



Industrial Practice Good[^]Hygiene

REGULATORY UPDATE!

March 2021

Mercurial Management

Virginia Implements Special Procedures for Mercury-Containing Urethane Floor Systems

A change in the way Virginia manages polyurethane flooring is effective as of March 25, 2021. This type of flooring system, most commonly used in gymnasiums, is a seemingly innocuous component of many facilities; however, certain actions are required *prior to continued occupancy* and *prior to acquisition of new properties* where such flooring exists on state-owned property.

Who Is Affected?

The new policy, outlined in the Virginia Department of General Services ([DGS](#)) Division of Engineering and Building ([DEB](#)) notice 032521, was issued under the auspices of the [Construction and Professional Services Manual](#) (aka, “the CPSM” or “the Manual”). This document “sets forth the standards, policies, terms, conditions, and procedures to be followed by state agencies and institutions in procuring professional design and construction services.”

Consequently, the Manual and the associated new policy applies to all state-owned buildings. The policy itself states that the provisions therein “shall be implemented by the Agency **prior to**

continued occupancy of spaces containing urethane flooring. This requirement shall also apply to existing buildings that are acquired by State agencies and shall be addressed prior to acquisition.”

Based on the facilities that typically have these types of flooring systems (gymnasiums), this will primarily impact colleges and universities but can also impact other state owned facilities such as prisons. However, since the type of flooring is the target of the policy, any other state-owned facility could be affected regardless of use.



What Is the Issue?

First, a little background. [Mercury](#) is that beautiful heavy, silvery-white liquid metal, also known as

quicksilver, that many of us remember playing with as children (by the way, this is a BAD idea). It's a component used in old electrical switches (especially in HVAC thermostats), thermometers, fluorescent light bulbs, and, as it turns out, some gym flooring.



Urethane flooring was used for decades and is a pourable flooring system which results in a fairly resilient, rubbery consistency – perfect for running, rolling, and recreating. Part of the installation process required the use of Phenylmercuric Acetate (aka PMA) as a curing catalyst. This compound is hidden in the matrix of the floor and, over time, has the capacity to release mercury vapor in the area as a result of its relative volatility.

As you may recall, the colloquial “[Mad as a Hatter](#)” designation was the result of hat makers using mercury in the felting process (we won't get into all the other uses) and developing a variety of [unpleasant symptoms](#) including:

- Tremors;
- Insomnia;
- Headaches;
- Disturbances in sensations;
- Changes in nerve responses;
- Poor performance on tests of mental function;
- Emotional changes (such as mood swings, irritability, nervousness, excessive shyness);
- Neuromuscular changes (such as weakness, muscle atrophy, twitching).

And who needs that? The high sensitivity to mercury exposure by our nervous system and the potential mercury vapor exposure resulting from urethane flooring means that proactive evaluation and considerations for operations and management (O&M) are, at the very least, prudent, and, in the case of Virginia-owned property, required.

[Occupational Exposure Limits \(OELs\)](#) for mercury exist in the form of a Ceiling Concentration established by the United States Occupational Safety and Health Administration ([OSHA](#)), a Permissible Exposure Limit (PEL), Recommended Exposure Limit (REL), and a Threshold Limit Value (TLV) established by California OSHA, the National Institute for Occupational Safety and Health ([NIOSH](#)) and the American Conference of Governmental Industrial Hygienists ([ACGIH](#)). Virginia's new policy has established a threshold criterion of 0.8 micrograms per cubic meter of air ($\mu\text{g}/\text{m}^3$) as the concentration that triggers additional actions. Even lower concentrations of [0.75 \$\mu\text{g}/\text{m}^3\$](#) have been established by others; the US Environmental Protection Agency ([EPA](#)) has established a threshold value of [0.3 \$\mu\text{g}/\text{m}^3\$](#) for longer term exposures.

How Is It Addressed?

So, you have urethane flooring and you want to know what to do?

Specific criteria are required in the policy itself but a good first step is to test the floor to determine whether mercury is present in the flooring. If mercury is present, testing for exposure is a good *next* step.

Virginia's new policy represents a reasonable approach for others. Virginia requires that an American Board of Industrial Hygiene ([ABIH](#)) Certified Industrial Hygienist ([CIH](#)) develop a proactive survey plan. The intent of the evaluation



is to determine the potential for exposure. Note that the policy states “These procedures shall be implemented by the Agency prior to continued occupancy of spaces containing urethane flooring.”

Are you going to disturb or replace that floor? Well, now you’ve stepped into the familiar realm of RCRA compliance. Waste associated with the floor could constitute [Characteristic Hazardous Waste](#) as codified in EPA [regulations](#). If there are plans for disturbance or disposal of urethane flooring, sampling and more stringent analysis is warranted to determine if the Hazardous Waste requirements apply. Disturbance and handling of urethane flooring can be managed safely; the approach is similar (but not identical) to impacting asbestos containing materials (ACM).

And, if a renovation or demolition is planned, always have urethane flooring evaluated as part of your standard survey in addition to asbestos, lead, PCBs, and others. The best time to find out that handling and disposal considerations are necessary is at the front end of a project prior to development of budgets and schedules. Discovering an issue in the middle of a project is never fun.

What Is Next?

Life is unpredictable but mercury in flooring doesn’t have to be. Be aware that urethane flooring can present a mercury exposure issue in your facility; proactively address the potential. Also, note that sometimes new flooring systems have been installed on top of older urethane flooring. Consult with a professional experienced in the field. Be prepared for sampling, testing, O&M plan development, abatement, and disposal requirements.

[Please join us for an April 28, 2021 webinar](#) for additional information regarding this update, get your questions answered and more about how to comply.

About the Authors

Glenn Hargrove and Jesse Phillips currently serve as the Practice Leaders for F&R’s Industrial Hygiene group. Both maintain familiarity with the rapidly developing science and best practices related to SARS-CoV-2 (COVID-19) coronavirus and have vast experience with assessments for a wide range of microbiological agents including mold, bacteria, and viruses.

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