DIFFUSION TUBE ENVIRONMENTAL MONITORS





INSTRUCTION MANUAL FOR EXPOSURE AND LOCATION

All sites need to be placed in a generally open area, within the restrictions imposed by the site location type, allowing free circulation of air around the tube. Ideally, samplers would be placed at breathing height, but in order to reduce loss of tubes due to theft, it is recommended that the tubes are placed at a height of 2-4m, and in all cases not higher that 5m.

Near-Road Sites

The location should be selected to reflect the maximum concentration of pollutant to which people may be exposed, even if only for short periods. As concentrations close to sources vary considerably, even over short distances, it cannot be assumed that any location selected will provide results representative for a significant area. The tube should be sited 1-5m from the kerb edge, and mounted ideally either onto street furniture on the pavement, or on the face of a building adjoining the pavement. The road with maximum traffic flow within the area may not produce the highest ambient concentration, if it is situated in a more open area, for instance a motorway. Higher concentrations may be observed at a less busy road which has tall buildings on either side, for instance in a town centre area. In general, unless data from other sources exists, local knowledge and common sense will be required to select the most appropriate site.

Intermediate Sites

Particularly in large cities, considerable numbers of people may live in such areas close to busy roads, where air pollutant is not likely to be a high as that measured close to the road, but has not reduced to typical urban background concentrations. The ideal location for the intermediate site is on a relatively quiet road or in a quiet area such as a school or public building, between 20m and 30m from a busy city centre road, but in line of sight to this road.

Urban Background Sites

At locations in excess of about 50m from a busy road, it is anticipated that any pollutant concentrations will tend to have equilibrated to a general urban background concentration level. Hence, measurements made in this type of location are likely to be representative of a fairly large spatial area and can be reliably compared with similar locations in other urban area. Examples of typical urban background sites are on lamp posts, or street signs, in quiet residential areas, schools or other public buildings, either close to the town centre or in suburbs bordered by a busy arterial road. When street furniture is used, even on quiet roads, the sampler must be more than 1m from the kerb.

Industrial Sites

At boundary locations around industrial complexes or individual factories.

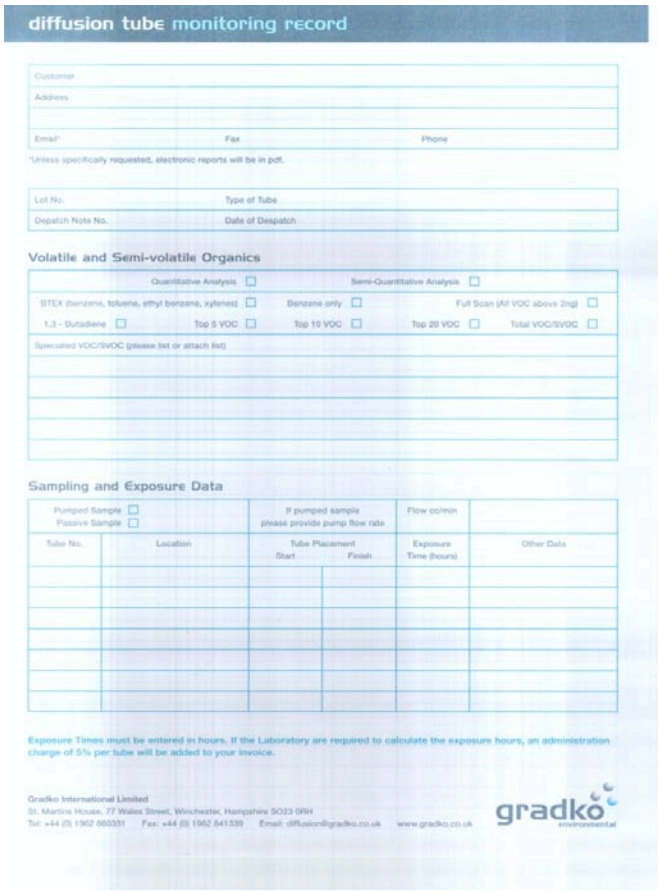
Care must be taken to avoid any very localised sources, or sinks of air pollutant, or disturbances to the air flow. For example, close proximity (less than 10m) to the following must be avoided:

- Heater flues (particularly low level balanced flues)
- Trees and other vegetation
- Air conditioning outlets
- Extractor vents
- Underground ventilation shafts

Any survey is intended to provide data over the long term, or provide short term information on local 'hotspots' of pollution. Hence, it is important that, as far as possible, the general area surrounding the site location remains substantially unchanged. Areas designated for redevelopment or subject to new road construction or traffic management schemes must be avoided.

