# Annex 9: ITDG – Smoke, health and household energy
# Enumerator manual for
# House, household and monitoring questionnaire
***remember to take this manual with you !***

**To the interviewer:**
This manual is intended to explain any of the questions in the questionnaire which may need further clarification. Please ask all the questions on the **questionnaire even if they are not mentioned in this manual.** It is very important that the questions are asked **at the times specified**. The first set (PART A) should be asked **before the monitoring starts** , to get to know the woman of the house and to introduce her to the project. PART B records the information from the monitors, whilst PART C must be asked **on completion of the monitoring**, as these questions deal with what caused the smoke (cooking, etc) over the 24 hours measured by the monitoring machines. The numbers in this manual match the numbers on the questionnaire.

## Part A : Notes on questions to be asked before starting the air monitoring

### THE HOUSEHOLD

**1. Identifying household and cook**

*Interviewee (data protection)*
Ensure that you are interviewing the correct woman, referring to the record of names at the end of this booklet. For reasons of confidentiality, only the ID number of the woman, and NOT her name, should be entered on the form.

**2. The family**

*Children*
Children under five are specified as these are the ones who are most likely to be with their mother

For older children, it is important to know if where they do their homework, as this may change when the kitchen has less smoke in it.

**3. Types and uses of household fuel**
The type of fuel is to be recorded in order of importance: by importance, this means used the most for each use listed (cooking, lighting, etc.). Columns are provided to record first, second and third most important fuel for each task.

Not all of the columns have to be completed – these are provided only so that several fuels can be recorded if necessary. If the interviewee says, for example that almost all cooking is done on wood, with occasional used of kerosene, candles are mainly used for lighting with some use of kerosene and occasional batteries, and wood is the only fuel used for keeping warm (space heating), you would record this information as follows:

| Task | Most important fuel | Second most important fuel | Third most important fuel | Field |
|---|---|---|---|---|
| Cooking (including drinks) | Wood | Kerosene | - | 15-17 |
| Lighting | Candles | Kerosene | Batteries | 18-20 |
| Keeping warm | Wood | - | - | 21-23 |

**Etc ……**

**4. Getting fuel: buying and gathering**

***Cost of fuel***
You may need to discuss this with the woman. If, for instance, she only buys it seasonally, record the weekly cost for the time of year when the monitoring is taking place. If she only buys it occasionally, work out an average for the week.

***Problems with gathering fuel***
This question has been left 'open' to allow interviewees to provide their own answers. If there are problems, but the respondent does not give a specific answer, try to probe (sensitively) for the reason(s).

**5. Fuel drying**
Use the following definitions:

| Term | Description |
|---|---|
| Very dry | Wood that is completely dry having been outdoors in very dry weather for a long period, or kept to dry in the house for some weeks at least. |
| Dry | Wood that does not feel damp, was gathered when the weather was variable and has needed to be dried in the house for several days |
| Damp | Wood that feels slightly damp, has not been dried in the house |
| Wet | Wood that is wet due to prevailing rain and dampness rather than because it is green (see below), and not having been dried to any degree in the house. |
| Green | Wood that was cut while still growing, or was doing so very recently, so that the wood contains sap. |

**6. Employment and education**

- Employment: ask woman about paid employment and/or other means of generating income. Also ask about women's husbands employment, and record this.
- The questions about being able to read may be important when working out good ways of disseminating information

**7. Women's and children's health and well-being**

The purpose of these questions is to explore and record the views that women have about the effects kitchen smoke has on their health, and that of the children. *Please differentiate between kitchen smoke and cigarette smoking by asking always about 'kitchen smoke'.* It is important that the woman has an opportunity to express her views without being asked to comment directly on the health problems that we have identified. This section should therefore be asked in two parts:

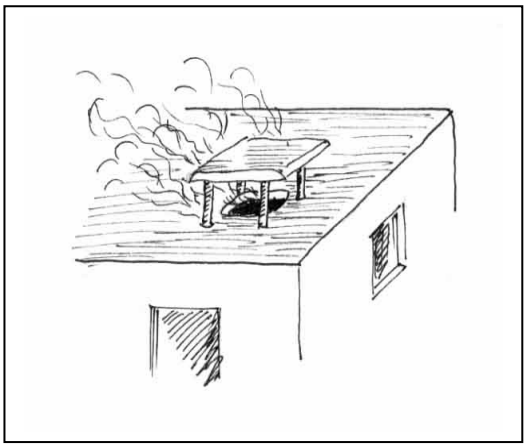
- The woman's views should be explored in an open question, and her comments recorded
- When she has stated her views, then ask whether she thinks the smoke affects the specific health problems we have listed *if she has **not** already mentioned one or more of these.*
- Only when the kitchen smoke problems have been discussed, find out if she smokes, and if so, how much she smokes (e.g. number of cigarettes, or weight of tobacco etc.)

