

**Air pollution trade-offs in developing countries:
an empirical model of health effects in Goa, India**

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ONLINE APPENDIX

Appendix A. Household Questionnaire

Code:

Serial number:

Common Household Questionnaire

Identification information: (to be filled by investigator)

Identification Number: _____	Date: ____/____/____
Name of the interviewers: _____	
House Number: _____	Ward: _____
Village: _____	Taluka: _____
Time: Start : _____ End: _____	

I. Socio-economic status of the household

1. Are you originally from this village?

(1) Yes → Go to 5 (2) No → Go to 2

2. Which year did you come to this village? _____

3. Reason for coming to this village: _____

4. Place of origin: _____

5a. Religion: _____

5b. Caste: _____

6. Type of family (1) Joint (2) Nuclear

7. Size of the household (from the SE table): _____

8. Number of women in the HH (from the SE table): _____

9. Total family income per month: Rs. _____

10. Total family expenditure per month: Rs. _____

II. Housing characteristics

1. Type of house (Observation by the interviewer)

(1) *Pucca* (2) *Semi- pucca* (3) *Kutchha*

2. Floor of residence: _____

3a. Total number of rooms: _____

3b. Total area of the house: _____ (if they know)

4. Distance from the main road: (meters)_____
5. Distance from the mine site: (meters)_____
6. How many windows do you have at your house? _____
7. Is the house electrified? (1) Yes (2) No
8. What are the other sources of light at home?
 (1) Kerosene lamps (2) Gas lights (3) Oil (4) Candles
 (5) Others (specify)_____
9. How do you dispose your solid waste?
 (1) Burning (2) Throwing it in open places/river/forests
 (3) Manure/compost (4) Open pits *panchayat*/private
 (5) Closed pits (private) (6) Others_____
10. Do you use coils or incense or any other repellants to ward off insects/ mosquitoes?
 (1) Yes (2) No
11. If yes, for how many months in a year do you use it? _____

III. Kitchen: indoor smoke exposure

1. Who cooks the food in your house? _____
2. How many meals do you cook in a day?_____
- (1) One (2) Two (3) Three
3. Type of fuel and stove used for cooking and water heating (tick mark in the appropriate column and write the codes for the type of stoves as given below the table)

Type of fuel	Purpose		Type of stove	
	Cooking	Heating	Cooking	Heating
Wood				
Twigs/branches/crop residues				
Dung cake				
Kerosene				
LPG				

Electricity				
Biogas (<i>gobar</i>)				
Any others				

Types of stoves

1. Mud or clay without chimney 2. Mud or clay *chula* with chimney

3. Three stones 4. Kerosene stove 5. Biogas stove 6. LPG stove

7. *Bumba* 8. Other (specify)

4. IF LPG/ is in use, since how long are you using this? _____ years

5. How many days does one cylinder last? _____ days

6. Type of kitchen (For indoor cooking/water heating to be observed and tick marked in the appropriate column by the investigator)

Activity	Type of kitchen	Rainy season	Other season
Cooking	Separate room inside the house with a door/without a door		
	Inside the house but not a separate room		
	Separate room/place outside the house		
Water heating	Separate room inside the house with a door/without a door		
	Inside the house but not separate room		
	Separate room/place outside the house		

7. How do you cook?

(1) Standing

(2) Sitting/bending/kneeling

8. Number of windows in the kitchen: _____

9. Do you use exhaust fans/chimney in the kitchen?

(1) Yes

(2) No

IV. Health

1. Who pays for your medical expenses?

- (1) Employer (2) Self (3) Partly employer

2. **If (3)** then what is the percentage contribution by the employer? _____

3. How many members in your family have health insurance? _____

V. Averting activities

1. Do you/your HH members avoid walking and disallow children from playing outside due to such pollutants?

- (1) Yes (2) No

2. Has any other activity of the household been changed to avoid dust exposure?

- (1) Yes (2) No

3. Do you close the windows or doors of your house to avoid dust?

- (1) How many hrs in a day? _____ (2) Which months? _____

4. Do you have plants and trees in your garden or compound?

- (1) Yes (2) No

5. Any other averting measures used by your HH to avoid dust?

Completely fill in the socio economic table and the specific individual questionnaire for each and every member of the household.

