

**Water Quality Test (H<sub>2</sub>S) Evaluation  
Comprehensive Initiative on Technology Evaluation (CITE)  
in Partnership with the Indian Institute of Management-Ahmedabad (IIM-A)**

We are names of team members present, and we are researchers from IIM-A and a university in the United States. We are working with local NGOs to study water quality in Ahmedabad. We are asking people to do a survey and water quality test to better understand how the test works, and what people think of the test and their water quality.

We want you to be a participant in this study because you live in a community where a local NGO, NGO name and NGO volunteer name(s) (if known), has agreed to help us with our research. You can choose to participate in our research or not. To help you decide, we will now tell you more about how you would participate and how the results of our research will be shared. Please ask questions about anything you do not understand.

- Participation is entirely voluntary. You do not have to answer any question if you do not want to, or complete any procedure. You can stop participating at any time.
- If you choose to participate, you will be asked to do a water quality test and a survey. The test takes 2 days to finish, so we will return in 2 days to collect the test and ask you some more questions. You will also get a free, automated phone call tomorrow, asking you one simple question.
- You will be given an extra water test after you have finished today. It can be used to test your own household water.
- If you are able to complete the test and survey, we will give you 100 Rs. when we return in 2 days.
- We will be sending a sample of your community water source to a laboratory for analysis. The results will be shared with your community when they become available.
- The results of this study will be used for academic publications, newspaper articles, and online content (blogs, social media). The results will also be made available in a database, but your name and personal information will not be shared.
- You will be given our contact information so you can call us with any questions.

Contact Info		<input type="checkbox"/> Input to Google Sheet
Part 6 (24-hr. call)		<input type="checkbox"/> Input to database
Part 7A (48-hr. call)	<input type="checkbox"/> Complete	<input type="checkbox"/> Input to database
Part 7B (48-hr. field)	<input type="checkbox"/> Complete	<input type="checkbox"/> Input to database
Part 1-5	<input type="checkbox"/> Complete	<input type="checkbox"/> Input to database

ID: \_\_\_\_\_ - \_\_\_\_\_ - \_\_\_\_\_  
Date (DD/MM) - Group ID - Researcher - Subject No.

### CONSENT FORM

Do you understand the procedures I have just spoken about? <sup>1</sup> Yes <sup>0</sup> No  
Have all of your questions been answered to your satisfaction? <sup>1</sup> Yes <sup>0</sup> No  
Do you agree to participate in this study? <sup>1</sup> Yes <sup>0</sup> No  
Have you been given a copy of this form? <sup>1</sup> Yes <sup>0</sup> No

Do you give permission for the following information to be included in publications and other content resulting from this study? <sup>1</sup> Your name  
<sup>1</sup> Photos of you  
<sup>1</sup> Video of you

Do you give permission to have your test results and survey responses included in an online database? It will not include your name. <sup>1</sup> Yes <sup>0</sup> No

Subject name: \_\_\_\_\_

Subject signature, thumbprint or other mark: \_\_\_\_\_

Date: (D/M/Y) \_\_\_\_\_

Researcher name: \_\_\_\_\_

Signature of Researcher: \_\_\_\_\_

Date: (D/M/Y) \_\_\_\_\_

Please contact our Research Lead, Jonars Spielberg, at [jspiel@mit.edu](mailto:jspiel@mit.edu) or +91 75 67 646 837 if you have any questions.

If you feel you have been treated unfairly, or if you have questions regarding your rights as a research subject, you may contact the Chairman of the Committee on the Use of Humans as Experimental Subjects at Room E25-143B, MIT, 77 Massachusetts Avenue, Cambridge, MA 02139, phone: +1.617.253.6787.