*Other benefits*
There are other ways in which reduced smoke in the kitchen can improve the quality of life for cooks and their families. We want to find out which of these benefits is *important for them*, so this question should be as little prompted as possible

## THE KITCHEN

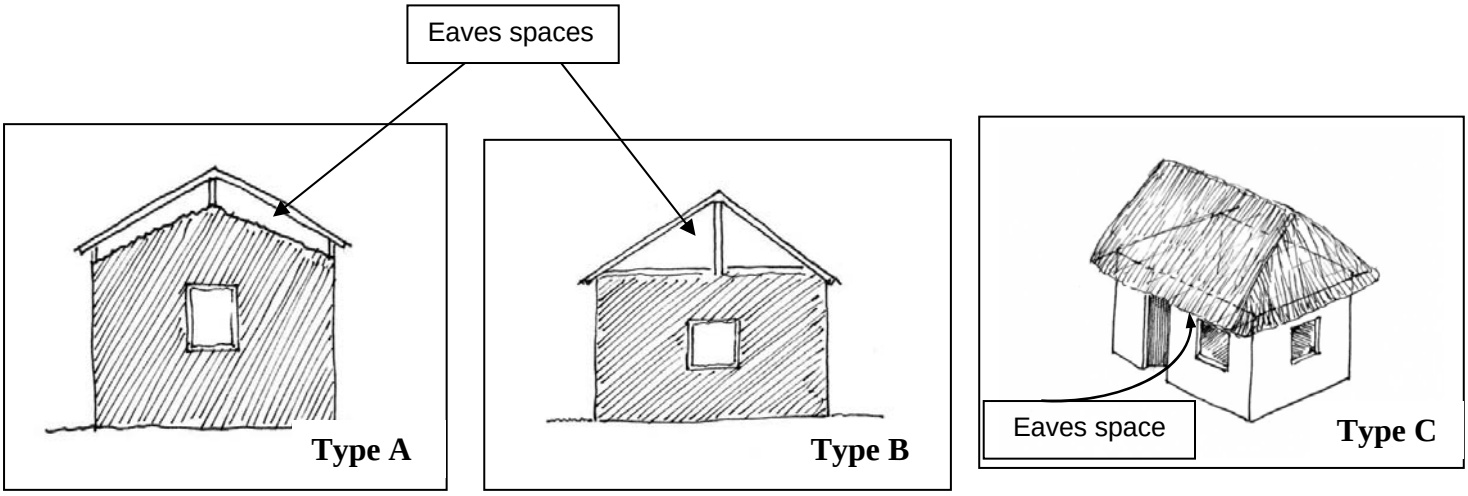
**8. Kitchen type**
Indicate whether the kitchen is part of the main house (whole house or partitioned), a separate but solid, enclosed structure, or whether a separate/external semi-open area.

**9. Roof**
Observe and record the type of roof and material. Permanent ventilation in the roof refers to openings such as those illustrated below, although other types might be encountered. Note that these are **not** chimneys or hoods, as there is no flue leading from the stove (or just above it), just a hole in the roof. Measure the diameter of the opening (in centimetres) and record.



**10. Walls**
Describe the material from which the walls are made. This is important as some materials will allow smoke to pass through.

**11. Eaves spaces**
The eaves spaces are openings between the walls and the roof, and may be of different types and extent for varying distances around the house/kitchen. The illustrations below show three types. It is possible that you will encounter others, in which case you should provide a sketch and measure the depth as best you can.



