusions, based on detailed analysis of the history and judgement of possible outcomes if one factor (the legal status of PIC) were different.
national laws and behavior. Developing countries have used the deviations less often because they have fewer existing national rules that might conflict with international standards. Failure to accept standards yielded no penalty. Compliance with "accepted" standards has probably been very high, but influence on behavior appears to have been minimal. Now that Codex has been incorporated into the World Trade Organization (WTO), all Codex standards appear to apply to all WTO members, regardless of whether they have been "accepted." The consequence of this change in legal status has, so far, not been to increase implementation of Codex standards but, rather, to make national governments even more hesitant to agree to those standards in the first place. That is evident in several high profile cases—on bovine growth hormones (adopted narrowly by secret ballot) and bovine somatotropins (rejected by secret ballot)—as well as several less politicized cases such as on standards for mineral water and cheese. Incorporation into the WTO has made standards binding and has allowed strong enforcement mechanisms to be used in support of Codex standards, but that has merely exposed the incompatible interests ("Deadlock") that previously were hidden by the ability of nations to avoid inconvenient Codex standards.

In the Montreal Protocol case, governments have also adopted binding commitments principally when they have been confident of their ability to implement them. All OECD countries have complied with all of the regulatory commitments of the Protocol, and that achievement has required substantial changes in behavior. The Protocol is rightly seen as a success in international environmental regulation—it is not a case of "high compliance but low implementation," which is evident in many other regimes with binding commitments such as the Codex. But governments faced strong domestic pressure and were confident that they could implement the needed measures, which mainly affected a small number of producers of ozone-depleting substances and a larger number of users. Regulatory commitments in the Protocol were tightened as substitutes became available, and a special "essential use" exception ensured that these substances could be used where substitutes were not available, without violating the binding Protocol.

Other studies have examined the negotiation and implementation of the Protocol in more detail; the case study in this thesis focuses on instances of and responses to noncompliance. It

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2 As in the PIC case, the author is mindful that precise determination of compliance and implementation of Codex standards is difficult to make because no data are collected. However, as in the PIC regime, the case study in this thesis employs varied methods to trace whether Codex standards have influenced behavior. Those include the first ever tabulation of acceptance rates as well as efforts to compare deviations with national laws. Over its life of more than three decades the Codex Alimentarius Commission has never attempted such assessments. In light of the paucity of data, the overall assessment reported must be qualified, but it is probably accurate.

3 Additional examples include the 1985 First Sulphur protocol to the Long Range Transboundary Air Pollution (LRTAP) Convention and the 1988 NOx protocol, both of which are briefly discussed later in this conclusion.
shows that some industrialized countries in "transition" have not complied, but most have implemented nearly all regulatory commitments on or before the date required. Belarus, Russia and Ukraine are the principal exceptions, and Russian noncompliance has caused the greatest concern because Russian emissions of ozone depleting substances are the largest of all the noncompliant countries and Russia has been the most intransigent. These cases do not falsify the argument presented here—that nearly all countries have adopted binding commitments only when sure that they can comply. Rather, Russia's failure to comply starting in 1996 principally reflected that circumstances had changed and the Russian government gave compliance a lower priority than other public policies. While that failure to comply with regulatory commitments might be termed "inadvertent," Russia also willfully failed to comply with the programmatic requirement to report data even when it could have easily supplied the necessary data. How international institutions identified and responded to this case is discussed further below. What is important here, however, is that if Russia had anticipated these obstacles to noncompliance when the Protocol was first negotiated it is unlikely that it would have given consent (i.e., signed and ratified) to such binding commitments unless other measures, such as financial assistance and/or more lenient terms of compliance, had been part of the package. Indeed, the negotiating behavior of Russia's predecessor—the Soviet Union—provides excellent evidence of how governments make special efforts to adopt international commitments with which they are sure they can comply. When the Protocol was finalized in 1987, the baseline was adjusted to grandfather production plants under construction—that device was designed to make it easier for the Soviet Union to ensure compliance. Developing countries, also, have negotiated special provisions—delays in the imposition of regulatory commitments and compensation through the Protocol's Multilateral Fund—which reflect not only that they are less willing to pay the costs of compliance but also that they want to ensure they are able to comply when they join the Protocol.

Implementation Review

The introduction argued that the review of implementation could be especially important in managing problems that are complex because such problems require legal instruments that can adapt. Implementation review can contribute to that adaptive process by assessing the adequacy of existing implementation efforts and of what efforts will be needed to address the regulatory problem at hand. Implementation review can make it easier to adjust commitments in light of experience and thus may be especially important when combined with nonbinding regimes that are designed for such learning. Implementation review is also necessary for identifying failures to implement existing commitments—a function also termed "verification"—which is a necessary to effective responses (considered in the next section).

4 Other members of the former Soviet Union have not implemented the Protocol's provisions but are not (yet) in formal noncompliance because they are not (yet) members of the Protocol. Soon they will be, and then their cases will be handled with the Belarus, Russian and Ukraine cases as a model.
This section focuses on three aspects of implementation review: monitoring of implementation; evaluation of implementation; and assessment of the adequacy of existing commitments. Responses to identified cases of poor implementation is addressed in the next section.

**Monitoring National Implementation**

All three studies underscore that the supply of data on implementation, which is crucial for implementation review, is generally poor. Neither Codex nor the PIC system include any mechanism to collect data on implementation. International agreements often require self-reporting by governments on their efforts to implement commitments, but even that mechanism is absent from these cases. In practice, experts, industry and other participants do provide data, but the supply of such information follows their interests and expertise; systematic data collection has not been attempted and thus systematic assessment remains difficult.

The Montreal Protocol illustrates a more extensive system for gathering data, but it does not suggest that requiring countries to report data—as the Protocol does—will lead to an adequate supply of useful information. The Montreal Protocol requires only simple statistics on production and trade in ozone-depleting substances; developing countries receive financial assistance to pay the cost of compiling baseline data and building the institutional capacity to report data periodically thereafter. When countries receive that assistance they report data; when they don't, data are few or nonexistent. Moreover, the Protocol has explicitly avoided nearly all questions related to data quality.

In short, the data that are useful for reviewing national implementation are scarce. Official data often do not exist at all, which can be problematic since formal mechanisms for reviewing implementation often depend heavily on official data. The study on the Montreal Protocol's Non-Compliance Procedure shows that official data have been the principle means of reviewing implementation of the Protocol, and thus the Implementation Committee has focused much attention on rectifying problems with data reporting. Evaluation of the accuracy of official data has been a sensitive topic; in the few cases where alternative independent data have been available, conflicts with official data sets have been resolved by using the official data. The handling of the Russian case of noncompliance was hampered first by the limited supply of official data, and now by suspicions that official data are inaccurate. The other two case studies—Codex and PIC—do not illustrate such problems because there is no mechanism for gaining official data on implementation.5

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5The reports to Codex on "acceptances" are a partial exception to this statement. However, the Codex system has made practically no effort to review these reports systematically. The concept of "acceptance" has been eclipsed by incorporation of Codex standards into the WTO, where those standards seem to have application whether or not they have been "accepted."
None of these cases illustrate "monitoring" in the traditional sense of an administrative body making inspections. An alternative term, such as "cooperative monitoring" might more appropriately reflect that these, and many other international regulatory regimes, depend heavily or entirely on self-reported and scattered data. (At the domestic level, self-reporting of compliance is also common, but typically regulatory laws also include some provision for independent monitoring and inspections.)

