M.Sc. Environmental Science (II Semester)
Course Name: Air pollution: causes, consequences and control
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Sampling methods

- Different gaseous pollutants and atmospheric aerosols were emitted from anthropogenic and natural activities.

- Gaseous pollutants such as water soluble inorganic pollutants, organic pollutants and persistent organic pollutants.

- Atmospheric air pollutants can be collected using different methods.
Passive air sampler (PAS)

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- The PAS sampler is used to monitor the persistent organic pollutants (OCPs, PAHs, PCBs etc.) present in ambient air.
- PAS can be installed at any remote site and open place without any electricity.
- It is cost effective to use.
The polyurethane foam (PUF) disk sampler consists of two stainless steel domes (approximately 30 cm in diameter), resembling like a flying saucer.

- PUF disk (14 cm diameter, 1.35 cm thick and 0.0213 g/cm³ density) is suspended in the center of the two dishes.

- Spacing between the upper and lower chambers allows air to enter the device and flow over the foam disk while providing protection from high winds, direct precipitation, sunlight, and coarse particle deposition.
Active air sampler (AAS)

- Atmospheric aerosols (PM10 and PM2.5) can be monitored using this instrument.
- This instrument has provision to attach the gaseous sampler (SO2, NOx, NH3, Ozone etc.).
- The flow rate of 1m3/hr.
Absorption in liquid

- The gaseous pollutants are absorption in to a liquid medium.
- The gas stream is broken down into small bubbles in fritted glass absorber so that it enhances contact with the gas and liquid.
Adsorption in solid

- Solid materials was used for external adsorption of gaseous pollutants

- The porous solid medium such as activated charcoal and silica gel will be used for adsorption in solid
Double cold trap sampling

- Volatile organic compounds and organic compounds can be monitored using double cold trap sampler
- VOC in air can be trapped in temperature of -80°C

Fig. Cooling tank for cold trap
Source: Oguma et al., 2015
## Analysis methods

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https://www.envirotechinstruments.in/ambient-air-pm2-5-samplers.html

Rao CS. 2006. Environmental pollution control Engineering. New age international private limited publisher