**WATER QUALITY TEST (H<sub>2</sub>S) EVALUATION SURVEY**  
**CITE SUSTAINABILITY AND IIM-A, FEBRUARY – MARCH 2015, AHMEDABAD, INDIA**

**A. PART ONE**

**Pre-Survey [PRE]**

1. [A] Date: (D/M/Y) \_\_\_\_\_ [B] Time: \_\_\_\_\_  
2. Neighborhood: \_\_\_\_\_ 3. GPS: [A] \_\_\_\_\_ N [B] \_\_\_\_\_ E  
4. Researcher: \_\_\_\_\_ 5. Translator: \_\_\_\_\_  
6. Language survey was conducted in: <sup>1</sup> Gujarati <sup>2</sup> Hindi <sup>3</sup> Other \_\_\_\_\_  
7. Test: <sup>1</sup> ORLab <sup>2</sup> Jal TARA 8. Group: <sup>1</sup> Instruction <sup>2</sup> Demonstration

**Demographics [DEM]**

9. Name: \_\_\_\_\_  
10. [A] Phone: \_\_\_\_\_ <sup>0</sup> None [B] Type: \_\_\_\_\_  
11. Age: \_\_\_\_\_ <sup>5</sup> Unsure 12. Gender: <sup>1</sup> M <sup>2</sup> F  
13. Education level:  
<sup>1</sup> Not literate <sup>4</sup> Middle (Between Course 6 and 9)  
<sup>2</sup> No formal school <sup>5</sup> Secondary (Course 10 and 10+2)  
<sup>3</sup> Primary or below (up to Course 5) <sup>6</sup> Diploma/certificate, graduate, above  
14. People (sleeping) in household: \_\_\_\_\_ 15. Monthly household income: \_\_\_\_\_

**Knowledge, Attitude, and Practices [KAP]**

16. When/how do you know drinking water is not safe? (Select all mentioned, do not lead)  
[A] <sup>1</sup> Taste [B] <sup>1</sup> Smell [C] <sup>1</sup> Color  
[D] <sup>1</sup> Cloudy/turbid [E] <sup>1</sup> Scaling/Deposits [F] <sup>1</sup> Other \_\_\_\_\_  
17. [A] Do you think your drinking water is safe or unsafe to drink? <sup>1</sup> Safe <sup>0</sup> Unsafe  
[B] Why do you think so? \_\_\_\_\_  
18. Do you treat, or have you treated, your drinking water in some way? [A] <sup>1</sup> Prompted  
[B] <sup>1</sup> Boiling [D] <sup>1</sup> Cloth [F] <sup>1</sup> Cloth + jali [H] <sup>1</sup> Solar dis.  
[C] <sup>1</sup> Chlorination [E] <sup>1</sup> Jali [G] <sup>1</sup> Stand/settle [I] <sup>1</sup> Other \_\_\_\_\_  
19. What other water treatment methods do you know about? \_\_\_\_\_  
\_\_\_\_\_  
20. [A] Do you currently spend any money on drinking water? <sup>1</sup> Yes <sup>0</sup> No  
[B] If yes, how much? \_\_\_\_\_ Rs. per \_\_\_\_\_  
21. [A] Has water quality testing been performed in your society? <sup>1</sup> Yes <sup>0</sup> No <sup>5</sup> Unsure  
[B] If yes, have you ever performed water quality testing before? <sup>1</sup> Yes <sup>0</sup> No  
22. If you could only have information about your water quality or information about  
[ <sup>1</sup> Education scholarships <sup>2</sup> Access to credit <sup>3</sup> Nutritional supplements ] which would  
you choose? <sup>1</sup> Water quality <sup>2</sup> Alternative choice

