



Environmental Health Information

Mercury in Poured-in Place Polymer Floors

May 2008

Mercury was used in making some rubber-like (polyurethane) floors from the 1960s to the 1990s. Some of these floors have been found in gymnasiums, field houses and similar rooms and facilities in Minnesota. When new, these floors contained up to 0.1% mercury (1,000 parts per million or ppm). As these floors age, the mercury content slowly decreases, so levels in floors which are decades old can be considerably less than 1,000 ppm.

How does mercury get into the air?

Mercury from these floors evaporates into the air and can accumulate in indoor air.

Why is mercury vapor a health concern?

If the mercury vapor accumulates to a high level, it can be a health concern for people who breathe in the mercury vapor over a period of months to years. Long-term exposure may cause hand tremors and tingling in hands and feet as well as memory disturbances and other neurological effects. Similar mercury exposures may also affect a developing fetus.

How do I find out if our facility has a mercury-containing floor?

An environmental consultant can sample and analyze a small section of flooring (such as a ½-inch square and full thickness of the flooring). Flooring with less than 20 ppm mercury is unlikely to give off mercury vapor that could accumulate to levels of health concern.

If the floor contains more than 20 ppm mercury, then MDH recommends using an environmental consultant to measure mercury vapor concentrations in air in the gym or other room. MDH can provide guidance to ensure that the measurements reliably indicate whether mercury vapor is present at levels of concern.

For K-12 schools that pledge to be mercury-free under the Mercury-Free Zone program of the Minnesota Pollution Control Agency (MPCA), the program has staff and equipment to make a one-time qualitative assessment of mercury vapor levels at the school's request. Information is available online at

<http://www.pca.state.mn.us/programs/mercury-free/index.html>.

What level of mercury vapor in air is safe?

If mercury vapor concentrations are at or below 800 nanograms per cubic meter (ng/m³), the gymnasium or other room is safe for occupancy, even for students and teachers who use the gymnasium over several years. This health-based exposure limit provides safety for the general public, including students who breathe a lot of air during exercise in the room on a daily basis. It is also protective of developing fetuses of women who are pregnant.



Minnesota Department of Health ♦ Division of Environmental Health ♦ Site Assessment and Consultation Unit

651.201.4897, or 1.800.657.3908, press 0 ♦ www.health.state.mn.us

How can a room with higher levels of mercury vapor be made safe?

When a mercury-containing floor gives off elevated mercury vapor (greater than 800 ng/m³), the best permanent solution is to remove the floor and replace it with a floor that does not contain mercury. If replacement is being considered, the MPCA should be consulted about proper disposal of the old floor. Safety precautions should be used during removal because the process may cause mercury vapor emissions to increase. Precautions may include isolation of the building, vapor monitoring, dust control, and personal protection equipment for workers carrying out the removal.

Room air concentrations of mercury above 800 ng/m³ may also be managed by active ventilation of the room. It may be necessary to work with an environmental consultant or the facility's HVAC engineers to determine how the ventilation system can be adjusted so that it operates to ensure average exposures over a year are not higher than 800 ng/m³.

While covering floors that contain mercury could reduce the levels of mercury vapor, this method is not recommended because it may not reduce mercury vapor levels and the new flooring may become contaminated and also require special disposal when removed. If a floor is covered, follow up air sampling should be done to confirm that mercury vapor levels have been reduced. The effectiveness of this method depends on many factors, including the new materials used, the method of attaching the new floor and how completely the old floor is sealed in to block any emissions. Whether a mercury-containing floor is covered or not, the facility should maintain records so that when the floor is eventually removed, the facility owner will properly dispose of the floor according to MPCA regulations.

What should we tell students and faculty about their exposures and possible health effects?

Actions taken now should prevent future exposures to elevated mercury concentrations. There is no way to tell how much people were exposed in the past. Health effects from mercury exposures are unlikely unless people were exposed for a long period of time to levels much higher than the health-based exposure limit. Because symptoms of mercury exposure can also be caused by many other factors, linking past exposures and symptoms is very uncertain. People who believe that they have been exposed to elevated mercury vapors may wish to consult with a physician. In any case, the best action is to stop the exposure.

If you have questions about health, exposure or risk, contact Carl Herbrandson, Ph.D.:

(651) 201-4906

carl.herbrandson@state.mn.us

For more information about the MPCA Mercury-Free Zone program for schools, contact Carol Hubbard:

(651) 282-2604 or toll free, (800) 657-3864

carol.hubbard@state.mn.us

For more information about disposal of mercury-containing floors, contact Don Nelson at the MPCA:

(651) 296-8621 or toll free, (800) 657-3864

Don.nelson@state.mn.us

For more information contact: MDH/Site Assessment and Consultation: (651) 201-4897 or 1 (800) 657-3908, press 2 and leave a message. To request this document in another format, call (651) 201-5000 or TDD (651) 201-5797.

This information sheet was prepared with partial support from the federal Agency for Toxic Substances and Disease Registry (ATSDR). This statement does not imply that ATSDR has endorsed this information sheet.