



DEB Notice 032521
(Effective: 03/25/2021)

Special Procedures for Urethane Flooring Containing Mercury

I. Purpose of this Notice:

To ensure that State agencies implement the attached procedures to identify potential hazards in their facilities associated with pourable urethane flooring systems and address them as required to assure the health, safety, and welfare of building occupants.

Pourable urethane flooring systems using the compound Phenylmercuric Acetate (PMA) that includes mercury as a curing catalyst were manufactured from the 1960s through 2005. This flooring has a rubber-like texture and generally was installed in athletic facilities and multi-purpose spaces. This flooring may release vapor with a mercury concentration that poses a potential health hazard to building occupants. Mercury exposure levels may increase due to deterioration, damage and cleaning of the flooring. Exposure levels are also impacted by the indoor air temperature and fresh air ventilation rate.

II. Related Construction & Professional Services Manual (CPSM) Revisions:

Section 4.14 of the 2020 Edition of the CPSM, dated July 1, 2020, is hereby replaced with the attached Section 4.14 “Special Procedures for Urethane Flooring Containing Mercury”.

III. Applicability:

This policy applies to all State-owned buildings and 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.

A. Errata, as follows:

2020 CPSM

Erratum

Section 4.14

“Construction Inspection” – renumbered as Section 4.20

4.14 SPECIAL PROCEDURES FOR URETHANE FLOORING CONTAINING MERCURY

Pourable urethane flooring systems using the compound Phenylmercuric Acetate (PMA) that includes mercury as a curing catalyst were manufactured from the 1960s through 2005. This flooring has a rubber-like texture and generally was installed in athletic facilities and multi-purpose spaces. This flooring may release vapor with a mercury concentration that poses a potential health hazard to building occupants. Mercury exposure levels may increase due to deterioration, damage and cleaning of the flooring. Exposure levels are also impacted by the indoor air temperature and fresh air ventilation rate.

4.14.1 General

Buildings constructed or renovated between January 1, 1960 and December 31, 2006 with pourable urethane sports flooring may contain PMA. Urethane flooring shall be addressed in accord with these procedures.

4.14.1.1 State-owned buildings

These procedures shall be implemented by the Agency prior to continued occupancy of spaces containing urethane flooring. "Appendix P, Building Permit Policy for Construction - State Owned Buildings and Structures" applies to the work associated with the implementation of these procedures.

4.14.1.2 Existing buildings acquired by state agencies

The survey, report and recommended actions shall be addressed prior to acquiring the property.

4.14.2 Survey

A survey under the supervision of a Virginia Certified Industrial Hygienist (VCIH) (COV Section § 40.1-139) is required. A VCIH shall develop a survey plan identifying the locations and method(s) that samples are required to be taken, and other necessary testing procedures. The minimum sampling criteria indicated in Section 4.14.3 shall be used. Surveying that exceeds the minimum testing criteria recommended by the VCIH is at the discretion of the Agency.

4.14.3 Minimum Sampling Criteria

4.14.3.1 General

Air samples shall be collected in accord with the VCIH plan, including air samples of potential "hot spots" and air samples in adjacent occupied spaces such as corridors, offices, spectator spaces and outdoor locations. Air samples collected for analysis shall be analyzed by a Virginia Accredited Environmental Laboratory. Air samples shall be taken at a height of 36" above the floor unless otherwise designated by the VCIH plan. Air samples shall be taken with the HVAC operating at the minimum outdoor air design ventilation rate to the space (cubic feet per minute) and the maximum space design temperature. Outdoor air temperature/humidity readings shall be taken at the time of the indoor air sampling.

4.14.3.2 Direct-Reading Mercury Vapor Air Sampling

Air sampling using Direct-Reading Portable Mercury Vapor Detection Equipment, with a detection limit of 0.2 $\mu\text{g}/\text{m}^3$ shall comply with the requirements of 2020 EPA 600 Portable Mercury Detector Testing and Evaluation Report and 2005 EPA

Performance Specification 12A. At a minimum, samples shall be taken on a twenty (20) foot grid and at two outdoor locations, or as required by the VCIH plan.

