

## **CASE STUDY: MERCURY CONTAINING POLYURETHANE FLOORING**

### **Project Description: GYMNASIUM RUNNING TRACK REMOVAL**

**Scope of Services:** AET was contracted to perform airborne sampling for mercury during the removal/replacement of a polyurethane running track located in a gymnasium of a major university. Bulk sample analysis of the polyurethane flooring confirmed mercury content. The removal contractor was responsible for developing the scope of work for this project including the means, methods and controls used during the removal process. This contractor also was responsible for personal exposure monitoring on their workers during the removal process. *See Lessons Learned below*

**AET's Experience:** Polyurethane flooring or rubber-like flooring manufactured between 1960 and 1980 can contain mercuric acetate. These floors are most often found in sports settings (gymnasiums, running tracks) but can also be found in industrial plants and hospitals where this cushioned, all weather, non-slip surface has been installed. Once installed these floors can release mercury vapors into the air; background levels are below OSHA standards. However, flooring disturbance during resurfacing or removal can release mercury contaminated surface dust.

**Standards/Toxicity:** The OSHA standard for mercury as identified in 29 CFR 1910.1000 Table Z-2 is an 8-hour TWA concentration of 100 ug/m<sup>3</sup> (0.1 mg/m<sup>3</sup>). Inhalation of mercury vapors can result in nose, throat, lung as well as skin and eye irritation. Long term exposures can affect the central nervous system, kidneys and reproductive system. Mercury is also toxic by ingestion and good personal hygiene practices must be followed. Mercury can also be absorbed through the skin which can enhance its toxicity as well as cause skin allergies, itching and rashes.

#### **AET's Investigative Approach/Tools:**

1. **Air Sampling During Work:** A total of 6 work area and perimeter stationary air samples were collected yielding airborne mercury levels ranging from 2.32-4.80 ug/m<sup>3</sup>.
2. **Surface Dust Sampling During Work:** Visual inspection identified evidence of surface dust in the seating areas and other locations throughout the gymnasium. Surface dust sampling confirmed mercury content in 9 of the 13 samples collected.

**CONCLUSION:** The contractor's removal process was altered to improve dust controls. Cleaning of surface dust was implemented utilizing specially equipped mercury vacuums with HEPA filtration.

#### **LESSONS LEARNED - REMEDIATION STEPS FOR POLYURETHANE FLOORING**

1. Determine mercury content by bulk sampling. Check the mastic which adheres the flooring to the substrate separately for mercury and asbestos.
2. Determine disposal requirements for the flooring (hazardous or non-hazardous) by TCLP sampling/analysis.
3. Establish background airborne mercury vapor and mercury dust levels before work.
4. Develop a detailed written scope of work including necessary controls and work practices prior to initiating work. Daily cleanup of surface dust is mandatory using specialty equipped mercury vacuums.
5. Perform independent daily project monitoring of the removal process to verify the effectiveness of the controls implemented.
6. Perform visual inspection and final clearance testing (including surface dust sampling) to verify proper completion of the project.

When you need professional industrial hygiene advice email Alan Sutherland, CIH, CHMM at [a.sutherland@aetinc.biz](mailto:a.sutherland@aetinc.biz) or call 610-891-0114. We provide nationwide services; phone consultations are free. Check out the full range of environmental contracting/consulting services on our website [www.aetinc.biz](http://www.aetinc.biz).