Evaluation of Implementation

Only the Montreal Protocol has a formal mechanism for evaluating whether performance meets international commitments. In that case, the evaluation of implementation has consisted principally of evaluating whether a party has complied ex post, which is a trivial task because the commitments are clear and the data available are easily compared with those commitments. It is important to distinguish formal compliance from whether international commitments have been put into practice ("implemented") and caused changes in behavior ("effective"). However, the Montreal Protocol case underscores that compliance is an important concept because it is the benchmark against which performance is measured. (In this case, implementation and compliance are identical measures because the commitments require complete elimination of most ozone-depleting substances; thus, unlike other regimes where pollutants are managed at certain non-zero levels, in this case full compliance is synonymous with the international commitments having had their fullest possible effect.)

In the other cases, formal mechanisms for comparing behavior with international standards do not exist. In the PIC case, some informal mechanisms have arisen to fill the void. Those include the industry organizations, which appear to have helped ensure that their members (who supply nearly all of the hazardous chemicals and pesticides on the PIC list) comply; environmental and consumer organizations have also helped to evaluate implementation efforts. However, those informal mechanisms also reflect the interests of their sponsors—the industry organizations have ensured only that its members formally comply with PIC and have conducted

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pilot programs to enhance implementation of PIC in three countries but no more. The public interest groups have not strictly evaluated implementation of PIC but, rather, have sought to identify ways that the existing PIC system (and other chemical and pesticide regulatory schemes) should be expanded. International organizations, such as FAO and United Nations Institute for Training and Research (UNITAR), which run training workshops have also sought to identify ways to extend the PIC system and to build capacity; evaluation of the implementation of the existing PIC system has been incidental to UNITAR's larger mission—to expand and improve training activities. There has been one systematic review of those activities, but that review has focused on the implementation of the training programs themselves and less whether they have affected implementation of PIC at the national level. These facts partially reflect that PIC was created without a mechanism for reviewing implementation. That may be a common feature of nonbinding agreements; if so, binding agreements may be a necessary condition for rigorous review of implementation of international law, as in the case of the Montreal Protocol. However, this conclusion will briefly describe the experience under the North Sea regime, where extensive data reporting, monitoring and evaluation of implementation has occurred under nonbinding agreements.

Assessment of the Adequacy of Commitments

Assessments of the adequacy of commitments require information on the goals of the cooperation, information on existing and likely futures under existing commitments, and actual assessment of whether those futures are compatible with the ultimate goals. The first of these goals--are not evaluated here because they are principally determined by negotiation, although implementation review can provide technical information that aids the goal setting process. For example, expert assessments of the PIC system have contributed information that has guided the negotiation over the goals of the binding PIC convention. Implementation review is more directly relevant to the other two aspects of assessing the adequacy of commitments. The information needed for such assessments could be provided in conjunction with efforts to review implementation, and the capacity to assess whether parties are implementing commitments might also make it easier to determine whether the regime as a whole is on track. If these capacities overlap then implementation review could be useful not only for identifying implementation problems—discussed above—but also to the general adaptation of regulatory regimes over time.

The studies confirm that often the data that are needed to make assessments of the adequacy of commitments are the same as those needed to review implementation, and thus the weaknesses noted above also apply here. However, additional data, such as the on state of the environment and projections of future impacts, are also necessary for evaluating the adequacy of existing commitments. Often that information is provided from the scientific community and literature—in some cases (e.g., Codex and PIC) the data already exist in the literature, and in others (e.g., Montreal Protocol) new studies and model runs are needed. However, in all three cases that external scientific data has not been directly applied to policy decisions. Rather, intermediary mechanisms for reviewing and assessment data have been crucial. In the Montreal
Protocol, those have included the Technology and Economic Assessment Panels (TEAP) and Technical Options Committees (TOCs), which are not analyzed in this study, as well as a special expert committee assigned to handle the problems of Countries with Economies in Transition, which are analyzed here. In the PIC system, expert review has been partially conducted by the Joint Meeting of Experts on Prior Informed Consent (JMPIC) that have managed and adjusted the PIC system. In PIC and the Codex the FAO Joint Meeting of Experts on Pesticide Residues (JMPR) have also reviewed scientific data on pesticide hazards. In all of these cases, expert review appears to have made it easier to employ information from the regulated industries, which is often abundant and unavailable from other sources, while eliminating or reducing fears of "regulatory capture."

Neither the PIC nor the Codex regimes has a formal mechanism tasked specifically with assessing the adequacy of commitments. However, in both regimes such adjustment mechanisms have evolved, and both have made extensive use of expert delegation. In the PIC case, a small group of experts played the central role in elaborating the rules and decision-making procedures that have made PIC work. Interestingly, in contrast with binding instruments, the PIC expert group evolved to play this central role in part because there was no model for the PIC system. With alternative organizational forms absent, an expert committee convened by FAO for other purposes filled the need. In the Codex case, ideas for adjustments and elaboration of standards have come principally from national delegations and industry associations. An extensive committee and review process has elaborated the details. That political process was designed to produce standards backed by high political consensus; but when the standards have been technically complex expert committees have limited the range of political maneuvering, which accounts for some of the efficiency and qualified successes of Codex. Especially interesting is that the Codex system has successfully decoupled scientific and technical questions from political choices--the expert committees on pesticide residues and on food additives (JMPR and JECFA) do their substantive work seemingly free from political interference. Counterpart committees, consisting of government delegates, are more closely integrated into the Codex structure and take on the more political tasks of weighing costs and benefits.

Together these cases do not suggest a particular organizational form--other than

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independent expertise—that is especially conducive to reviewing the adequacy of commitments and proposing adjustments to commitments. Rather, what is most important is that such a function is performed. Both binding and nonbinding instruments have been more effective when subjected to periodic scrutiny and review. Formal mechanisms may be adequate for binding commitments because those commitments tend to be employed when uncertainties are low and thus the regulatory framework is relatively stable. In those instances of high certainty, the "wiring diagram" of committee relationships and procedures, which is especially important in binding commitments because they are highly formalized, is stable. For nonbinding commitments, less formal arrangements may be more appropriate because the wiring diagram is unknown at the outset. Indeed, in the PIC case no organizational chart was conceived in 1989 when PIC was created. In practice, the organizations that proved most important to implementing, assessing and adjusting PIC--JMPIC, industry associations, NGOs, and later the UNITAR training programs--could not have been anticipated at the outset. In both binding and nonbinding agreements, in practice implementation review has consisted of centralized and decentralized as well as formal and informal procedures—a "system for implementation review (SIR)," The PIC case suggests that the decentralized and informal elements are especially crucial when the wiring diagram is unclear. Through this approach, the most competent and useful organizations evolve into the most important roles. After initial "learning by doing" experience, the organizational elements became clearer. In the case of PIC, JMPIC emerged as the crucial central formal body, with other players--JMPR, the industry organizations, and a few public interest groups as the key suppliers of expert information.