You are asked to record three features of the eaves spaces:

| Features | Guidance on recording |
|---|---|
| Type | • Refer to the diagrams and Type code (A, B or C) provided. If approximate, uses closest description. If none of the descriptions are adequate, provide details in your sketch of the kitchen at the end of this section. |
| Depth | • For Type A, depth is the height of the space which is (approximately) the same all round<br>• For Type B, depth is the maximum height at the apex<br>• For Type C, depth is the distance between the wall and the inside edge of the roof, which is (approximately) the same all round |
| Length | • Record how far round the kitchen (house) the eaves extend, for example all round, or along one wall, or two walls, etc |

Note that you should in any case include a description of the location of the eaves spaces in the diagram of the kitchen at the end of this section.

**12. Windows**
Record the number of windows in the room with the main stove.
If the kitchen is a separate structure, only record the windows in the kitchen.
If the kitchen is attached to other rooms in the house, but it is separated by solid walls and a door, only record the windows in the kitchen.

When recording the size of the windows, measure the ***width***

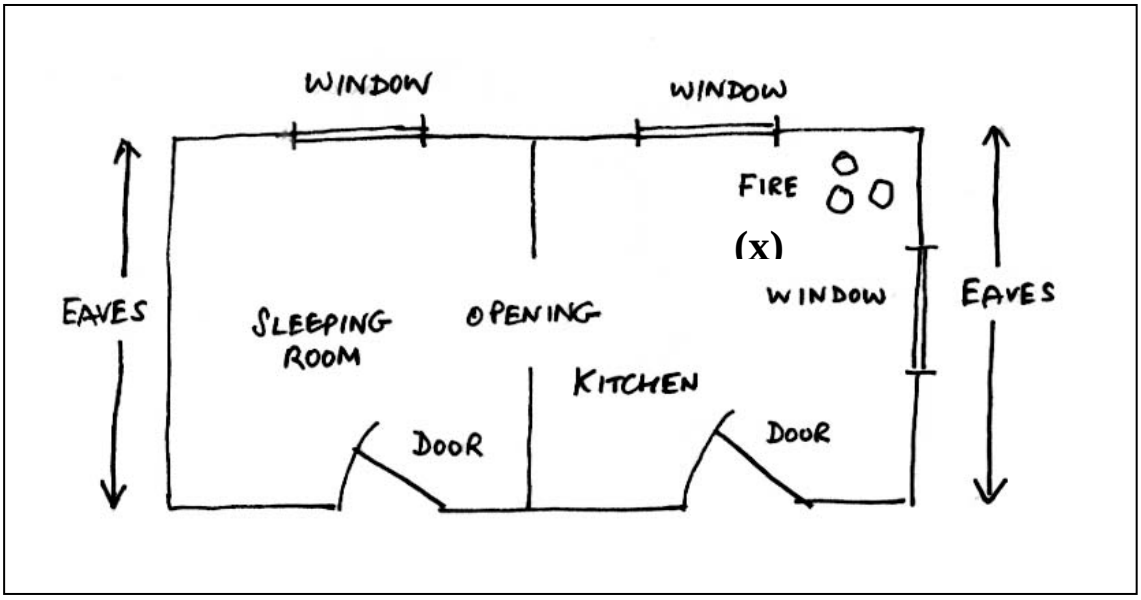
**13. The stove**
Record the type of stove from list provided. The questions about sleeping in the same room as the stove reflect the need to find out how many people in the household are affected by the smoke. Use the same criteria as the windows to decide whether people are in the 'same room'.

**14. Smoke extraction**
Smoke extraction refers to a method for actively removing smoke from a room, as is provided by a flue or hood with flue, or chimney. This is distinct from permanent openings in the roof (see 2 above) which allows smoke to escape but do not normally create the draught that characterises a flue or chimney. These are defined as follows:

| Type | Definition |
|---|---|
| Flue | A pipe (metal, cement, earth) attached directly to the stove, and venting outside the house. |
| Hood with flue | A metal (usually) hood over the fire which collects smoke, which is then vented through a pipe attached to the top of the hood to the exterior of the house. |
| Chimney | A chimney is built into the structure of the wall of the house and vents smoke to the exterior of the house. |
| Chimney stove | A stove with an 'built-in' flue which removes all the smoke from within the body of the stove and takes it out of the house. This can be confusing as it is a different use of the word 'chimney' |