23. Who is responsible for water and sanitation in your community? \_\_\_\_\_ <sup>5</sup> Unsure
24. When faced with a water-related problem, how do you try to solve it? Have you:
- [A] Taken collective action with neighbors? <sup>1</sup> Yes <sup>0</sup> No
- [B] Found a treatment product in the market? <sup>1</sup> Yes <sup>0</sup> No
- [C] Bought bottled water? <sup>1</sup> Yes <sup>0</sup> No
- [D] Talked to a government official? <sup>1</sup> Yes <sup>0</sup> No
- [E] Anything else? \_\_\_\_\_ <sup>1</sup> Yes <sup>0</sup> No
25. What water-related problems occur most often in your community? Do you experience:
- [A] Irregular supply? (*uncertainty*) <sup>1</sup> Yes <sup>0</sup> No
- [B] Water shortages? (*quantity issue*) <sup>1</sup> Yes <sup>0</sup> No
- [C] Poor quality? (*contamination*) <sup>1</sup> Yes <sup>0</sup> No
- [D] Poor infrastructure? (*broken/rusty pipes, etc.*) <sup>1</sup> Yes <sup>0</sup> No
- [E] Anything else? \_\_\_\_\_ <sup>1</sup> Yes <sup>0</sup> No
26. [A] Have you ever seen this kind of water test before (*show vial*)? <sup>1</sup> Yes <sup>0</sup> No
- [B] If yes, where/when/from whom? \_\_\_\_\_
27. [A] If you wanted to buy this, do you think you know where you might be able to find it?
- <sup>1</sup> Yes <sup>0</sup> No [B] If yes, where? \_\_\_\_\_

**B. PART TWO**

**Instruction And Demonstration [IAD]**

\*\*\* "This is a test for drinking water. It is called an H<sub>2</sub>S test and can only be used 1 time per bottle. The bottle has material that reacts with bacteria that might be in the water. I will now [read you the instructions/provide a demonstration] on how to perform the test. When you are doing the test later, I will observe you but I will not be able to answer any questions you might have, otherwise it will affect our research results. I will read/perform only once and you will be doing the test on your own, so please pay careful attention. I can answer your questions once you have completed the test and survey today."

<b>ORLab H<sub>2</sub>S Test</b>	
<b>Instructions (no hand gestures)</b>	<b>Demonstration (do not field questions)</b>
Directions for use:	
Step 1. "Thoroughly wash the hands with soap and dry."	Wash hands with soap and dry with a towel.
Step 2. "Remove the cap and fill the water sample up to the mark (20 ml)"	Point to the mark on the bottle. Open the bottle without touching the inside and fill to the mark. "Make sure not to touch the inside of the cap or bottle, or to place the cap on the ground face down. Pour water into the bottle slowly. It is bad if you pour too much water in the bottle and have to pour it out."
Step 3. "Close the cap and shake the bottle gently."	Close and shake gently, not vigorously. "Shake from your wrist, not your arm, for about 5 seconds."
Step 4. "Keep the bottle at ambient temperature (25° – 35° C) for 24-48 hrs., somewhere out of children's reach"	"Store the bottle in a dry, warm place inside, such as in a cupboard or in your kitchen but not next to the stove. Keep the bottle out of direct sunlight and out of children's reach."
Step 5. "Observe for blackening of water in the bottle."	Show how to observe the bottle. Show a black vial. "The water will also smell bad."
"Result: If water turns black, it is not safe for drinking."	
"Note: Test will not perform below 25° C temperature."	"This test will not work if it is stored somewhere that gets cold. Make sure you keep it somewhere warm for the next 2 days."

<b>Jal TARA Aquacheck H<sub>2</sub>S Test</b>	
<b>Instructions (no hand gestures)</b>	<b>Demonstration (do not field questions)</b>
Procedure for use:	
Step 1. "Fill Aquacheck vial with sample water, directly from source till arrow mark (water level) or sticker."	"Wash your hands with soap and dry with a towel." Open the pre-opened bottle without touching the inside. "Make sure not to touch the inside of the cap or bottle or to place the cap on the ground face down." Point to the mark. Fill the bottle up to the arrow mark. "Pour water into the bottle slowly. It is bad if you pour too much water in the bottle and have to pour some out."
Step 2. "Close the lid tightly and shake gently."	Close and shake gently but not vigorously. "Shake from your wrist, not your arm, for about 5 seconds."
Step 3. "Keep the vial at room temperature (25°C - 44° C) for 24-48 hrs and away from direct sunlight and children's reach. If water turns black within this time. It is not fit for drinking. It indicates presence of Salmonella / Citrobacter / Coliform bacteria or pathogens."	"Store the bottle in a dry, warm place inside, such as in your kitchen but not next to the stove. Keep the bottle out of children's reach."  Show how to observe the bottle. Show a black vial. "The water will also smell bad."
Step 4. "If ambient temperature is below 25 °C, use an incubator or keep in warm place such as in pocket to obtain reliable results."	"This test will not work if it is stored somewhere that gets cold. Make sure you keep it somewhere warm for the next 2 days."
"Storage: At room temperature in cool and dry place away from sunlight. Expiry Minimum 2 years from the date of MFG"	
"Disposal: Add few drops of disinfectant (phenyl, detol) and discard the vial, autoclaving if preferable. "	