In all three cases, industry provided vital information on hazards and technical options that was not easily available from any other source. In only a few instances have public interest groups played that role—the costs of gathering such information are high and the benefits, for a public interest group, are diffuse. However, this asymmetry has not automatically led to regulatory capture, as many have feared. At least some participation in decision-making fora by specialized public interest groups seems to have offset many risks of capture. In the Codex, such participation has been very low—observers and nonstate members of national Codex delegations are disproportionately drawn from industry. The risks of regulatory capture are higher in Codex; by coincidence, however, the global (rather than regional) orientation of Codex has made it difficult for industry to use Codex standards as protectionist barriers. In the few cases where Codex has adopted regional standards, evidence of protectionist behavior is stronger.

Application of regional standards to the global level has exposed their protectionist purposes, as in the case of the European regional standard on bottled mineral waters, which was written (mainly by European governments) to exclude water that is produced and bottled in many non-European regions. In other terms, a classic non-tariff barrier to trade. Another factor that has contributed to the lack of protectionism through Codex is that most Codex standards have not had much influence on national standards. Acceptance of Codex standards has been low (on average, 11%), and those standards that have been adopted appear to have had little influence.

In sum, mechanisms for implementation review have some significant overlap with the functions of evaluating the adequacy of existing commitments. The weaknesses of
implementation review—few and imperfect sources of data for "cooperative monitoring," and often minimal or nonexistent mechanisms for handling implementation failures—have not blocked the development of significant mechanisms for assessing the adequacy of commitments. Notably, both the PIC and Codex regimes have evolved from their original form because of active efforts to evaluate whether existing commitments are adequate. In the Codex case, initiatives for reform came from the member countries (in practice, the industry associations). In PIC, initiatives for reform came not only from stakeholders but also from the expert group that managed the PIC system. Especially in PIC, these mechanisms for evolution were crucial for "learning by doing." In turn, they have also helped to build up the capacity to engage in some limited reviews of implementation, although to date that capacity has not been used much.

Responses to Implementation Failure

Finally, each of the case studies in this thesis has examined the responses that are made, if any to instances of poor implementation. The studies confirm the expectation that formal handling of implementation failures is rare, as are responses. The selection of cases and episodes analyzed was intended to yield a variety of procedures and responses. The cases include the Montreal Protocol's Non-compliance procedure (NCP), which is one of the few mechanisms in all of multilateral environmental regulation that is dedicated to handling implementation failures. The case studies also include the recently strengthened WTO dispute panel system, which is de facto the only mechanism for handling failures to comply with Codex standards. The episodes include all significant cases of noncompliance handled under these two mechanisms. Thus this selection of cases probably overstates the availability and application of response mechanisms to implementation failures. Still, they suggest that responses are rare.

Part of the explanation is found in the incentives to invoke formal response mechanisms. The case studies show, as expected, that the number and type of implementation failures handled by these mechanisms depend on the design of the institution, in particular the incentives to "trigger" the mechanism. The NCP is multilateral and operates in the spirit of focusing on a particular country's problems and potential "cooperative" solutions. Every significant problem of noncompliance that has been identified with the data reported under the Montreal Protocol has been addressed, in some way, by the Protocol's NCP. However, all of the minor compliance problems—which concern failures to report data itself—have not been addressed under the NCP formally but rather by the Protocol's Implementation Committee acting as a standing committee. The Implementation Committee and the Protocol's Secretariat put these issues on the agenda,

\[8\] A notable problem of noncompliance not addressed by the NCP is illegal smuggling of ozone-depleting substances. That problem is poorly suited for a formal procedure such as the NCP because the magnitude and sources of the problem are known only poorly and thus there is little—other than to urge countries to tighten their border controls—that the NCP could do in response. That problem, almost by definition, is not evident in official statistics reported to the Montreal Protocol.
which entailed relatively low transaction costs because no formal claim of noncompliance has
been needed for the Committee to do useful work. The NCP has, itself, been triggered only
once—in the cases of Belarus, Bulgaria, Poland, Russia and Ukraine (BBPRU), by the
noncompliant countries themselves. Those countries were under pressure to address their
compliance problems, and the Procedure offered a multilateral mechanism that could deliver
benefits (funding). Thus the mechanism for handling implementation problems under the
Protocol actually consists of two interlocking parts—a standing committee and a more formal
procedures for more serious cases. Neither requires that a dispute exist between two parties
before they are invoked. In contrast, under Codex there is no mechanism for handling minor
problems, and thus the only implementation failures that are being addressed in that regime are
problems that are sufficiently grave that they yield a formal dispute that triggers the WTO
dispute panel system. The transaction costs in invoking that system are high. Only one case of
noncompliance with Codex standards has invoked the creation of a WTO dispute panel—that of
bovine growth hormones (BGH). BGH is being handled because it is strongly and directly in the
interest of US meat producers to enforce the new Codex standards on BGH, which will open
European markets to US exports. Indeed, the US pushed for adoption of the standard by the
Codex and also filed the WTO dispute. (Other countries with large meat exporting industries—
Argentina, Australia, Canada and New Zealand—later joined the dispute on the US side.)

Another partial explanation for apparently low activity related to implementation review
and the handling of noncompliance is that often many or all of these functions are external to an
agreement’s formal and dedicated procedures. In the Montreal Protocol, which has the most
extensively formalized system for implementation review, most implementation problems that
can be identified with formally reported data have been handled through the Implementation
Committee and Noncompliance Procedure. Nonetheless, much of the politically sensitive review
of compliance by Russia and other parties not in compliance was handled through the Global
Environment Facility (GEF) and through the Protocol’s expert assessment panel on countries
with economies in transition. In the PIC case, there is no formal mechanism for implementation
review; yet one evolved to provide some of that crucial function. It was focused on the
FAO/UNEP Joint Meeting of Experts on PIC (JMPIC), but many other actors—industry groups,
public interest groups, and international funding agencies—played significant roles. Moreover,
their full contribution to PIC’s operation extended beyond their contributions through JMPIC.
Funding agencies, for example, created and reviewed substantial programs to build regional and
national capacity with little direct oversight through JMPIC. Thus the analyst must look broadly—
at the system for implementation review (SIR)—to properly measure performance of this
function.

The observed low level of responses to implementation failure is also due to the fact that

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9Here the term "transaction costs" is, appropriately, used broadly. It includes the general
aversion of diplomats to make formal claims of "noncompliance" or other charges that imply breach
of a treaty.
these mechanisms typically require a case of "noncompliance" before they are triggered. As shown above, binding agreements are typically negotiated to ensure that compliance levels are high, either because parties are confident that the needed changes in behavior can be implemented or because the international commitments require no change in behavior. Thus a large fraction of the few cases where international commitments are inconvenient tend to reflect miscalculation--a party joining an agreement but later finding that it can't comply. This may partially explain why the "managerialist" viewpoint has substantial empirical support--most instances of noncompliance are not willful but rather reflect misjudgement, changes in circumstances, etc. The predominance of such unintentional noncompliance is reflection of the way that binding international legal commitments are established and the fact that most efforts to build regulatory agreements focus on binding commitments. If international cooperation deepens and yields more demanding commitments, with higher incentives to defect, willful noncompliance may become more abundant, which will require more extensive use of enforcement techniques in response.

