

MEMO

FROM: University Chemical Safety Committee
Phil Proteau, Chair (x7-5776)

TO: OSU Research Community

SUBJECT: Phase-out of mercury thermometers

As many of you are aware, the use of mercury thermometers in the laboratory or in field settings introduces certain safety risks. While the proper use of these thermometers poses little risk, safety concerns are greatly increased upon breakage of the thermometers and release of elemental mercury. Mercury is a neurotoxin which can have serious negative effects on human health, as well as being a major environmental contaminant.

In many laboratories across campus, mercury thermometers are in use in water baths and incubators, uses for which non-mercury thermometers are readily available. These uses are especially problematic because if a thermometer does break in an incubator, the tiny mercury droplets will be heated, releasing mercury vapors into the laboratory at an even faster rate than at room temperature. This potentially can increase the exposure of people to dangerous vapors. Non-mercury thermometers that use mineral spirits or alcohol in place of mercury are a much safer alternative.

In addition to the health concerns of broken mercury thermometers, there are also the hazardous waste disposal costs, both in direct expenditures and the time involved for EH&S to properly contain and package the spilled mercury. Mercury waste is very expensive for disposal and spill debris uses much more space than an intact thermometer. The University will spend much more to dispose of broken thermometers and contaminated clean-up materials than it would to dispose of the intact thermometers. Estimates for the disposal of one 55 gallon drum of mercury waste are approximately \$1,500!

In most cases, the risks and costs associated with mercury thermometer use are unacceptable, considering the alternatives that are available. Because of this, the University Chemical Safety Committee encourages all laboratories on campus to replace mercury thermometers with suitable non-mercury thermometers. The Committee recognizes the efforts already in place in the Chemistry department and other departments on campus. The Committee is exploring avenues for resources to support or a full-scale or partially-subsidized thermometer exchange program; there are only minimal funds currently available. However, the replacement costs for many thermometers are very reasonable, especially considering the disposal costs associated with broken mercury thermometers. A general-purpose non-mercury thermometer, with a -20 to $+110$ °C range, costs less than \$4 through VWR. Although there may be research applications in which a mercury thermometer will still be the best choice, most uses can be satisfied by a non-mercury thermometer. A gradual phase-out of the use of mercury thermometers will make OSU a safer place in which to do research.

In addition to replacing thermometers currently in use, any mercury thermometers or mercury-containing devices that are not being used should be collected for proper disposal. If each department could identify a central collection site, EH&S will gladly schedule a time to remove the mercury-containing items. EH&S will cover the costs of disposal.

Websites from other universities describing mercury thermometer alternatives:

<http://www.stanford.edu/group/water/hgtherm.pdf>

<http://www.ehs.psu.edu/chem/mtep.html>

General websites about mercury and human health and the environment:

<http://www.epa.gov/seahome/mercury/src/mercrisk.htm>

<http://www.atsdr.cdc.gov/tfacts46.html>

<http://www.epa.gov/seahome/mercury/src/mercenv.htm>