Appendix B. Individual Questionnaire

Code:
Serial number:

Specific Individual Questionnaire

Identification information: (to be filled by investigator)

Identification Number: _____ Date: ____/____/____
Name of the Interviewers: _____
House Number: _____ Ward: _____
Village: _____ Taluka: _____
Time: Start: _____ End: _____

Part I:

1. Name of the individual: _____
2. Number of years staying at this address: _____
3. Where did you live before this? _____
4. For how long (years)? _____

Part II:

1. How often do you travel to school/work/market?
(1) Everyday (2) Alternate day (3) Every week
(4) Once in 15 days (5) Any others _____
2. How do you usually get to work/school/college? **(Tick one or more)**
 - 1) Bus
 - 2) Train
 - 3) Lorry/truck
 - 4) Car/Jeep/Van
 - 5) Auto/Tempo
 - 6) Scooter/Motor cycle
 - 7) Bicycle
 - 8) On foot

3. What are your work/school/college timings?

From _____ to _____

4. Where is your place of work/study located (address)? _____

5. Are you regularly exposed to any kind of irritants such as dust, smoke or fumes at work/study/home?

(1) Yes (2) No

6. Do you work indoors? (1) Yes (2) No

If **Yes**, where? (**Tick the response**)

1) Shop

2) Office

3) Factory (Please specify) _____

4) Other (Please specify) _____

7. Do you work outdoors? (1) Yes (2) No

If **Yes**, where? _____

8. If you had another job earlier, did you have a similar exposure in your previous job?
(**Only if applicable**) (1) Yes (2) No

9. How much time do you spend in the kitchen?

(1) Actual time cooking _____ hours

(2) Other than cooking _____ hours

10. Do you do exercises? (1) Yes (2) No

11. Smoking status

1) Never smoked

2) Ex-smoker

3) Current smoker

If ex-smoker or current smoker, continue with the following questions

If nonsmoker, go to Part – III

12. What do you or did you smoke?

1) *Bidis*

- 2) Cigarettes
 - 3) *Hukka*
 - 4) Others (please specify) _____
13. At what age did you start smoking? _____
14. How many *bidis*/cigarettes etc do you smoke or used to smoke every day?
Minimum _____ Maximum _____
15. If ex-smoker, reason for stopping and when stopped: _____

Part III: Fill in the days of sickness for each illness during the past 3 months

Have you suffered from any of the following illnesses?	Yes	If Yes, have you suffered from this during the last 3 months	How many days were you sick due to this illness in the last 3 months
1. Headache			
2. Fever			
3. Eye irritation, tears, allergy			
4. Nose irritation, allergy			
5. Cold, sinus			
6. Throat irritation, dry scratchy throat, sore throat			
7. Hoarseness of voice			
8. Skin infection, rashes, boils			
9. Skin irritation, allergy			
10. Respiratory problems			
11. Dust/pollen allergy			
12. Dry cough			
13. Cough with phlegm			
14. Shortness of breath			
15. Wheezing			
16. Bronchitis			
17. Asthma			
18. TB			
19. Heart problems			
20. Chest pain			
21. High blood pressure			
22. Any other illness (specify)			

Part IV: Questions related to respiratory illness

A. Cough

1. Do you frequently get a cough? (**Exclude clearing of throat**) (1) Yes (2) No
2. Do you usually cough when you get up in the morning? (1) Yes (2) No
3. Do you usually cough at other times during the day or night? (1) Yes (2) No

If “No” to (1,2, or 3), go to “C”

If “Yes” to (1,2 or 3), ask the following questions:

4. Do you cough like this on most days for 3 months or more during the year?
(1) Yes (2) No
5. In which season do you get cough more often (**tick the response**):
 - 1) Winter
 - 2) Summer
 - 3) Rains
 - 4) Same in all seasons

B. Phlegm

6. Do you frequently bring up phlegm or sputum from your chest? (1) Yes (2) No
7. Do you usually bring up phlegm or sputum from your chest when you get up in the morning? (1) Yes (2) No
8. Do you usually bring up phlegm or sputum from your chest at other times during the day or night? (1) Yes (2) No
9. Do you usually bring up phlegm or sputum from your chest on most days for as much as 3 months in a year? (1) Yes (2) No