Indeed, all three of the studies suggest that when parties have a strong incentive to defect from their international commitments that they will do so unless there is a mechanism for imposing costs on defectors. The need to impose costs on defectors would suggest that enforcement mechanisms could be extremely important components of effective international governance. In practice, international institutions that are formally part of international regulatory agreements do not, themselves, apply all of the penalties that are sometimes necessary to achieve compliance. In the PIC case, industry implemented sometimes costly measures because failure to do so might lead to the cost of a more onerous regulatory system being imposed. Industry nonetheless could have faced a collective action problem--any given firm would have an incentive to cheat, which could unravel the collective effort. But that problem was solved by industry associations which made implementation of PIC a condition of membership; every major firm valued membership in such associations highly because they helped to address other industry problems, such as the poor image of chemical and pesticides production caused by Bhopal and other disasters. All firms sold many products and could not afford to be branded "dirty" because it refused to cooperate with trade restrictions on its few products that were part of the PIC system.

In no instance in the many episodes analyzed in this thesis has the target of a regulatory commitment implemented a costly obligation unless there was some penalty for failure. The low influence of Codex standards in industrialized countries can be explained by the lack of review and penalty from failure to accept and implement Codex standards. Now that Codex has been incorporated into the WTO, and the BGH case is showing that Codex standards will be used to resolve WTO disputes, countries are aware that there is some (highly uncertain) cost of failure to implement Codex standards. Aware that it is more relevant, even the Codex is taking itself more seriously--procedures are being streamlined and much greater care is taken to ensure consistency during the elaboration of Codex standards. Whereas food experts dominated Codex standard-setting activities before, today lawyers are on the rise. Whereas previously ambiguities and imperfections in Codex standards had few consequences, today all parties pay closer attention to
what they agree—consequently, they are increasingly reluctant to consent to Codex standards. The whole Codex system has not come to a halt because Codex has available a majority voting procedure for adopting standards, which is increasingly used. In contrast, most other decisions to adopt significant binding standards in other fora require unanimous consent (through ratification). As with other international standard-setting bodies that are now part of the WTO system, the Codex voting procedures are a legacy of the early history of Codex, when what it decided was less relevant.

The Montreal Protocol Non-Compliance Procedure (NCP) also illustrates the importance of incentives (including penalties) in yielding compliance when a party otherwise has strong incentives to defect. Some developing countries would not have submitted data as required by the Protocol if the NCP had not threatened to stop financial assistance to those countries via the Protocol’s Multilateral Fund. Russia would not have complied with the Montreal Protocol’s requirements to submit data and to phase out ozone-depleting substances if it had not received financial assistance, and threats to remove that assistance, through a deal brokered by the NCP. These examples are not sanctions in the traditional sense—strict penalties applied by one (or more) countries against a deviant. But they are nonetheless examples of tougher measures increasingly being employed to address poor implementation.

The Montreal Protocol case also shows that while the most difficult problems of noncompliance are being handled with increasingly tough measures (“enforcement”), the vast majority of implementation problems are addressed with softer (“management”) techniques. That case study also suggests that the effectiveness of each technique has grown as the whole range of available techniques for responding to noncompliance has grown wider. In particular, management methods that were often ineffective in the early days of the NCP have grown in influence because the NCP has demonstrated that when management fails it can and will resort to enforcement. The issues surrounding the management and enforcement debates are described in more detail in Chapter 1. In sum, the thesis offers support for both views. The management mode is most common and can be effective, as the managerialists argue; however, that observation may reflect more the mode by which binding international commitments are concluded than the influence of international law and institutions. The transaction costs of enforcement mode are much higher, and thus enforcement is rarer. However, as the advocates of enforcement argue, that mode is increasingly used as incentives to defect rise and it becomes less credible to maintain that implementation failures are unintentional. Management efforts are typically attempted in those situations, but when they have failed in some cases enforcement has been used, with considerable effect.

II. The Model

Chapter 1 presented a simple and stylized model of the international regulatory process: various (domestic) pressures lead to an agenda of issues to address; for some issues, agreements are adopted and institutions are employed to help regulate behavior. The discussion above has
touched on the main variables related to the legal status of those agreements and the influence of those institutions. How has the model as a whole fared in this study, and what does it imply for future research?

First, these studies suggest that care is needed when defining the dependent variable (behavior of targets). Many studies explicitly or implicitly define that variable as compliance—whether behavior of targets conforms with regulatory commitments. These studies suggest that it is crucial to not only to apply the concept of compliance. Rather, studies of the effectiveness of regulatory commitments must trace whether commitments actually have an effect on behavior. It is effect that we are ultimately interested to measure, although compliance is often easier to observe. The difference between these concepts is illustrated by comparing "accepted" and "non-accepted" standards in the Codex case. Industrialized countries have probably complied with those (very few) Codex standards that they have "accepted" and thus made them legally binding. But virtually every acceptance by an industrialized country has included deviations that, in effect, adjust the international standard to the domestic circumstances. Influence on behavior has been low. In contrast, acceptances by developing countries have been numerous, and relatively few such acceptances include deviations. In practice, few developing countries have probably achieved compliance with the Codex requirement that food products traded within the country conform with all accepted Codex standards, yet the influence of Codex probably has been high. Many of these countries had no food safety standards and little access to useful technical information; by adopting Codex standards, they gained both at low cost.

The difference between compliance and influence is especially important because many regulatory commitments may simply reflect what parties were already doing or planning when regulatory commitments were codified. In some cases, such codification may be important because it ensures that behavior does not change in the future, which could reduce uncertainties and thus aid cooperation. But often in consumer and environmental regulation, adoption of such "high compliance" commitments are an effort to satisfy the need to appear to be addressing an issue put on the agenda by public interest groups without actually changing behavior. Thus in 1984, industrialized countries crafted the OECD Recommendation on export notification and also were the main actors who shaped UNEP's Provisional Notification Scheme--both legal instruments merely codified what major countries were doing already. Compliance with these nonbinding instruments was high because behavior did not need to change. When the PIC system was adopted in 1989, standards were also nonbinding; however, behavior changed. Such illustrations reveal that in a large sample of regulatory commitments there may be little or no correlation between compliance and the effect of those commitments on behavior.

However, the concept of compliance is not irrelevant. Both the NCP and the WTO dispute panel system--the two most substantial enforcement mechanisms in the three case studies of this thesis--depend on the existence of a situation of noncompliance before they are triggered. Thus perhaps in cases of the most extreme deviations, the measure of compliance is crucial. Even the minor issues of poor implementation that have been handled by the Protocol's Implementation Committee have all begun as queries about compliance. Only once the situation-
of noncompliance existed has the Committee looked beyond simple compliance to the causes of poor implementation. The PIC case underscores that it is fear of noncompliance that especially leads parties to be wary of adopting binding commitments when the exact implications of those commitments are unclear. Assessments of compliance are crucial to identifying and handling implementation problems; consequently, compliance is taken seriously by many parties.