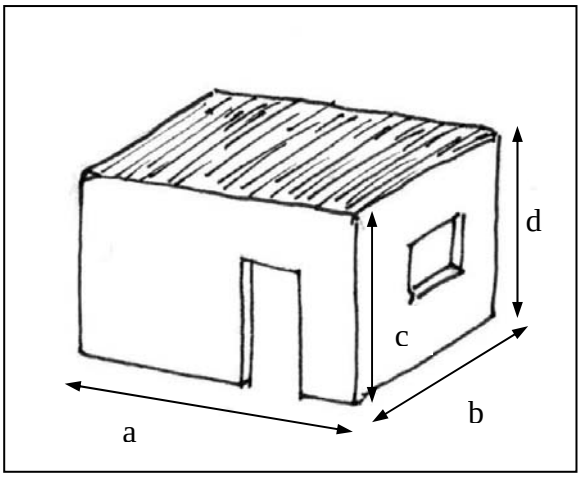
**15. House layout**
An example of the type of diagram required is shown below, indicating the level of detail requested. Note that these diagrams will be scanned, so it is helpful if a dark pencil or pen is used for clarity. The following details should be included in the sketch and labelled:

- Rooms, identifying kitchen if part of main house
- Position of fire/stove, indicating type (note there may be more than one)
- Position of door(s) and openings (doorways without doors)
- Position of window(s)
- Position of eaves spaces
- Interior walls
- Position of monitors **(X)**



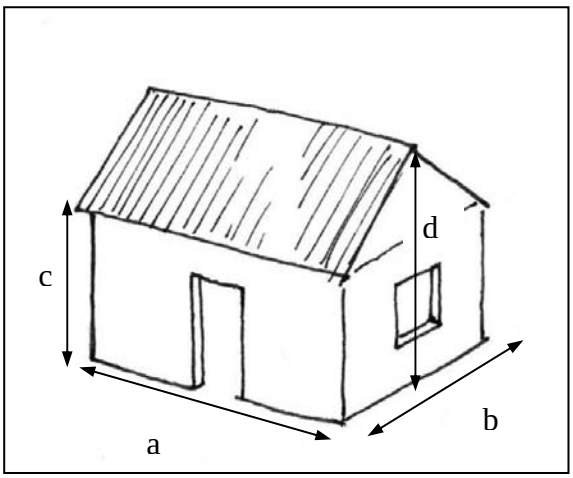

***Volume of kitchen***

Measurement should be made of the following **INTERNAL** dimensions, in metres, according to the shape of the kitchen. Record the TYPE (A, B or C). Choose the type which is most similar to the kitchen you are measuring. The actual volume will be calculated by computer.



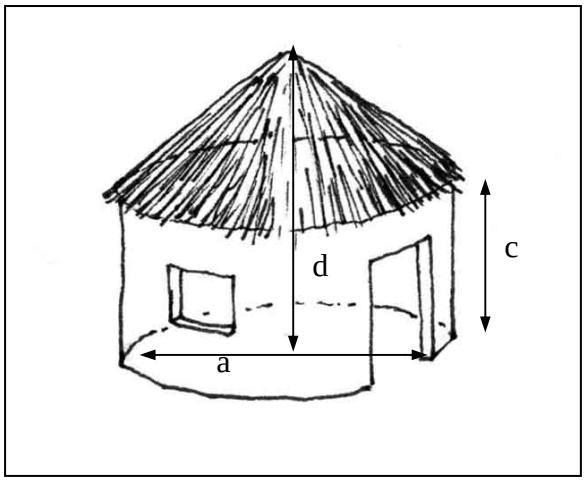

**TYPE A**

***Kitchen with flat or sloping roof:***
For a kitchen with a flat or sloping roof (whether separate building or part of main house), measure length (a), depth (b) and height at front (c) and height at back (d) [Clearly (c) and (d) will be the same if roof is flat, but enter both measurements].