Recording Data

Fill in a record sheet (supplied by your analytical laboratory) with the date and time. Also check that the site and tube number have been correctly entered. Store the record sheet and the removed end cap safely, for use at the next changeover.
Record anything unusual which may have occurred at the site during the period of exposure. This might be the tube found on the ground or upside down, insects inside the tube or major activity around the site, such as road works or construction works.
When visiting sites, it is recommended that the operator takes some spare mounting equipment to replace any sites lost due to theft and also some spare caps in case any are misplaced.
After recapping, place tube and exposure sheet into self seal polyethylene bag and package for return to analytical laboratory.
Exposed tubes should be returned to the analytical laboratory for analysis within a few days.



diffusion tube monitoring record

Customer
Address
Email* Fax Phone
*Unless specifically requested, electronic reports will be in pdf.

Lot No. Type of Tube
Despatch Note No. Date of Despatch

Volatile and Semi-volatile Organics

Quantitative Analysis ☐ Semi-Quantitative Analysis ☐
BTEX (benzene, toluene, ethyl benzene, xylenes) ☐ Benzene only ☐ Full Scan (All VOC above 2ng) ☐
1,3 - Butadiene ☐ Top 5 VOC ☐ Top 10 VOC ☐ Top 20 VOC ☐ Total VOC/SVOC ☐
Speciated VOC/SVOC (please list or attach list)

Sampling and Exposure Data

Pumped Sample ☐ Passive Sample ☐ If pumped sample please provide pump flow rate Flow cc/min
Tube No. Location Tube Placement Start Finish Exposure Time (hours) Other Data

Exposure Times must be entered in hours. If the Laboratory are required to calculate the exposure hours, an administration charge of 5% per tube will be added to your invoice.

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Section One

Nitrogen Oxides (NO2 : NO)

Nitrogen Dioxide

(1) Remove White cap from tube.

(2) Position tube vertically with the open end downwards during sampling. Ideally clips such as a terry clip or plastic clip, are mounted so that the tubes can be changed easily but alternative methods of fixing may be used.

Nitric Oxide (NO)

Remove tube from screw top container : Remove WHITE cap
Position tube vertically with the open end downwards during sampling using plastic clip, but alternative methods of fixing may be used.

Section One (Continued)

DIF 900 RTU - ACID GASES (NO2 / SO2 : Chloride : Fluoride : Bromide : Phosphate)

Remove tube from screw top container : Place tube into clip with filter cap (WHITE) facing downwards

The clip may be mounted directly to a wall or building if required.

The clip may also be mounted with a cable tie if the tube requires to be positioned on a post or similar structure.

It is important that the end of the tube is in an area with a free circulation of air. Certain surfaces may act as absorbers leading to reduced atmospheric concentrations immediately adjacent to the tube. For this reason tubes should not be mounted directly onto a surface. Ideally a spacer of at 5cm should be used between the surface and the tube.

The spacer should not be placed in any form of recess (to avoid the possibility of sampling stagnant air). To avoid sampling in an area of higher than usual turbulence, tubes should not be located on the corner of a building.

Section Two

Sulphur Dioxide

(1) Remove tube from screw top container.

(2) Position tube vertically with the white cap containing the filter facing downwards during sampling. Ideally clips such as a terry clip or plastic clip, are mounted so that the tubes can be changed easily but alternative methods of fixing may be used.

The clip may be mounted directly to a wall or building if required.

The clip may also be mounted with a cable tie if the tube requires to be positioned on a post or similar structure.

It is important that the filter end of the tube is in an area with a free circulation of air. Certain surfaces may act as absorbers leading to reduced atmospheric concentrations immediately adjacent to the tube. For this reason tubes should not be mounted directly onto a surface. Ideally a spacer of at 5cm should be used between the surface and the tube.

The spacer should not be placed in any form of recess (to avoid the possibility of sampling stagnant air). To avoid sampling in an area of higher than usual turbulence, tubes should not be located on the corner of a building.

Section Three

Ozone

(1) Remove tube from screw top container.

(2) Position tube vertically with the white cap containing the filter facing downwards during sampling. Place tube plastic clip, so that the tubes can be changed easily , alternative methods of fixing may be used.

Using the adhesive pad
the clip may be mounted directly to wall or building if required.

The clip may also be mounted with a cable tie if the tube requires to be positioned on a post or similar structure.

It is important that the filter end of the tube is in an area with a free circulation of air. Certain surfaces may act as absorbers leading to reduced atmospheric concentrations immediately adjacent to the tube. For this reason tubes should not be mounted directly onto a surface. Ideally a spacer of at 5cm should be used between the surface and the tube.

The spacer should not be placed in any form of recess (to avoid the possibility of sampling stagnant air). To avoid sampling in an area of higher than usual turbulence, tubes should not be located on the corner of a building.

Section 4
Ammonia

Tubes should be kept in cool environment until use. Avoid potential areas of cross Contamination i.e Tobacco Smoke, Fertiliser Storage, Livestock Houses

(1) Remove tube from screw top container. Remove overcap

(2) Position tube vertically with the White cap containing the filter facing downward during sampling. Mount the tube into a plastic clip, so that they can be changed easily , alternative methods of fixing may be used.

Using the adhesive pad, the clip may be mounted directly to a wall, building or post if required.