Second, as expected, interests have been a significant--often the most important--factor in determining the agenda and behavior. In the PIC study, the wide agenda on regulating trade in hazardous products was mainly the result of public interest groups; the interests of producer firms have been the main determinant of which items on that agenda have been selected for effective regulatory action. Items left on the agenda without substantive action have not been ignored--rather, they have been the topic of symbolic international (nonbinding) agreements, such as the OECD and UNEP export notification schemes as well as resolutions from the UN General Assembly and UNEP's Governing Council. In the Codex study, interests appear to have determined which standards were accepted. In the Montreal Protocol study, interests broadly explain why Russia has not complied with the Protocol and why some developing countries sought to preserve lucrative markets by limiting Russian exports.

Third, while interests are clearly a powerful factor, it is important not to attribute all behavior can be attributed narrowly to interests. In particular, a dynamic model of the regulatory process is essential. In each case, interests of the targets have changed as pressure has been focused on their activities. By envisioning and pressing for a more regulated world, public interest groups and some governments have created that world in part because the regulatory targets, also, eventually believed that regulation was inevitable. International institutions have helped to organize those visions and focus that pressure, in part by giving voice to actors that would not otherwise have much influence--for example, the existence of the PIC system is largely the consequence of public interest groups and developing countries working through UNEP and some public interest groups working through FAO. Without these institutions the task of creating a PIC system by working through many national governments (and an unreceptive OECD) would have been much larger.

Regulatory institutions have also helped to organize a process of learning and selection. In the PIC case, many issues have been on the agenda since the late 1970s. The nonbinding PIC system was selected for action in part because it addressed some of the concerns of public interest groups and developing countries while it was also consistent with the interests of industry. That was not obvious in the early 1980s when PIC came on the agenda; only with international institutions in place was it possible to envision a workable PIC system that met both sets of interests. Industry learned that a global FAO/UNEP PIC system would be viable and superior to a patchwork of national rules; NGOs, developing countries, and some industrialized countries learned that a global system could leverage their influence, but only if they abandoned their earlier agenda--banning exports of all dangerous goods. In the early 1980s neither side accepted such a role for international institutions, and the result was the adoption of agreements that had no influence on behavior--the notification systems of the 1984 OECD Recommendation.
and the UNEP Provisional Notification Scheme. In the late 1980s, all of the major actors were unified behind the PIC system. Industry sought lenient PIC rules, and other actors wanted a binding PIC Convention; but the position on all sides had narrowed remarkably. The nonbinding PIC system did not fully satisfy what public interest groups and developing countries perceived as their interests—they thought that even tighter regulation would be possible under a binding system. Thus, as before, they set the agenda, envisioned such regulation, and set a process in motion that is still under way—creation of a binding PIC Convention. (Whether that perception is correct is a separate issue from how it affected these groups' interests, which they pursued through international institutions.)

A dynamic model is also important not only because it helps to explain changes in interests that lead to new agreements within an existing regime but also because it can help explain behavior once a particular set of commitments is adopted. In particular, as the managerialists have argued, engagement in the process can raise the costs of defection, making it more likely that behavior will conform with international standards. The most difficult cases, such as noncompliance in the Montreal Protocol, have been addressed effectively only by applying penalties—narrow interests, rather than "management" has explained most of the outcome. However, even in this case it is difficult to explain all behavior by reference to narrow interests. Threats of penalties induced Russia to join that process, but over time the costs to Russia (and to the Montreal Protocol regime) of defecting have risen as all sides have become more deeply engaged in Russia's problems.

Interestingly, such dynamics leading to changing interests are not evident in the Codex system. Codex has focused on setting standards, but there is no mechanism for regular implementation review; nor has any informal mechanism evolved. The WTO system now provides substantial enforcement, but so far that has principally made participants in Codex conservative about adopting more Codex standards. Still, there is no regular mechanism for implementation review—implementation problems are handled in WTO only when they take the form of a dispute. The case underscores that merely participating in international institutions does not lead to "buy in" and "learning"—rather, such dynamic processes, which can even change the interests of participants, appear to depend heavily on the operation of mechanisms for implementation review.

Fourth, the model underscores the importance of "problem type." These studies confirm what was expected: behavior and the design of institutions are strongly influenced by problem type. For example, the only instances of substantial penalties applied in response to noncompliance have been in cases where the structure of costs and benefits has strongly favored noncompliance by the targets. Enforcement has been necessary to alter those incentives and to assure other participants that noncompliance will be met with a response. Codex was incorporated into the WTO because the mission of Codex—regulatory harmonization—is often a difficult collaboration problem which requires, at times, access to strict enforcement procedures such as those provided by WTO. The noncompliance procedure of the Montreal Protocol was adopted for similar reasons. These topics have been examined by game theorists, such as with
prisoners' dilemma models; this study gives support to the basic insight—sustaining cooperation when there are incentives to defect requires penalties for deviations. It is not claimed here that international institutions and sanctions are the only viable penalties—clearly, in some countries, public opinion and linkages to other issues have played a role. However, in the few cases examined here, penalties have been used and with considerable effect.

Interestingly, none of the cases in this book offer examples of classic "coordination" problems—where interests may diverge (considerably) on the preferred standard, but once adopted the standard is self-enforcing because all parties have an individual and common interest in compliance. Even in food safety standards, which are a most likely case for observing simple coordination, parties that disagree on the preferred standard have an incentive to violate that standard even after the standard is adopted. That is especially evident in cases, such as the regional European bee honey standard and the European (now global) standard for mineral water, where standards have been protectionist—they have been used to harm the interests of some exporters.

The absence of coordination problems suggests a revision to table 1.3 to eliminate that category. The result would be a taxonomy for international cooperation that ranges from "harmony," where the type of legal instrument doesn't matter and implementation review is not necessary, to "deadlock" where no substantive agreement is possible and agreements that contain implementation review will not earn consent. In the middle is only a large range of collaboration problems, for which implementation review is increasingly necessary as incentives to defect rise and in cases where "learning by doing" to reduce uncertainties is a policy goal.