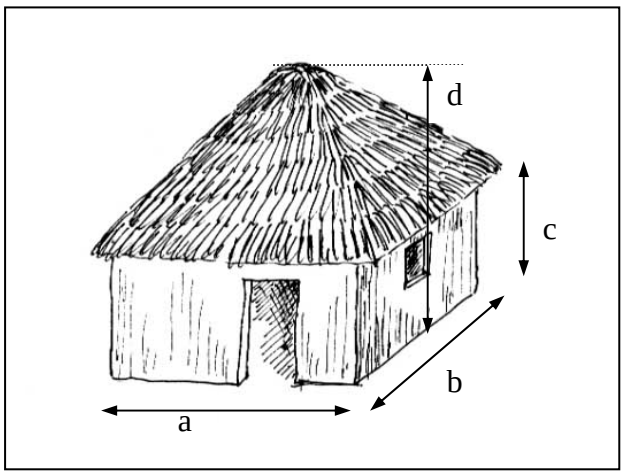

**TYPE B**

***Kitchen with pitched roof:***
For a kitchen with a pitched roof (whether separate building or part of main house), measure length (a), depth (b) and height to the eaves (c) and also height to the apex of the roof (d)




**TYPE C**

***House with conical roof:***
Measure the diameter (a), do not give a measurement for (b), the height to the eaves (c) and the height to the apex (d).




**TYPE D**

***Rectangular house with pyramidal roof:***
Measure the length (a), depth (b) and height to the eaves (c) and also height to the apex of the roof (d).

## Notes on part B: PM and CO air pollution and CO exposure monitoring

### 16. Setting up equipment

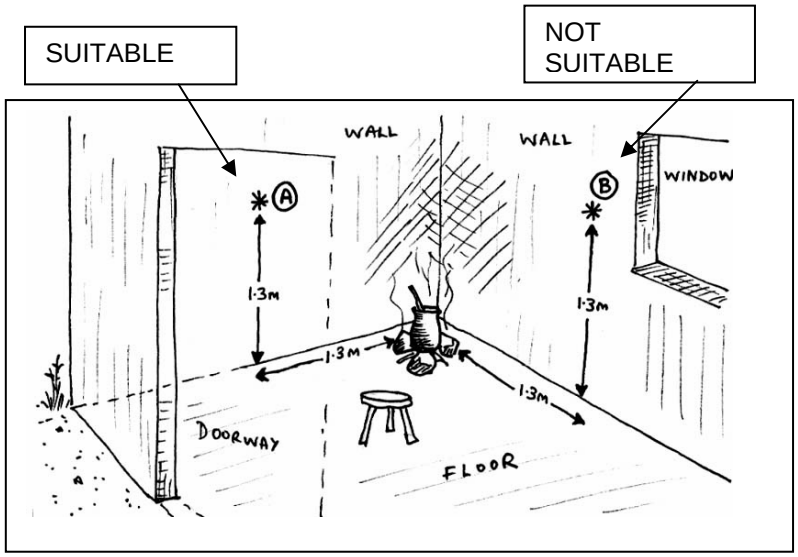
***PM monitor set-up***

*Serial number of cassette:*
Vital this recorded correctly, as this is the only way we have of knowing which sample comes from which house:

1. Check Annex 2 at the end of this manual for the filter cassette serial numbers for each house
2. Select the filter cassette with the correct number for the first 12 hour monitoring (already prepared by supervisor)
3. Enter the filter cassette serial number onto the data collection form
4. Remove the plastic clip, replace clip in bag and reseal the bag. Place the cassette into the cyclone the right way up (the word 'TOP' is printed on the top), and close the cyclone securely, without overtightening

*Positioning the pump and cyclone:*

- Connect cyclone to pump, and ensure cyclone lid securely tightened, and pipes well connected.
- Identify a suitable site for the **cyclone**. This must be in the kitchen, 1.3m above floor level, at least 1.3 feet from fire, and away from smoke rising directly from fire. Avoid a location that is close to (less than 1metre away from) windows, doors, and other openings.




In the Figure above, two locations are marked, A (which is suitable) and B (which is not suitable).

- **Position A:** This location is 1.3 metres from the edge of the fire, and 1.3 metres above floor level. It is not too close to a window, and is more and 1 metre from the door opening. Hence, it is a ***suitable*** position.
- **Position B:** This location is 1.3 metres from the edge of the fire, and 1.3 metres above floor level. However, it is very close to a window, that is – less than 1 metre from the window. Hence it is an ***unsuitable*** position.

