Oregon
John A. Kitzhaber, M.D., Governor

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Vonnie B. Good
Environmental Safety Specialist
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Salem-Keizer School District
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Dear Ms. Good,

This letter is in response to your request for guidance on testing for possible mercury vapors being released from polymer-based flooring installed in some of your schools. Based on previous work evaluating the risks to children and adult faculty associated with exposure to this type of flooring we recommend the following:

**Sampling**

Bulk Sampling

We recommend that bulk sample of flooring be taken at all schools identified as having this type of flooring material produced or installed between 1960 and 1980. If a school's flooring is determined to contain mercury, air sampling is recommended.

Air Sampling

We recommend breathing zone sampling at all schools found to have mercury in their bulk samples. We recommend that the air sampling method and equipment meet the following criteria:

1. Equipment used is either a Lumex meter or SKC 226-17-1A (hopcalite) sorbent tubes analyzed using OSHA method ID-140. Other methods of measurement are not sensitive enough for this type of investigation and may produce false negative and/or false positive results.
2. In order to get representative samples of air being breathed by persons in the gyms during normal activities, samples should be collected in the normal breathing zone (3-5 feet above the floor) and as near as possible to normal gym activities. .
3. Normal activities should be going on during the sampling periods. Mercury vapor is heavier than air and tends to lie along the surface of the floor, so it is important that normal activity and normal heating/ventilation systems be operating to maintain as uniform mixing of air as is possible.

4. Sampling should be done by an active airflow sampler equipped with an effective mercury trap that can be analyzed by the laboratory at the end of the sampling period.
5. The sampling period should be prolonged. An 8-hour period is best because this is a normal workday and most time-weighted averaging is done with 8-hour sampling period.
6. The sampling process should provide accurate and consistent sampling flow and accurate timing to allow for accurate calculation of the average mercury in the air during the sampling period.

**Mercury Vapor Threshold**

Bulk Samples

According to 3M's reports about their early Tartan floorings, their materials could contain as much as 500 to1000 ppm. We have no basis upon which to evaluate the relationship between mercury concentration in the flooring and the amount of vapors released into the air. Therefore, we recommend that any amount of mercury found in the bulk samples indicate the need for additional investigation and air sampling. If no mercury is found in the bulk samples and you have reason to suspect other mercury sources at a school, further evaluation is unwarranted.

Air Samples

There are no credible studies that indicate or suggest that health effects due to inhalation of mercury vapor might occur at air mercury concentrations less than 10 $\mu g/m^3$. The recommended guidance from the United States Environmental Protection Agency's (EPA) for residential occupancy is 1 $\mu g/m^3$. This level which assumes a 24-hour/day, 7 day per week exposure. ATSDR typically considers mercury vapor concentrations of 1 $\mu g/m^3$ to satisfy the safety requirements for airborne mercury exposure in a residential scenario. It is important to note that the 1 $\mu g/m^3$ threshold is based on a residential exposure which is at least three times the exposure period that would be expected in a school setting. Therefore, we recommend using 3 $\mu g/m^3$ as the safe level for adults working and children playing in the environment up to 8 hours per day, 5 days per week.

If you have any questions or concerns about this guidance please contact us.

Sincerely,

Jae P. Douglas
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Superfund Health Investigation
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Kenneth Kauffman
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