The model employed in this thesis has expanded the concept of "problem type" beyond the structure of costs and benefits to include uncertainty. The studies show that the extension is useful. In the Montreal Protocol, uncertainty was relatively low and thus specific and binding commitments were possible to adopt. Areas where uncertainty was higher—such whether certain "essential uses" of ozone depleting substances could be phased out—were exempted from the Protocol's most stringent regulatory requirements. As expected, stringent, specific and binding commitments could be adopted only when uncertainty was low. In the PIC case uncertainty was extremely high at the outset; most governments of exporting nations, and the exporters themselves, were willing to adopt significant commitments because they were nonbinding. High uncertainty meant that there were significant opportunities for learning by doing; the nonbinding legal framework and extensive implementation review allowed that learning to occur. That learning occurred only because specific institutions—notably the expert group—were available to structure the learning process and focus it on practical improvements to the PIC system. Below, we return to this issue.
III. Evidence from Other Cases

While the above conclusions are suggestive, they are based on limited empirical information. Experience with three other regimes, each of which has been assessed recently in other studies, offer support for the main conclusions here and suggest some other ways that nonbinding instruments have been effective. Each has employed both binding and nonbinding measures, and thus they allow for some quasi-controlled comparisons. In brief, these episodes in the other three regimes are:

- When the legally binding protocol to freeze emissions of NO\textsubscript{x} was signed in 1988, a small group of countries simultaneously adopted a more ambitious nonbinding declaration to cut emissions by 30%. While it is difficult to ascribe a strong impact to either the binding protocol or the nonbinding declaration, at least in the Netherlands and Norway the existence of more ambitious nonbinding commitments forced governments to explore the need for additional regulations to limit NO\textsubscript{x} than they would have if only the binding freeze had been adopted.

- In the North Sea, the first decade of cooperation focused on the binding standards of the Oslo and Paris Commissions (OSPARCOM). Little was achieved until lead countries shifted North Sea cooperation from OSPARCOM to high-level Ministerial Conferences starting in the 1980s and continuing to the present. The Conferences yielded highly ambitious and specific goals to cut major pollutants flowing into the North Sea by 50% to 70% and to stop dumping of waste into the Sea.

- Baltic Sea cooperation followed the North Sea model with a similar progression--from staid binding commitments to ambitious nonbinding declarations. The Baltic Conferences also forged the Joint Comprehensive Programme (JCP) which provided a nonbinding framework for setting ecological priorities and coordinating western funding to clean up the Baltic Sea.

In all three of these cases--regulation of NO\textsubscript{x}, North Sea and Baltic Sea pollution--the effectiveness of international cooperation rose with the adoption of nonbinding instruments. In

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\textsuperscript{10}This section was excerpted from: Victor, D.G., "The Use and Effectiveness of Nonbinding Instruments in the Management of Complex International Environmental Problems," Proceedings of the American Society of International Law, 91 (in press).

\textsuperscript{11}For case studies that review these topics see chapters by Skjærseth (North Sea), Wettestad (NO\textsubscript{x} regulation), Roginko (Baltic Sea), Greene (Baltic Sea) and Hjorth (Baltic Sea) in: Victor et al., eds., 1998, \textit{op. cit.}
none was the improvement a sole result of the choice of legal instrument--nonbinding instruments allowed and facilitated, but did not directly cause, more effective cooperation. For example, the end of the cold war allowed more effective cooperation to clean up the Baltic Sea--states in the East were more willing to implement significant commitments, in part because (except for Russia) they sought much closer relations with the West; states in the West, which had the strongest interest in protecting Baltic Sea ecology, were more willing to fund necessary projects when their money was not flowing to communist regimes and when it was possible to verify that money was being spent on intended projects. The nonbinding Baltic conferences and the JCP allowed policy makers in the East and West to take rapid advantage of this crucial change in context.

Nonbinding commitments have aided cooperation and implementation in these three cases in several crucial ways. First, as in the PIC case, states appear to have been more willing to adopt clear and ambitious commitments when codified in nonbinding form. Clear commitments have been more effective because they were more easily translated into specific actions, regulations and other incentives that lead to changes in behavior. The Baltic Sea JCP has produced highly detailed priorities for action, making transparent the major causes of Baltic pollution and the cost of necessary policy responses; JCP priorities have not been followed fully, but they have helped to direct and coordinate funding, which would not have been possible if goals had been vague. Clear commitments also make the process of measuring progress more transparent. The North Sea targets are highly specific and thus, when data have been available, it has been relatively easy to assess whether national performance meets the goals. Ambitious commitments have spurred wider and more intensive efforts to change the behavior that causes transboundary environmental hazards. The Netherlands and Norway explored additional ways to regulate NO\textsubscript{X} because they had signed the nonbinding NO\textsubscript{X} declaration; neither country would have had to do much beyond already planned policies in order to comply with the more modest, binding protocol to freeze NO\textsubscript{X}. Norway has since rejected the NO\textsubscript{X} declaration, but only after serious efforts to make additional cuts in NO\textsubscript{X}; that it bothered to renounce the declaration underscores that some countries take their international obligations seriously, binding or not. The declaration compelled Norway to consider deeper cuts that it clearly would not have contemplated under the binding NO\textsubscript{X} Protocol, without fear that it would be locked in if the additional cuts proved not acceptable or feasible. If only binding commitments had been

\footnote{The end of the cold war shifted cooperation from deadlock to an asymmetrical collaboration game, with compensation (from West to East) to ensure that the outcome was higher environmental protection of the Baltic Sea.}

\footnote{Most countries provide most of the data necessary to assess performance. Overall, the North Sea agreements and institutions for implementation review have yielded much a higher quantity and quality of data than is typical in multilateral environmental law.}
available, Norway would not have adopted the goal of a 30% cut.\textsuperscript{14} Similarly, addressing the most complex and costly aspects of pollution control in the North Sea had been ineffective when principally binding instruments were used in the 1970s. At the early stages of cooperation it was not clear which sectors caused the most severe problems, nor was it clear how much abatement would cost.

A second advantage of nonbinding agreements is flexibility in participation. In both the North Sea and NO\textsubscript{x} control cases, a small group of countries used nonbinding instruments to move forward with deeper cooperation. In both cases, nonbinding agreements allowed the benefits of "minilateralism"--focused cooperation among a small number of motivated parties--when it was politically or symbolically difficult to exclude laggards from formal, binding agreements. In the North Sea, the ministerial conferences made it easy to exclude Spain and Portugal--neither contributed significantly to North Sea pollution, but both had been formal participants (and slowed work) in OSPARCOM. Absent those two states, the only remaining laggard was the United Kingdom--isolated, branded the "Dirty Man of Europe," faced with a growing domestic green movement, and under high-level pressure at Ministerial Conferences (including the critical 1987 ministerial conference, which it hosted in London), the UK switched positions and North Sea cooperation moved forward rapidly. Politics explain the UK switch, but nonbinding instruments made it easier to isolate the UK and easier for the UK to adopt the commitments once it had changed position.\textsuperscript{15} In short, nonbinding agreements made it easier for advocates of deep cooperation to fine tune participation--to exclude laggards (NO\textsubscript{x}), especially laggards who were irrelevant to the problem (North Sea).\textsuperscript{16} These issues of state participation

\textsuperscript{14}In this short essay the author has not addressed the reasons why states adopt voluntary commitments--rather, the purpose is mainly to explore what types of commitments are most effective when states want to make commitments but are uncertain what and how to commit. I touch on the role of domestic pressure, which is probably the most important factor in most cases, at the end. In the example used here, Norway adopted the NO\textsubscript{x} declaration because it was under pressure from other Nordic nations (who were especially vulnerable to acid rain).