When you have identified a suitable location, fix the pump and cyclone securely. Ensure that the cyclone is upright. Record the location on the data collection form, providing enough detail to ensure that the same location can be selected for all subsequent rounds of air pollution monitoring. Put an 'X' on the layout drawing for the kitchen to identify the location of the monitor

***CO monitors set-up***

*Locating the CO monitor in the room*
The T82 room monitor should be fixed securely at the same position as the cyclone

*Fixing the CO monitor to assess woman's personal exposure*
The T82 personal CO monitor needs to be carried by the woman, so that the sensor is near to where she is breathing. It is important to carry out your own experiments to find the best way of achieving the objective – that the woman should wear the monitor at all times inside the house, and carry it safely with her when away from the home (at market, collecting wood, water, etc). **It should not be left in the house when the woman goes out, as it will continue to record the kitchen smoke in her absence.**

A case with a broad/soft strap has been prepared so that the woman can 'wear' the monitor around her neck. If the woman would prefer, she can clip it to a scarf fastened round her neck. Please check that it is securely clipped to the scarf in this case.

The woman will clearly need to remove the monitor when washing, changing, and sleeping. She should be asked to keep the monitor close to her at such times, and following washing/changing – if it is convenient – to put the monitor back on as soon as possible. When sleeping, she should put the monitor near to her breathing area.

**Security**
The T82 monitor is an expensive item, and all efforts must be made to avoid loss or theft, and to prevent the woman from feeling worried about the risks of carrying it. This is an important issue for country teams to consider, and develop plans and advice to minimise these risks. If necessary, the woman could carry the monitor in a bag, or tuck it inside her blouse or jumper etc. when out of the house.

**Starting up equipment**

***Starting the pump for sampling PM***
The pump has been prepared and calibrated by the supervisor, and should be ready to start sampling. Attach the external leads to the car battery – red to **(+)** and black to **(-)**. It is important to make one last check on the pump's function before leaving it running at the house.

Switch on the pump in SAMPLING mode, and record the temperature displayed by the pump

Press ENTER to start the pump, and check that the flow rate is in the range 2135 – 2265 ml/minute.
- If flow rate is in range, proceed
- If flow rate is not in range, the pump must be re-calibrated by the supervisor

***Sampling CO for the room***
Switch on room CO monitor by pressing and **holding the switch until it gives one beep** – watch to see that the display goes through the following sequence;
- 'On'
- CO – this is what is it going to measure
- A series of bars to show the condition of the battery in a 3-2-1 pattern (if it is less than 3-bars, let the UK know at once)
- r 1.1 – this is the software which is needed to download the measurements
- A red light and backlight to the display
- A countdown set of numbers – 5-4-3-2-1
- It will then indicate the level of CO in the room (which may be zero, so do not be concerned if it shows 0….the important thing is that there is a number on the screen – it is now working

***Repeat for woman's monitor***

**17. Twelve-hour data collection**

***Filter replacement***

If all has gone well, all that is required at the 12-hour point is to check the pump, replace the filter cassette, and then re-start the pump. If the pump has stopped before you arrive, it is important to find out why. The following procedure should be followed:

*Procedure for checking and then stopping the pump:*

- If pump **still running**, record the flow rate, then press ON/HOLD and ENTER, then ENTER again to obtain full data display. This will provide the following information which should be recorded on the form:

  - Temperature
  - Time elapsed (minutes)
  - Total volume sampled (litres)

- If pump has **stopped running**, the reason should be displayed (e.g. "flow interrupt" if the filter is blocked). If the display has gone, you will need to press ON/HOLD. Record the reason for the pump stopping.
- Record the data displayed on Time Elapsed and Total Volume Sampled.
- If the pump has stopped, the monitoring in that house should be abandoned and the pump taken back to the field office for checking and to establish exactly what the problem has been. Advise the householder that you are making checks on the equipment, and with her permission you would like to arrange to repeat the sampling on another day. Please ensure that she does not think that she is in any way responsible for problems such as these.

*Replacing the filter*

Remove the filter cassette from the cyclone, put the sealing clip on the cassette, then place the cassette into the plastic bag and close the seal.
Locate the second filter cassette and enter the serial number (which will contain a B, for the second period) on the form. As you did for the first cassette at the start of monitoring, remove the plastic clip, replace this in the bag, and re-seal the bag. Place the cassette into the cyclone the correct way up (see reminder box), and close the cyclone securely without over-tightening.