The clip shall be mounted with a cable tie if the tube requires to be positioned on a post or similar structure.

It is important that the filter end of the tube is in an area with a free circulation of air. Certain surfaces may act as absorbers leading to reduced atmospheric concentrations immediately adjacent to the tube. For this reason tubes should not be mounted directly onto a surface. Ideally a spacer of at 5cm should be used between the surface and the tube. Where possible, the filter should be kept clear of any particulate contamination or other materials that may reduce the airflow through the filter

The spacer should not be placed in any form of recess (to avoid the possibility of sampling stagnant air). To avoid sampling in an area of higher than usual turbulence, tubes should not be located on the corner of a building. In adverse weather conditions i.e driving rain, it is recommended that a tube shelter is employed.

At the end of the exposure period replace the tube into the screw top container. Remove excess dirt or contamination from the tube , avoid contaminating the inner tube area.

Section Five

Hydrogen Sulphide

(1) Remove tube from screw top container.

(2) Position tube vertically with the cap containing the filter facing downwards during sampling. Tubes are mounted into a plastic clip, so that they can be changed easily , alternative methods of fixing may be used.

Using the adhesive pad
The clip may be mounted directly to a wall or building if required.

It is important that the filter end of the tube is in an area with a free circulation of air. Certain surfaces may act as absorbers leading to reduced atmospheric concentrations immediately adjacent to the tube. For this reason tubes should not be mounted directly onto a surface. Ideally a spacer of at 5cm should be used between the surface and the tube.

The spacer should not be placed in any form of recess (to avoid the possibility of sampling stagnant air). To avoid sampling in an area of higher than usual turbulence, tubes should not be located on the corner of a building.
The clip may also be mounted with a cable tie if the tube requires positioning on a post or pole.

Section Six

Volatile Organic Compounds V.O.C. (Passive Sampling)

(1) Assemble the tube for exposure (Ref Photopic No. 1).

(2) Position the tube with the diffuser cap end (coloured spot) facing downwards during sampling.

(3) (Fig. 1) The clip may be simply mounted at the monitoring site with a cable tie if tube requires to be positioned on a post or similar structure or double sided tape for wall mountings.

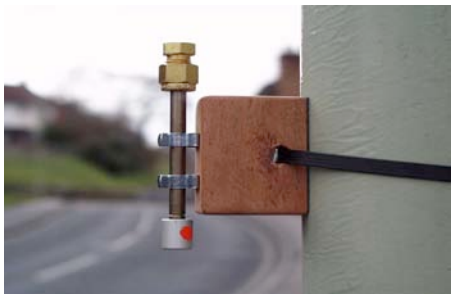

Fig. 1

(4) (Fig. 2) It is important that the diffuser cap end of the tube is in an area with a free circulation of air. Certain surfaces may act as absorbers leading to reduced atmospheric concentrations immediately adjacent to the tube. For this reason tubes should not be mounted directly onto a surface. Ideally a spacer of at least 5cm should be used between the surface and the tube.

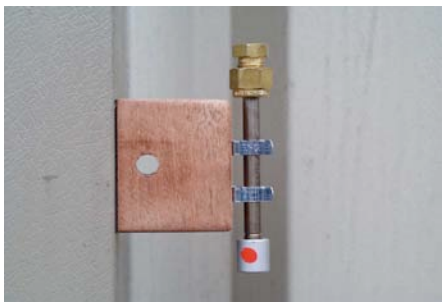

Fig. 2

(5) The spacer should not be placed in any form of recess (to avoid the possibility of sampling stagnant air). To avoid sampling in an area of higher than usual turbulence, tubes should not be located on the corner of a building.

Section Seven

VOLATILE ORGANIC COMPOUNDS V.O.C.
(ACTIVE – PUMPED SAMPLING)

Components : VOC diffusion tube : Air Pump pre-set and calibrated by Gradko International Ltd. The pump should be supplied fitted with pressure controller and a low flow adjustment valve Fig.1

1. Remove both brass caps from the VOC diffusion tube and position the tube in its exposure location**.**

2. Fit the pump tubing to the non-grooved end of the diffusion tube (fig 2)

3. Lift up small plastic flap on air pump and press small black button. The pump should now start (confirmed by a green flashing L.E.D.)

4. Run the sampling for the required period, at the end of sampling, shut pump down, Remove pump tubing form diffusion tube . Fit both brass caps to diffusion tube, finger tight at first, then using a small spanner, tighten the brass nuts one quarter of a turn. Test the tightness of the nuts by a gentle pull on the tube.

5. Complete exposure data sheet ensuring that it is indicated that the sampling is pumped. Fill in pump flow rate and time of sampling, plus tube number and location.

6. Package tubes in secure box or container and return to laboratory for analysis

   If environment being sampled is known or suspected to contain a high level of moisture, precaution should be taken to minimize the mass of moisture allowed on the diffusion tube during sampling. The use of some form of drying agent should be considered.
   Please inform our laboratory as to the presence of moisture on the tube by indication on the exposure data sheet.