\textsuperscript{15}The U.K. has also been supportive of the North Sea regime because, in practice, its commitments are less onerous. The costly commitments to regulate land-based nutrient pollution (e.g., manure, fertilizers, sewage) apply only to pollution that flows into "sensitive ecological areas." The UK has declared that its North Sea coastline includes no such areas. In contrast, Norway's Parliament declared that its entire coastline met that classification. However, this fact does not explain all of the outcome--when it switched position the UK did, for example, also agree to stop marine dumping, which the UK government had previously not been willing to do. For more on the case see: J.B. Skjærseth, 1998, "The Making and Implementation of North Sea Commitments: The Politics of Environmental Participation," in: Victor et al., 1998, \textit{op. cit.}, chapter 8.

\textsuperscript{16}These cases also illustrate that even when international commitments appear to be uniform, much differentiation is possible. In the case of the North Sea and the declaration of sensitive
have not been addressed in this thesis—in all three of the regimes in this thesis, the strategy adopted has been to begin with a broad regime and then deepen over time.

Third, these studies also suggest that nonbinding instruments are important when the environmental problem at hand is marked by uncertainty but parties nonetheless want to start the process of cooperation. As in the PIC case, which illustrates substantial "learning by doing", in both the North Sea and Baltic Sea cases the first ministerial declarations were broad. They set a framework for cooperation. The initial regulatory commitments were stringent, and thus they set goals that required significant action by all parties. Extensive implementation review—through the process of regular ministerial conferences in the North Sea and the JCP in the Baltic Sea—ensured that lessons were learned.

Advocates of binding measures fear that nonbinding commitments won’t be honored and parties will defect; binding commitments, they argue, are less prone to defection and thus are superior. In practice, defection from nonbinding commitments has not been as prevalent as feared in part because the incentives to defect have often been small. (The same is true of many binding agreements.) However, some nonbinding standards—such as the North Sea and Baltic Sea regulatory commitments to limit land-based sources of nutrient pollution—have been costly to implement, with higher incentives to defect, but parties have nonetheless adopted some costly measures. In those cases, the risks of defection have been reduced through extensive review and transparency, which has threatened and caused political costs for countries that don’t comply. The North Sea case provides an example of an extensive process (managed by the host country of each upcoming ministerial conference) to review whether parties are implementing commitments. That case points to two important elements of review for such nonbinding instruments. First, reviews must look at policies and plans, not only simple indicators of compliance. Policy reviews allow assessment of whether countries are on track to meet international commitments and whether those commitments are adequate; simple compliance reviews—or simply publishing data that allows calculation of which parties, _ex post_, are in compliance—do not allow such useful assessments. Second, they are part of the ministerial conferences and thus are backed by periodic high-level political attention; the North Sea case illustrates that when high-level political figures (ministers) become involved that scrutiny of national performance is more effective. Moreover, the ability to forge agreements with other ecological areas, national actions and decisions can result in differentiation of commitments. In the case of the North Sea and NO₅ cases, the nonbinding instruments also resulted in differentiation of commitments because they allowed leaders to adopt more stringent commitments. Such differentiation is not exclusive to nonbinding instruments—reservation clauses in binding instruments similarly allow nations to select the stringency of commitments that they will implement. Moreover, all legal instruments allow for differentiation by allowing different parties to over- and under-comply. Nonbinding instruments may allow more such unilateral differentiation because they compel all parties, perhaps especially leaders, to do more; however, that hypothesis needs further investigation.
ministers, including agreements that require extensive and costly implementation, also rises. The second point—enforcement through reputation of high-level officials—is not evident in the cases in this thesis. However, the first point is confirmed. In handling the Russian case it has been crucial for the NCP to examine Russia’s policies and plans, not simply its claims for compliance. In the PIC regime, the system for implementation review has contributed to learning by doing because it provided detailed information on which substances were hazardous as well as on trends in use and remedies to problems encountered in the field. That information has been especially crucial in elaborating PIC rules for pesticides that are hazardous under particular conditions of use. Those pesticides are the ones that cause the most problems in developing countries and thus the area where PIC could make the largest contribution to its ultimate objective: improving management of hazardous chemicals and pesticides. Formal compliance with PIC has not been considered practically at all; indeed, no data are collected and no assessments are made of whether participating countries are "in compliance."

Legally binding commitments nonetheless may retain an important role. Indeed, the benefits of nonbinding instruments are often evident when applied in tandem with legally binding measures. The North Sea ministerial declarations and the NOx nonbinding declaration were conceived as broad umbrellas, not detailed instruments. They were part of a complex of instruments that included both nonbinding and binding commitments. In the North Sea case, the ministerial declarations set a broad path for cooperation, with the details later elaborated and codified into legally binding commitments after uncertainties are reduced and interests become clearer. Both the North Sea and Baltic Sea ministerial processes have led to new, binding conventions that have replaced earlier binding treaties that had been ineffective on their own. In the NOx control case, the legally binding protocol has provided a backstop to the nonbinding agreement—the backstop has remained in place, even when some countries (e.g., Norway) abandoned the nonbinding agreement because they could not implement its stringent terms. If legally binding agreements are more enforceable, or if the process of earning consent for binding agreements leads to more implementation, then legally binding agreements may also be required as the terms of cooperation become more stringent and the incentives to defect from international collaboration grow.17

17Both of these "ifs" are widely assumed but in need of empirical investigation. In the case of enforcement, perhaps binding agreements can be incorporated more readily into domestic law—but comparative studies have not yet been conducted to explore whether the incorporation of nonbinding instruments is systematically lower. Moreover, some modes of enforcement—such as by NGOs—seem to be as valid for nonbinding agreements as for binding ones. Indeed, many "enforcement" actions—such as by Greenpeace against commercial whaling or against dumping in the North Sea—do not concern formal violations of a binding treaty but rather an informal (nonbinding) norm.
IV. A New Approach to International Regulation

The studies in this thesis, and the three other studies just reviewed, suggest a new approach to international environmental governance—one that places greater emphasis on nonbinding instruments and on implementation review. This new approach contrasts sharply with current efforts to manage international environmental problems, which has deified binding commitments, focused on compliance rather than whether international commitments are actually influencing behavior, and has not given priority to collecting and reviewing useful data on implementation. Here the new approach is discussed with particular attention to its practical implications for negotiators and stakeholders. For illustrative purposes, I also apply this new approach to international efforts to slow global warming.

In general, this new model suggests three practical shifts in the style of international environmental governance. First, it centrally suggests the need to employ non-binding instruments to set the broad direction and pace for cooperation. At the early stages of cooperation, if problems and solutions are uncertain, such instruments can offer a rigorous framework for experimentation. At all stages, leading parties can use nonbinding instruments to coordinate and promote more ambitious actions.

Second, the new model underscores the need to reduce uncertainties by learning, and the most effective way to learn is to experiment. Thus it employs legal instruments and approaches that emphasize early actions that plausibly will reveal useful practical information. In some cases, early action entails implementing entire regulatory systems, such as the PIC scheme for regulating trade in pesticides and chemicals. In others, useful early actions include starting the long process of engaging an important actor or sector, such as in the North Sea where the agriculture sector has been both a large source of pollution and an especially difficult one to regulate. Often in regulatory regimes, where the most important needed actions are at the national level, the most important early action is to develop and implement national plans. Binding and nonbinding measures both benefit from early implementation and thus learning by doing. But when the basic structure of competition is unclear, the PIC case suggests that the flexibility of a nonbinding instrument allows especially early and rapid learning.