**Make sure the cassette is the correct way up!**

**Check CO monitors**

Make sure that both the woman's monitor and the house monitor are still working, by checking that there is a value on the display (this may be zero – that is OK). Do not make any adjustments to the CO monitors. Check that the woman is comfortable with the monitor.

**18. Twenty-four hour data collection**

***Procedure for checking and then stopping the pump***

- If pump **still running**, record the flow rate, then press ON/HOLD and ENTER, then ENTER again to obtain full data display. This will provide the following information which should be recorded on the form:

  - Temperature
  - Time elapsed (minutes)
  - Total volume sampled (litres)

- If pump has **stopped running**, the reason should be displayed (e.g. "flow interrupt" if the filter is blocked). If the display has gone, you will need to press ON/HOLD. Record the reason for the pump stopping.
- Record the data displayed on Time Elapsed and Total Volume Sampled.
- If the pump has stopped, the monitoring in that house will not be used. The pump will need to checked to establish exactly what the problem has been. Advise the householder that you are making checks on the equipment, and with her permission you would like to arrange to repeat the sampling on another day. Please ensure that she does not think that she is in any way responsible for problems such as these.

***Switching off the T82 CO monitors:***
Record final CO reading from display for room monitor.
Depress and hold down the function switch on the room CO monitor **until the instrument beeps 5 times.** Check that the display is now blank. The machine is now off – replace in kitbag

***Repeat this activity for woman's CO monitor.***

## Part C:
## Notes on questions to be asked on completion of the 24 hours of pollution monitoring

**19. Cooking meals**

Note that these questions refer only to the preparation of meals for the family, not the preparation of food or other products for sale, or for any other used (see section below if this applies).

***Timing of meal***

Give time started and approximately how long it took to cook (to nearest quarter of an hour, if possible).

***Types of food and drink cooked***

Please record food using local names, also hot drinks prepared for the mealtime. We, in the UK, may need some guidance on how the types of food should be recorded (hard/soft etc) and in what detail for this to be used in an effective way in the analysis. This will be easier when we have a complete list of foods.

***Numbers of adults and children cooked for***

| Group | Description |
|---|---|
| Children | Male or female children up to age 15 years (< 16 years) |
| Men | Adult males aged 16 years and over |
| Women | Adult females aged 16 years and over |

**20. Other uses of the fire/stove:**

This question is to be used for use of the fire/stove in the preparation of food or other products for sale, or for any other used.

If food and/or other products were prepared at the same time as one or more of the meals for the family, try to find out how much of the fuel used on the day of the monitoring was used in income-generating and 'other' activities. This will show how important fuel is to people's earning power.

**21. Time-activity information**

The table in Annex 1 shows an example of how this should be completed. In this case, air pollution monitoring began at 08.00 hrs (8 o'clock in the morning). The fire was not lit until 5.30 am, and went out at about 10.00 am. It was lit again at 1.00 pm, and was kept alight (smouldering) during the afternoon, until cooking began again at 5.30 pm. The fire was used for cooking and sitting round in the evening, and finally went out at (probably) 1 am when the family was asleep – in this case the mother and child were sleeping in the same room as the fire.

**22. Comments and observations**

***From the interviewee***

Ask if the interviewee has any more comments that she would like to add about the issues that you have discussed, or related issues. If the interviewee does not obviously have more to add, there is not need to press her for further comments.

***From the interviewer***

Record here any observations you wish to make about the interview, and any other relevant observations.