### C. PART THREE

#### Ease of Use [USE]

28. How long do you think it will take you to complete this test? \_\_\_\_\_ min.
29. [A] Are you confident or not confident you will be able to complete this test correctly?  
 Confident  Not confident
- [B] How confident or not confident?  Very  Somewhat
30. [A] Was it easy or difficult to understand the test procedure?  Easy  Difficult
- [B] How easy or difficult?  Very  Somewhat

**D. PART FOUR**

**Subject Testing and Researcher Observation [OBS]**

\*\*\* "Now, please perform the test. Take your time. Do not feel pressured to finish as fast as you can. Do your best to ignore me. Just concentrate on finishing the test."

Time it took Subject to complete test: _____ min. _____ sec.		
Did the Subject ask for/receive assistance? (right column)		
31. [A] Did the Subject wash their hands?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
[B] With soap?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
[C] Dry his/her hands?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
[D] Did s/he touch clothes or sari after washing hands?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
32. [A] Did the Subject open the vial without potentially introducing contamination?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
[B] If no, how did potential contamination occur? <input type="checkbox"/> Touch inside cap <input type="checkbox"/> Touch inside vial <input type="checkbox"/> Other _____		
33. [A] Did the Subject pour in the water sample without potentially introducing contamination?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
[B] If no, how did potential contamination occur? <input type="checkbox"/> Touch bottle to vial <input type="checkbox"/> Other _____		
34. [A] Did the Subject fill the vial up to the line/mark?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
[B] If no, did the under- (U) or over- (O) fill?	<input type="checkbox"/> U <input type="checkbox"/> O	
[C] If over-fill, did the Subject pour water out of the vial?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
35. Did the Subject close the lid tightly?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
36. [A] Did the Subject close the bottle without potentially introducing contamination?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
[B] If no, how did potential contamination occur? <input type="checkbox"/> Touch inside cap <input type="checkbox"/> Touch inside vial <input type="checkbox"/> Other _____		
37. Did the Subject shake the bottle adequately?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
38. [A] Does the Subject plan to store the bottle in a suitable place?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
[B] If no, why was the place not suitable? <input type="checkbox"/> Direct sunlight <input type="checkbox"/> In reach of children <input type="checkbox"/> Too warm <input type="checkbox"/> Too cold		
39. Notes and additional observations:		

**E. PART FIVE**

**Immediate Post-Test Follow-Up [PTF]**

40. [A] You took \_\_\_\_\_ minutes to perform this test. Is this reasonable or unreasonable?

Reasonable     Unreasonable

[B] How reasonable or unreasonable?     Very     Somewhat

41. [A] Now that you have performed this test, are you confident or not confident in your ability to correctly perform this test again?     Confident     Not confident

[B] How confident or not confident are you?     Very     Somewhat

42. [A] Was this test easy or difficult to perform?     Easy     Difficult

[B] How easy or difficult?     Very     Somewhat

43. Do you expect the test to say your water is clean or dirty?     Clean     Dirty

44. Is there anything else you would like to tell us about the H<sub>2</sub>S test, your experience using it, or your water in general? \_\_\_\_\_

\*\*\* Go through all the mistakes the Subject made during the test together with the Subject. After this, give him/her an extra, unused vial. Tell them they should test a water source of their choosing (e.g., household tap) soon, so when we return in two days we can get the test.

\*\*\* "Thank you for taking our survey. The information you have provided will be very helpful for our research."

