

# Mercury Exposure

## Tartan Brand Polymer Flooring

### What is 3-M Tartan Brand flooring?

3-M's Tartan Brand floor covering is a solid rubber-like polymer developed in the 1960s. This flooring was promoted as a durable substitute and improvement over wood floor gymnasiums and running surfaces for both indoor and outdoor track & field facilities.



These rubber-like polymer floorings were installed in a large number of elementary and secondary schools and in colleges and universities across the country during the early 1970s to the mid 1980s. During the production of the 3M's Tartan Brand flooring, mercury was used as a catalyst to help the mixture maintain its soft texture.

According to 3M, the finished product typically contained 0.1 to 0.2% mercury.

### Is mercury a health concern?

Mercury is a naturally occurring element found in the environment. Elemental or metallic mercury is a shiny, silver, odorless, liquid metal. It is the common liquid metal used in thermometers, dental fillings, blood pressure cuffs, fluorescent light bulbs, barometers, batteries and switches. Mercury

is unique among metals because it will vaporize (turn to a gas) at room temperature. Mercury does not pose much of a health risk when it is swallowed (ingested) or comes into contact with the skin (dermal) because it is not easily absorbed as a liquid. However, mercury vapor is almost completely absorbed by the body when it is inhaled. The nervous system is very sensitive to all forms of mercury. High levels of mercury can permanently damage the brain, kidneys or a developing fetus. Effects on brain functioning may result in irritability, shyness, tremors, changes in vision or hearing and memory problems.

Information collected by 3M and other entities have shown that the 3M Tartan Brand flooring is capable of emitting mercury vapors. There are also concerns about disposal of the Tartan Brand floors. Tests have shown that the floors may contain enough mercury to be above the United States Environmental Protection Agency's Toxic Characteristic Leaching Procedure (TCLP) standard. If the material exceeds this standard, it must be disposed as hazardous waste.

**Note:** Not every floor exceeds this standard and each floor should be handled on a case-by-case basis to avoid paying excessive disposal fees.

### What are mercury screening levels?

Screening levels are the numbers established by the regulatory and public health agencies to be protective of public health. Mercury screening levels are established to prevent or reduce the health threat resulting from the exposure to mercury vapor released from the flooring.

These established levels are assumed to be safe for a 24 hour-a-day lifetime exposure for all populations, including children. The Ohio Department of Health (ODH) is recommending an indoor air mercury vapor screening level of 1 microgram per meter cubed (1 ug/m<sup>3</sup>) in residential dwellings and 1-3 ug/m<sup>3</sup> for school/daycare/medical settings, respectively. Note that school/daycare/medical settings are site and situational-dependent and establishing air screening levels will be based upon a number of contributing factors such as the age of the students, pregnancy, and other factors such as room use.

Environmental sampling collected in an Ohio school with the 3M Tartan Brand flooring indicated indoor vapor levels ranging up to 1.4 ug/m<sup>3</sup>. In addition to the indoor air, mercury vapor has also been detected at levels ranging from 2 to 9 ug/m<sup>3</sup> in the various pieces of gym equipment (balls, mats, etc.) as well as other porous substances that are in the same room as the Tartan brand flooring. Information provided by 3M has shown mercury vapor levels up to 22 ug/m<sup>3</sup> in a new sample of the flooring.

**There are many uncertainties associated with the flooring, including:**

- Not all 3M Tartan Brand floors contain enough mercury to be considered hazardous waste for disposal.
- There is some information suggesting that the amount of mercury vapor released from the flooring might increase as the floor ages and begins to crack and break down.
- Very few health studies have been done that examine long term effects caused by exposures to these relatively low levels of mercury vapor, especially to young children and pregnant students and staff.

**What does ODH recommend to the schools that use 3-M Tartan brand flooring?**

ODH is currently recommending schools examine their facilities to determine if they may have a rubber-like gymnasium floor. Other companies have manufactured similar products and it is unknown whether or not these products used mercury in their production. If a facility has one of these flooring types, ODH recommends the school obtain the services of an environmental contractor to determine if these products contain elevated levels of mercury.

If the flooring is determined to contain elevated levels of mercury or mercury vapor, ODH recommends the schools examine the feasibility of removing the polymer flooring product and replacing it with an alternative flooring option.

**Where Can I Get More Information?**

Ohio Department of Health  
Bureau of Environmental Health and Radiation Protection  
Radiological Health and Safety Section  
246 N. High Street  
Columbus, Ohio 43215  
Phone: (614) 644-2727

