

Measuring Mercury in Air

There are two generally used methods for measuring mercury in air: the use of field-portable mercury detectors, and air sample collection followed by certified laboratory analysis.

The decision to measure mercury in air should be made on a case-by-case basis depending on how the air levels will be considered, which method will be used, and the considerations discussed below.

Field-portable mercury detectors

Field-portable mercury detectors provide readings of mercury air levels and are primarily used for identifying locations of elemental mercury.

Screening for mercury vapor with a field-portable mercury detector is most appropriate:

- to assess the extent of the spill,
- to investigate whether elemental mercury has been tracked away from the spill
- to define the area of air contamination (e.g., to control access to an area of mercury contamination)
- to help evaluate the cleanup progress

Field-portable mercury detectors vary substantially in the amount of mercury they can detect, their sensitivity, the time taken to respond to changes in mercury levels and the factors which may affect their readings. Investigators who use field-portable mercury detectors should understand how the instrument operates, be able to evaluate whether the instrument is operating correctly, and assess whether environmental factors may affect the instrument's readings. NYSDOH can provide information on the use of certain instruments.

Air sample collection with certified laboratory analysis

Air samples collected over time and analyzed in certified laboratories measure average air concentrations over the sampling period. This type of sampling should only be conducted when all cleaning is complete and vapor screening indicates no identifiable source of mercury remains.

Certified laboratory measurements of mercury air levels are appropriate:

- to characterize exposure and health risks, and
- to satisfy compliance with a criterion

Air sample collection should consider the following:

- If fans or other supplemental ventilation systems have been used as part of the spill cleanup, they should be switched off 24 hours or more prior to beginning the air sample collection. Minimum normal ventilation should be used in the spill area within the 24 hours prior to and during sampling.
- During colder months, heating systems should be operating under normal conditions for at least 24 hours prior to and while collecting the air samples. Do not switch off the heating system.
- The building's HVAC system should be operating under the minimum normal conditions during the air sample collection.
- Air samples should be collected from an adequate number of locations to understand the relative levels of mercury in air and to assess potential exposure to occupants in various

locations. Samples should be collected in the area where the spill occurred and in other locations as required to determine whether mercury vapors are present beyond the area of the spill: **sampling plans should be tailored to address the site-specific situation and to meet the purpose of sampling.**

- Samples should be collected during the same periods as when the location is normally occupied to be representative of typical exposure.
- The building conditions and sampling efforts should be understood and documented within the framework and scope of the investigation.

ELAP Requirements for Certified Laboratory Analysis

New York State Public Health Law requires that environmental samples collected for the analysis of mercury in air must be analyzed by a laboratory that is certified by the New York State Environmental Laboratory Approval Program (ELAP) and that laboratory must analyze the sample using an ELAP-approved method.

The use of field-portable instruments is permitted to assess the extent of a spill and as an aid to clean-up. If verification is needed to show that an environmental or public health hazard no longer exists, then testing must be performed by a laboratory certified by ELAP and using an ELAP-approved method.

Lists of ELAP-certified laboratories and methods and more information on this program are available from ELAP (518) 485-5570 or elap@health.state.ny.us.

Measuring mercury in air may not be necessary when the mercury spill and subsequent cleanup can be easily evaluated by visual inspection, and/or when the residue of mercury remaining after the spill cleanup is unlikely to have an impact on air that people are breathing. This generally applies to simple spills that:

- involve small amounts of mercury, e.g. from a fever thermometer or home thermostat
- AND are limited to a known area of contamination, e.g. a small area on a smooth surface
- AND can be easily cleaned up, e.g. the mercury is contained on a non-porous surface, or contaminated porous materials have been removed
- OR are in an area that is readily ventilated to the outdoors, or in a room so large that a small mercury residue remaining after the spill cleanup will have an insignificant impact on air quality, e.g. in a warehouse

The above situations are presented as examples of typical characteristics to consider in any spill investigation. Common sense must always be applied when investigating mercury spills. If the investigator is uncertain, err on the side of caution and take appropriate actions that are protective of the public health.

For additional Information:

- NYSDOH Indoor Air Sampling and Analysis Guidance (<http://www.health.state.ny.us/nysdoh/indoor/guidance.htm>)
- ELAP approved methods, laboratories, and other ELAP requirements (<http://www.wadsworth.org/labcert/elapcert/index.html>)

Who can I call for more information?

If you have questions about measuring mercury in air you can call:

NYSDEC Spills Hotline	800-457-7362
NYSDOH After-hours Duty Officer	866-881-2809
NYSDOH Environmental Health	800-458-1158