**PLEASE TAKE CARE TO ENSURE THAT NO EQUIPMENT HAS BEEN LEFT AT THE HOUSE**

## Annex 1: Example of time / activity chart

| 9. Time budget | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Mark hour when air monitoring began (X)** | **Time of day** *(starting at midnight)* | | **What fraction of the time was the woman in the monitored room with the fire?** | | | | | | **What fraction of the time was the youngest child in the monitored room with the fire?** | | | | | | **Was the fire: Not lit = 1 Smouldering = 2 Burning well = 3** |
| | **Midnight to midday** | | | | | | | | | | | | | | |
| | | | None of the time | Quarter of the time | Half the time | Three Quarters | All the time | | None of the time | Quarter of the time | Half the time | Three Quarters | All the time | | |
| **AM** | 12-1 o'clock | | | | | | ✔ | | | | | | ✔ | | **2** |
| | 1-2 o'clock | | | | | | ✔ | | | | | | ✔ | | **1** |
| | 2-3 o'clock | | | | | | ✔ | | | | | | ✔ | | **1** |
| | 3-4 o'clock | | | | | | ✔ | | | | | | ✔ | | **1** |
| | 4-5 o'clock | | | | | | ✔ | | | | | | ✔ | | **1** |
| | 5-6 o'clock | | | | | ✔ | | | | | | | ✔ | | **3** |
| | 6-7 o'clock | | | | | ✔ | | | | | | | ✔ | | **3** |
| | 7-8 o'clock | | | | ✔ | | | | | | | ✔ | | | **3** |
| X | 8-9 o'clock | | ✔ | | | | | | ✔ | | | | | | **2** |
| | 9-10 o'clock | | | ✔ | | | | | | ✔ | | | | | **2** |
| | 10-11 o'clock | | ✔ | | | | | | ✔ | | | | | | **1** |
| | 11-12 o'clock | | ✔ | | | | | | ✔ | | | | | | **1** |
| | **Midday to midnight** | | | | | | | | | | | | | | |
| **PM** | 12-1 o'clock | | ✔ | | | | | | ✔ | | | | | | **1** |
| | 1-2 o'clock | | | | | ✔ | | | | | ✔ | | | | **3** |
| | 2-3 o'clock | | | | ✔ | | | | | | ✔ | | | | **3** |
| | 3-4 o'clock | | | ✔ | | | | | | ✔ | | | | | **2** |
| | 4-5 o'clock | | | ✔ | | | | | | ✔ | | | | | **2** |
| | 5-6 o'clock | | | | ✔ | | | | | | ✔ | | | | **3** |
| | 6-7 o'clock | | | | ✔ | | | | | | ✔ | | | | **3** |
| | 7-8 o'clock | | | | ✔ | | | | | | | ✔ | | | **3** |
| | 8-9 o'clock | | | | | ✔ | | | | | | | ✔ | | **3** |
| | 9-10 o'clock | | | | | | ✔ | | | | | | ✔ | | **2** |
| | 10-11 o'clock | | | | | | ✔ | | | | | | ✔ | | **2** |
| | 11-12 o'clock | | | | | | ✔ | | | | | | ✔ | | **2** |
| If there is a child recorded in the table above, please give the age of the child | | | | | | | | | | | | | | | *13 months* |

**Location of woman and child**

The woman was in the room for part of the time that the first meal was cooked, as was the youngest child (13 months). She then went out, with her child, for several hours, before returning to prepare the midday meal during which time she and the child were in the room part of the time. She was then near the house (and sometimes inside) during the afternoon, and the young child was also with her most of the time. In the evening she prepared the evening meal, and then (with her family) sat around the fire until going to bed. The young child was with her, but in the house more than her during the early evening

**Annex 2: Household numbers, name of cook and identifier and serial number of cassette**

| Round number = 1 Kenya | | | | |
|---|---|---|---|---|
| House Number | Identifier | Name of woman | Serial number of first cassette | Serial number of second cassette |
| K01 | FR | | | |
| K02 | GV | | | |
| K03 | HN | | | |
| K04 | SK | | | |
| K05 | XT | | | |
| K06 | FN | | | |
| K07 | MW | | | |
| K08 | EV | | | |
| K09 | UN | | | |
| K10 | SN | | | |
| K11 | LT | | | |
| K12 | BE | | | |
| K13 | WB | | | |
| K14 | WN | | | |
| K15 | WK | | | |
| K16 | XE | | | |
| K17 | SB | | | |
| K18 | RN | | | |
| K19 | UX | | | |
| K20 | RV | | | |
| K21 | KN | | | |
| K22 | WR | | | |
| K23 | SZ | | | |
| K24 | SC | | | |
| K25 | CY | | | |
| K26 | RD | | | |
| K27 | UL | | | |
| K28 | KJ | | | |
| K29 | WY | | | |
| K30 | VQ | | | |

*Confidential information: on completion of this round of monitoring please detach sheet, send copy to UK and file securely*