Third, fundamental to the approach proposed here is that international cooperation take place in an environment that is rich in useful information about policy options and the activities under way to implement international commitments. Information is crucial to reviewing whether existing commitments are being implemented and whether those commitments are adequate. In practice, such information comes mainly from national reports; review of that information—what we call implementation review—is a function that is built up over time within regimes. Useful information systems can take decades to build; in general, the national reporting and review procedures in international environmental agreements have been weak. Indeed, while compliance with regulatory commitments has been high, in general compliance with data reporting obligations has been lower. More serious has been that even in those few instances
where data reporting is more active, the accuracy and comparability of reported data is often low. Especially useless have been national reports on policy options and activities; yet such information is necessary in order to review whether countries are making comparable efforts to implement their commitments.

In addition to poor data on policies and activities, the mechanisms for review typically fall far short of their potential. Common practice today is to defer the creation of review mechanisms until after regulatory commitments are adopted. Consequently, parties that are wary of regulatory commitments often work hard to weaken the institutions that review those commitments.\textsuperscript{18} A better approach is to start with institutions and data reporting and to ensure that those activities are on track to building a useful foundation, without which effective complex management is not possible.\textsuperscript{19}

What does all this mean for efforts to regulate new problems on the agenda, such as slow global warming? The problem is the archetypical case of high uncertainty and thus ripe for the new approach proposed here. Goals, costs and benefits are unclear; sources and sinks of greenhouse are uncertain; the efficacy of policy instruments is disputed; emissions rise and fall with the pace and structure of the economy; countries can't estimate accurately their future emissions, let alone plan the policies that might be needed to meet particular targets. Advocates of tougher regulation of climate changing gases are virtually unified in support for a legally binding protocol to strengthen the Framework Convention on Climate Change (FCCC); such a protocol is slated for adoption in December this year. Following the model suggested here, a complement to the binding approach might be to negotiate a nonbinding declaration to set more stringent and longer-term goals, similar to the NO, declaration and the North Sea ministerial statements. Such goals are needed to give the regime a compass, but it is doubtful that clear and nontrivial goals could be adopted in a binding protocol. In addition, mechanisms for reviewing implementation need more support. The FCCC's system of in-depth reviews of national plans is potentially one of the most advanced review mechanisms in all of international environmental law. But it is young; while its first reports on national implementation are a good start, understandably they do not provide much comparable useful information. While most FCCC participants focus on 1997 as the year of the first binding protocol, in fact 1997 is more important to the regime for other reasons: the first reports from developing countries, and the second round of reports from industrialized countries are due this year. All will need reviews. Yet while thousands of stakeholders focus on negotiation of a binding regulatory protocol, only a small fraction of the FCCC's resources are targeted to reviewing the imminent flood of national reports.

\textsuperscript{18}Some weaken review by not providing data (or inaccurate data), as in the case of the Soviet Bloc in many regimes; some weaken mechanisms by weakening their design, as in the case of developing country participation in the design of the Montreal Protocol Non-Compliance Procedure.

At present, political pressure on governments to adopt stringent global warming controls is weak, and thus efforts to negotiate a stringent binding protocol are likely not to bear much fruit. Now is an ideal opportunity to focus on the less controversial, but crucial, task of building up the system for data reporting and review.\textsuperscript{20}

V. Final Words

Among the conclusions of this thesis is that the type of regulatory problem—the strategic "game" and the level of uncertainty—dictate a range of agreement on the type of legal instruments and institutions. Within that range, policy makers have choices. In two of the cases in this thesis—the PIC system and the Codex—policy makers have consciously made choices, and the thesis explores the consequences. In three other cases, reviewed briefly in this conclusion, choices have also been weighed and made.

One argument developing in the thesis is that when international regulatory problems are marked by high uncertainty and reluctance by the regulated to give their consent, nonbinding instruments can be an effective tool for regulation. As uncertainties decline, and as cooperation deepens, binding instruments can be used in tandem. Two caveats to this argument are important. First, this new approach is not a panacea. It does not eliminate other impediments to environmental cooperation, notably low domestic pressure. Legal instruments probably affect the strength and organization of interest groups that favor environmental protection and thus might help to offset problems of low pressure. If so, the choice of legal instrument may influence the degree of domestic pressure. Here I have not addressed that important issue. More work is needed to explore what types of instruments and organizations yield particular domestic responses. Implicitly it has been assumed that binding instruments are taken more seriously and thus have the largest influence in mobilizing domestic pressure, but in this area the evidence is not robust. The evidence presented here suggests that a hybrid approach—ambitious nonbinding commitments backed by binding treaties—may achieve the benefits of both types of instruments.

\textsuperscript{20}Not addressed here is the fact that some means of regulating greenhouse gases may require highly quantified, binding targets. For example, a system of tradeable permits—envisioned, for example, in the current U.S. proposal for strengthening the FCCC—probably requires binding targets because absent such hard targets the value of permits will be uncertain; experience at the domestic level with permits systems shows that high certainty and security of permits is vital to ensuring that an active market emerges. Without an active market the benefits of such a market-based approach—namely, cost reduction and flexibility—will not be forthcoming. A less ambitious form of trading—known as "joint implementation (JI)"—could probably work without hard targets. At this early stage in cooperation, with uncertainty in goals and means high, a full-blown tradeable permits scheme seems premature, especially if it perpetually narrows the range of legal instruments that might be used to address global warming in the future.
Second, this argument for wider use of nonbinding instruments applies only to a particular type of problem—one marked by complexity, uncertainty and the need for adaptation. For other problems, where goals and means are clear, binding approaches may still be more effective.\textsuperscript{21} (Or, perhaps, the choice of legal instrument doesn't matter.) Moreover, it may be applicable mainly at the early stages of cooperation, where risks of defection are lower because the costs of implementation are lower. As the screws are tightened, it may be necessary to employ binding measures because the incentives to defect will grow and thus so will the need for strict determination of compliance and enforcement of international commitments. It is widely assumed that binding commitments allow greater enforcement, though evidence for that argument is also not robust. The North Sea case shows that nonbinding approaches backed by extensive review and high-level political attention can focus domestic and international pressure on states that don't implement their commitments—a form of enforcement that has led to more effective management of international environmental hazards.

\textsuperscript{21}An example is the Montreal Protocol. In that case there has hardly been zero uncertainty, but compared with global warming clarity in goals and means has been much higher; because ozone-depleting substances could be substituted in most cases, most governments were certain that they could implement the international commitments. (That was not true at the outset, but commitments were also more modest in the early stages.) Applications where substitution is impossible are exempted under the Montreal Protocol's "essential uses" provision. An illustration of the crucial role of implementation review regardless of the legal status of an agreement, the essential uses exemption is extensively and regularly reviewed on a case-by-case basis.