APPENDIX AVAILABLE ON REQUEST

Research Report 157, Public Health and Air Pollution in Asia (PAPA): Coordinated Studies of Short-Term Exposure to Air Pollution and Daily Mortality in Two Indian Cities

Part 1. Short-Term Effects of Air Pollution on Mortality: Results from a Time-Series Analysis in Chennai, India
Kalpana Balakrishnan et al.

Part 2. Time-Series Study on Air Pollution and Mortality in Delhi
Uma Rajarathnam et al.

Appendix C. Method for Determination of Respirable Suspended Particulate Matter (RSPM) in the Ambient Air (Gravimetric technique with high volume sampling)

Note: Appendices Available on the Web appear in a different order than in the original Investigators’ Report. HEI has not changed these documents. Appendices were relettered as follows:

Appendix C was originally Appendix I
Appendix D was originally Appendix II
Appendix E was originally Appendix III
Appendix F was originally Annexure 2
Appendix G was originally Annexure 3 (Figure 1)
Appendix H was originally Appendix IV
Appendix I was originally Appendix V
Appendix J was originally Appendix VII

Note: Appendices F & G are for Part 1; Appendices H–J are for Part 2.

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Appendix I: Method for determination of Respirable Suspended Particulate Matter (RSPM) in the ambient air
(Gravimetric technique with high volume sampling)

Purpose of experiment:
To measure the concentration of Respirable Suspended Particulate Matter (RSPM) in the ambient air.

INPUTS

Accessories required

<table>
<thead>
<tr>
<th>SI No</th>
<th>Name of the accessory</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Glass fibre Filter paper (20.3 X 25.4 cm)</td>
</tr>
<tr>
<td>2</td>
<td>Filter jacket or envelope for storing the filter</td>
</tr>
<tr>
<td>3</td>
<td>Desiccator</td>
</tr>
<tr>
<td>4</td>
<td>Analytical balance</td>
</tr>
<tr>
<td>5</td>
<td>Silica gel</td>
</tr>
<tr>
<td>6</td>
<td>Forceps</td>
</tr>
<tr>
<td>7</td>
<td>Gloves</td>
</tr>
</tbody>
</table>

Methods: Gravimetric technique with high volume sampling

Procedure

At office

♀ Apply an ID number to the upper right hand corner on the smoothest side of each filter.

- Condition the GF / A - WHATMAN filter papers in an oven at 100° C for 1 hour.
- After conditioning, place the filter papers in a silica gel filled desiccator for 24 hrs.
- Weigh the papers at least twice, consecutively to get the average initial weight.
II At site

Pre sampling activities

Clean the sampler

Check whether the manometer water level is at zero or not. If not fill the manometer tube up to zero with distilled water.

Check the carbon brush. If it is not sufficient to run the sampler put the new one. (this step is not required in use of brush less Respirable dust sampler).

- Place the high volume based respirable dust sampler (RDS) at their respective sampling positions.
- Open the gable roof of the shelter of samplers and place a numbered, pre weighed filter paper in position with its rough side up.
- Replace the face plate and tighten the screws.
- Connect the mains chord of the sampler to a live 220 volt A. C. switch.
- Switch on the power switch.
- Record the initial flow rate and start time.
- Let the sampler run for 8.0 hr.
- After 8 hour, note the final flow rate, time and record it in the data sheet.
- Switch of the machine and change the filter paper and restart.
- Record flow rate and time again.
- In 24 hour duration, use three filters at 8 hour sampling frequency and record the initial, final flow rate and record.
- After sampling duration (8 hour), switch off the sampler using the power ON-OFF switch.
- Open the filter holder and carefully remove the filter paper.
- Fold the paper along its length so that the soiled sides are in contact and are facing inwards.
- Store the paper in a clean envelope.
III At Office

- Desiccate the filter paper for 24 hrs.
- Weigh paper twice at least consecutively.
- Do the calculations.

Calculation

Concentration of RSPM (µg/m³) =

\[
\text{Concentration of RSPM (µg/m}^3\text{) = } \frac{(\text{Final weight (g)} - \text{initial weight (g)}) \times 1000000}{\text{Volume of air sampled (m}^3\text{)}}
\]

Volume of air sampled (m³) = Average flow rate (m³/min) × duration of sampling (minutes)