C. Shortness of breath

10. Do you get short of breath when you hurry (walk fast) on level ground or walk up a slight incline? (**Distinguish from fatigue**) (1) Yes (2) No
11. Do you get short of breath walking with other people of your age on level ground?
(1) Yes (2) No
12. Do you have to stop or reduce your pace to catch breath? (1) Yes (2) No

If “No” to any of the above, go to “D”

If “Yes” to any of the above, ask the following question:

13. In which season do you get short of breath more often (**encircle the response**):

- 1) Winter
- 2) Summer
- 3) Rains
- 4) Same in all seasons
- 5) Change of seasons

D. Wheezing

14. Do you ever get wheezing of whistling sound in your breathing?
(1) Yes (2) No

If “No” to (14), then go to “E”

If “Yes” to (14), please ask the following questions:

15. Did you ever get wheezing or whistling sound in your breathing?

During the: (**tick the response**)

- 1) Last week
- 2) Last month
- 3) Last 3 months
- 4) Last 6 months
- 5) Last 1 year

16. Does this wheezing or whistling sound occur: (**encircle the response**)

- 1) After a “cold”? (1) Yes (2) No
- 2) After running or severe exercise or intense exertion? (1) Yes (2) No
- 3) When you are exposed to dust/ smoke/ strong fumes/ smells? (1) Yes (2) No
- 4) When the weather or season changes? (1) Yes (2) No

17. During the past two years have you had any chest illnesses that have kept you off work, indoors at home or in bed? (1) Yes (2) No

18. Have you ever had or do you currently have any chronic heart or chest disease?
(1) Yes (2) No

(Chronic means disease of long duration)

Part V: Occupational health

1. Does your job involve contact with metals, chemicals, liquids or solvents?

(1) Yes (2) No

2. What are the problems you face at your work place with regard to air, water, noise, humidity, temperature, facilities or any others? (write the kind of problems they face at work, e.g. poor ventilation, unsafe water, loud noise, extreme dryness, heat, cold, poor lighting, poor work space, faulty equipments ect)

3. Are you exposed to allergens like irritants, pollens, mould, droppings, dust mite, pets, wool, cotton? (1) Yes (2) No

4. Do you use safety devices at work like eye goggles, face mask, gas mask, hearing cover, or headgear, if required for your job? (1) Yes (2) No

5. Did you have or are you having any health problems while at work?

If yes, what kind of health problems do you have?

Part VI: Mitigating activities

1. State individual expenditure incurred towards your medical costs in the last 3 months.

Individual Expenditure	Last 3 months
1) Number of visits to the doctor	
Disease details	
2) Expenditure on	
a) Doctor's fees	
b) Pharmacy/medicines	
c) Diagnostic tests	
d) Hospitalisation	
e) Travel	
f) Any others	
3) Number of days hospitalised	

4) Number of days of work lost due to illness	
5) Number of days of work lost due to illness of family members	

2. Local mitigation measures

2a. Do you undertake any home remedies for respiratory problem?

E.g. herbs, honey, onion juice, dry ginger, tulsi, kashay, gangan, shoonthi, badishee, others

(1) Yes (2) No

3. How much do you spend per month on such measures? Rs. _____

Part VII: Awareness and averting activities

1. Are you aware that air pollution causes illness? (1) Yes (2) No

2. What are common illnesses that could be caused due to air pollution in your village?

3. Have you/ your family members suffered from any of the above illness during the last one year? (1) Yes (2) No

4. How many dusty months have you experience in your locality in a year? _____ months

5. Do you think air pollution has affected your/ your household members' daily activities? (1) Yes (2) No

6. Do you avoid main roads during peak hours of traffic? (1) Yes (2) No

7. Do avoid exposure to dust have you taken a different route to your work/school/market? (1) Yes (2) No

8. Do you use handkerchiefs, duppatta, eye goggles or any protective clothes when you travel though these roads? (1) Yes (2) No

9. Do you stay indoors to avoid such exposure, any loss of workdays due to this?

(1) Yes (2) No

10. What kind of averting measures do you use to avoid dust exposure?

Appendix C. Health Diary

Health diary format

Code _____

House No _____

Ward _____

Village _____

S.n	Member	Kind of ailment	Date	No of days sick	No of work lost	No of visits to doctor	Total medical expense	Additional comments