\*\*\* "Tomorrow around this time, you will receive a phone call asking you 1 question about your test result. The call will take about 1 minute to complete and will be free. When will you be available to receive this call? We will also call in 2 days, and return so we can see your vial and ask you a few more questions. The call should take 5 minutes and the visit should take 5 minutes. Will you be available 2 days from now in the afternoon?" (If Subject says no, negotiate an alternative time to call/visit)

45. Additional notes and observations #1:



### F. PART SIX

#### 24-Hours Post-Test Follow-Up [24H]

46. [A] Date: (D/M/Y) \_\_\_\_\_ [B] Time: \_\_\_\_\_
47. [A] What is the color of the water in the vial with the orange sticker?  
 Not black  Black  Other \_\_\_\_\_
- [B] What does the color of the water tell you about the water sample?  
 Uncontaminated  Contaminated  Not sure  Other \_\_\_\_\_

### G. PART SEVEN

#### 48-Hour Post-Test Follow-Up [48H]

48. [A] Date: (D/M/Y) \_\_\_\_\_ [B] Time: \_\_\_\_\_
49. [A] Where did you store the vial for the past 2 days? \_\_\_\_\_
- [B] How long after you finished the test did you store the vial in its current place?  
 immediately  Less than 1 hr.  More than 1 hr.  More than 6 hrs.
- [C] Was the vial moved or disturbed at all?  Yes  No
50. [A] What is the color of the water in the vial with the orange sticker? (*do not lead*)  
 Not black  Black  Other \_\_\_\_\_
- [B] What does the color tell you about the water sample? (*do not lead*)  
 Uncontaminated  Contaminated  Not sure  Other \_\_\_\_\_
- [C] Does the Researcher confirm the Subject's result?  Yes  No
- [D] What is the source of the Subject's personal vial? \_\_\_\_\_
- [E] What is the color of the Subject's personal vial? (*Researcher observes and records*)  
 Clear  Black  Other \_\_\_\_\_
- [F] (If either test is positive) Now that you have said your water is dirty according to this test, what do you think is causing the contamination? \_\_\_\_\_
- [G] (If either test is positive) Now that you have said your water is dirty according to this test, what, if anything, do you plan to do? \_\_\_\_\_
51. [A] Are you likely or unlikely to recommend this test to neighbors?  Likely  Unlikely
- [B] How likely or unlikely?  Very  Somewhat
52. Imagine you are in your local store and the storekeeper offers you this test, available for purchase for Rs. [  30  60  90 ]. (*Reemphasize that this test is single-use*)
- [A] Are you likely or unlikely to buy the test?  Likely  Unlikely  Unsure
- [B] How likely or unlikely?  Very  Somewhat
53. Is there anything else you would like to tell us about the survey, the H<sub>2</sub>S test, your experience using it, or water quality in general?

54. [A] Was it easy or difficult to read the test results?  Easy  Difficult

[B] How easy or difficult?  Very  Somewhat

55. [A] Are you confident or not confident that you have read the results correctly?

Confident  Not confident

[B] How confident or not confident?  Very  Somewhat

56. [A] Do you trust the results of this test?  Yes  No

[B] How much?  Very  Somewhat

57. We are thinking about doing some more research about water over the next few months.

Can we contact you in the future for this research?  Yes  No

58. Did the Subject receive 100 Rs. for their participation?  Yes  No

\*\*\* "Please note that this test only measures one way water can be unsafe to drink. Just because this test does not turn black does not necessarily mean your water is safe to drink. When the water in the vial turns yellow or brown, this is a negative, not a positive, result."

\*\*\* "We will be take your vials with us so we can disinfect and dispose of them properly."

\*\*\* "Thank you for taking our survey. The information you have provided will be very helpful for our research."

59. Additional notes and observations #2:

Name: \_\_\_\_\_ Mobile: \_\_\_\_\_ Age: \_\_\_\_\_ Gender: \_\_\_\_\_

ID: \_\_\_\_\_

Notes: \_\_\_\_\_