4.14.3.3 Sorbent Tube Mercury Vapor Air Sampling

Sorbent Tube Mercury Vapor Air Sampling shall only be used when direct-reading portable mercury vapor detector air sampling is not practical. Equipment and procedures shall comply with NIOSH Method 6009 or other VCIH approved sorbent tube air sampling methodology. At a minimum, four (4) samples shall be taken, and at two outdoor locations by Direct-Reading Mercury Vapor Detector Air Sampling, or as required by the VCIH plan.

4.14.3.4 Survey Report

A detailed survey report, including survey sampling criteria and recommended actions, shall be authored and signed by a VCIH and provided to the Agency. Air sampling data, equipment calibration data, test results, space temperature/ humidity data, HVAC outdoor air ventilation rate (cubic feet per minute) and outdoor air temperature/humidity recorded at the time of air sampling shall be included in the report.

4.14.4 Actions

If the VCIH report identifies airborne mercury levels higher than $0.8 \mu\text{g}/\text{m}^3$, then adjustments to the HVAC and air handlers shall be made to maximize the flow of fresh air without compromising temperature and humidity control. After the actions prescribed in the VCIH survey report have been implemented, and the HVAC system adjustments have been in operation for three (3) days, the spaces shall be retested and reported on by the VCIH in accord with this policy.

In spaces where airborne mercury levels remain higher than $0.8 \mu\text{g}/\text{m}^3$ after the survey report recommendations have been implemented the Agency shall immediately take additional action to reduce the airborne mercury levels below $0.8 \mu\text{g}/\text{m}^3$. If these additional actions are effective and do not include removing the flooring, then a Mercury Management Plan shall be developed by the VCIH and implemented by the Agency.

4.14.5 Mercury Management Plan

The Mercury Management Plan shall define the adjustments to the HVAC and Maintenance and Operational changes required to maintain airborne mercury levels below $0.8 \mu\text{g}/\text{m}^3$.

Surveys in spaces with flooring containing PMA (mercury) shall be made, recorded and retained by the Agency to ensure that the airborne mercury level does not exceed $0.8 \mu\text{g}/\text{m}^3$. The minimum testing criteria of Section 4.14.3 shall be performed once every quarter and reviewed by a VCIH to ensure conformance with the Mercury Management Plan. As an alternative to quarterly testing, continuous monitoring of airborne mercury to ensure that levels below $0.8 \mu\text{g}/\text{m}^3$ are maintained is an acceptable method to demonstrate compliance with the Mercury Management Plan.

The Mercury Management Plan shall be retained in the Agency Facilities Management files for use by maintenance staff, contractors and as a reference for future renovations.

4.14.6 Mercury Removal and Remediation

If the Mercury Management Plan cannot be implemented to maintain airborne mercury levels below 0.8 $\mu\text{g}/\text{m}^3$, the Agency shall remove the flooring.

4.14.6.1 Removal

The flooring shall be tested in accord with the Toxicity Characteristic Leaching Procedure (TCLP) Method 1311 in accord with DEQ criteria to determine concentration of mercury. Concentrations exceeding 0.2 mg/l (0.2 ppm) of mercury shall be disposed of in accord with DEQ policies for hazardous waste.

Contract documents for removal shall be prepared under the supervision of and endorsed by a VCIH. Provisions to ensure compliance with VOSH indoor air quality, worker safety protective equipment, handling and disposal of contaminated flooring shall be included in the contract documents.

4.14.6.2 Remediation

After removal, and before the flooring in the room is replaced, Section 4.14.3 Minimum Testing Criteria shall be performed to determine if additional remediation work is required.

4.14.7 Mercury Disclosure Statement

If the flooring is not removed and renovations are proposed, the Agency shall make the Mercury Management Plans available to the A/E of Record responsible for renovations. The A/E of Record shall note on the title page of the contract documents the following Mercury Disclosure Statement:

Urethane flooring in spaces (fill in the blank) contains the compound Phenylmercuric Acetate (PMA). Disturbance or removal of this flooring shall be performed under the supervision of a Virginia Certified Industrial Hygienist. The Mercury Test Report is included as an appendix to the project specifications.