



Citizen Science

Air Monitoring Equipment

Resources

There are several different types of air monitoring and sampling equipment that have been used in citizen science work. A general description of monitoring and sampling equipment is below:

Passive monitors - Passive monitors absorb airborne pollutants onto a reactive material (for example, a sorbent tube or filter) for subsequent laboratory analysis. These are simple to use monitors that do not require a pump to collect pollutants. This type of monitor has been used for personal exposure monitoring or work space monitoring.

Personal air monitors - Personal air monitors use a pump to draw air through a filter or reactive material that is later analyzed by a laboratory. Direct measuring personal air monitors can also be used. These monitors are generally portable enough to be carried by an individual.

Grab-sampler - A grab-sampler is a self-contained device that collects air samples without the use of a pump. An example of this type of monitor is a canister under vacuum. The canister relies on its own vacuum to draw in air until it comes to ambient pressure. A grab sample is analyzed in a laboratory.

Integrated air sampling device - An integrated air sampler uses a pump to draw an air sample across a reactive material or into a collection vessel (for example a canister). The pump can be programmed to run for a preset period of time. The air sample is analyzed in a laboratory.

Direct-read monitor - A direct-read monitor uses a pump to draw an air sample through a detector. The monitor provides a direct reading of pollutants. The monitor may be designed as a table-top unit or it may be rack-mounted such as for use in an air monitoring station.

Automated monitoring system - This is a fully automated system to sample the air, analyze for the pollutant of interest, and report the resulting data. Calibration of the analyzer (for example, gas chromatograph, mass spectrometer) is also automatic. Analyzer control and data retrieval may be performed remotely.

Air deposition monitor - Air deposition monitors collect samples that “fall” from the air. There are two major types of deposition monitors in use: precipitation collectors for wet deposition; and air samplers to measure toxics in the particulate and vapor phases. The air deposition network is generally comprised of active and passive, wet and dry sampling systems.