



FREQUENTLY ASKED QUESTIONS MALIBU HIGH SCHOOL AND JUAN CABRILLO ELEMENTARY SCHOOL PCB REMEDIATION PLAN FACT SHEET

May, 2015

1. Why is SMMUSD leaving the caulk in place when it has been tested and confirmed in some areas to contain Polychlorinated Biphenyls (PCBs)?

PCBs do not present a danger to students and teachers unless those individuals are, in fact, exposed to dangerous levels of PCBs. Students and teachers/staff can potentially be exposed to PCBs in caulk through inhalation or contact with dust, which the Environmental Protection Agency (EPA) identifies as the primary pathways for human exposures in schools. For this reason, air and wipe sampling was conducted at both Juan Cabrillo Elementary School (JCES) and Malibu High School (MHS) (to date 250 air and 765 surface dust samples have been taken). These data indicate that, even assuming an exposure or contact occurred, air and dust concentrations are well within acceptable health-based levels established by EPA. EPA has found that there is no unreasonable risk to students or teachers at MHS or JCES, and concurred with the District's decision to make the classrooms accessible to students at the start of this past school year.

Additional Information

As recommended by EPA, SMMUSD is employing best management practices (BMPs) that have been shown to be the best way to reduce concentrations and, therefore, potential exposure. EPA determined that MHS and JCES are being managed in a manner protective of human health:

"Overall, the sampling data from the two schools demonstrate that these PCB exposure pathways are currently being addressed by the District's Best Management Practices (BMP) in a manner that protects public health. Thus, the District's undertaking of the BMPs, as verified by pre- and post-BMP sampling data, demonstrates that the Toxic Substance Control Act (TSCA) standard for no unreasonable risk is currently being met at MHS and JCES" [10/31/14 EPA Approval Letter to SMMUSD].

The District has already committed to remove all caulk that has already been verified to contain PCBs in levels above the TSCA regulatory threshold of 50 ppm before the start of the next school year. For caulk that has not been verified to contain more than 50 ppm PCBs, because the exposure data shows no unreasonable health risk, the District will be removing the caulk during planned renovations or repairs consistent with EPA recommendations. Until that time, the caulk will be managed in place. This is similar to approaches used for lead paint and asbestos at schools throughout the United States.

2. How is the TSCA standard of 50 ppm related to health risk?

Like all regulations intended to protect public health, EPA only regulates chemicals that have a potential for hazard due to their toxic characteristics or other potential harmful characteristics. The potential risk related to PCBs is the basis for the regulation of PCBs. TSCA regulates many substances including use of PCBs. In the parts of the TSCA regulation applicable to the situation at MHS and JCES, TSCA has a 50 ppm standard for PCBs in building and other materials as a regulatory determination of unauthorized use that requires its removal; if all PCB concentrations in materials are below 50 ppm then a regulatory requirement for removal under TSCA is not

triggered. This standard is not based on health impacts associated with PCBs in building materials but, instead, is based on other considerations. During the December 2013 Study Session, EPA Region IX Senior Regional Toxicologist Patrick Wilson explained that: “The 50 parts per million is a part per million measurement for the concentration of PCBs in caulk. It’s a regulatory trigger. It’s not based upon health impacts, or the potential for PCBs in caulk to generate an adverse health effect.”¹

TSCA gives EPA authority to implement TSCA through regulation and guidance. Because the 50 ppm standard is not expressly tied to health impacts, EPA recommends measuring potential exposures to PCBs to understand whether health risks may exist, and has set uniform thresholds for PCB exposures in schools that **are** health-protective. In other words, while the 50 ppm regulatory threshold is not based upon the potential for an adverse health effect, EPA’s public health levels are. By staying within EPA’s health-based levels for PCB exposures in schools, SMMUSD can ensure that exposures to students and staff are below any level EPA has determined could cause potential adverse health effects.

EPA’s risk-based policy for regulation of PCBs in schools and public buildings states that if risk is low (below the EPA risk-based guidelines for air and dust), materials containing PCBs are managed in place, removed at the end of life (renovation or demolition) and disposed of. As noted above, air and wipe sampling conducted at both JCES and MHS shows concentrations well within EPA’s acceptable health-based levels and best management practices (BMPs) are being employed to reduce concentrations and exposure until the caulk is removed at the end of life (renovation or demolition).

3. Why are the PCBs in caulk tested when it is planned to be removed, but comprehensive testing for PCBs in caulk that is left in place does not need to be done?

At MHS and JCES, the air and wipe sampling were conducted to address health concerns raised by teachers and staff, so testing focused on the primary exposure pathways for schools – the air and dust – consistent with EPA policy. Neither TSCA nor EPA policy requires or even recommends testing caulk when air and dust concentrations fall below EPA’s health-based exposure levels, as they do at MHS or JCES.

When building materials containing PCBs are planned to be removed, depending on the concentration of PCBs in the building materials, different types of disposal may be required—for example, materials with lower concentrations may be disposed of in a general municipal landfill, but certain materials with higher concentrations may need to be disposed of differently. Therefore, prior to renovating or demolishing a school building that was constructed or renovated when PCBs were commonly used, building materials suspected of containing PCBs are tested to assess the potential presence of PCBs, and the test results are used to inform decisions regarding the waste characterization of the building debris and options for appropriate off-site disposal. This evaluation process is similar to that used for certain other chemicals, particularly asbestos and lead. All of these building materials are appropriately managed in place until removed during renovation/demolition activities.

4. Testing of PCBs in caulk at MHS and JCES have shown concentrations above the TSCA standard; sometimes much higher than the standard. Why isn’t all caulking being removed from these schools?

In the September 26, 2014 Supplemental Removal Letter to EPA, SMMUSD agreed with EPA to remediate the caulk in areas at MHS previously identified and verified to contain PCBs in caulk greater than 50 ppm no later than June 30, 2015; this includes MHS Library, Building E (Rooms 1, 5, and 8) and Building G, Room 506 (Woodshop). SMMUSD also agreed that any additional building material identified and verified with PCBs greater than 50 ppm would be removed within a year. In the March 20, 2015 Notification Letter to EPA, SMMUSD identified additional

¹ See December 12, 2013 Board of Education Session, http://santamonica.granicus.com/MediaPlayer.php?view_id=5&clip_id=3174, at 1:31:00-1:31:20.

areas at MHS and JCES with verified concentrations of PCBs in caulk greater than 50 ppm; it is the District's plan to have caulk removed from these additional locations by the end of summer break 2015.

As explained above, when, as at MHS and JCES, the potential for exposure to PCBs does not exceed EPA's health-protective levels, PCBs in caulk within classrooms can be managed safely by limiting exposure through use of BMPs. Extensive air and wipe sampling conducted at SMMUSD indicate that PCBs in air and wipe samples are within safe exposure concentration levels set by EPA.² EPA has found that there is no unreasonable risk at MHS or JCES.

5. Complaints of illnesses to date have included thyroid cancer, thyroid related illnesses and auto immune illnesses. What is the District doing to address this?

Extensive air and wipe sampling conducted at SMMUSD indicate that PCBs in air and wipe samples are within safe exposure concentration levels set by EPA.³ EPA has found that there is no unreasonable risk at MHS or JCES. Current PCB levels at MHS and JCES are much lower than the levels that have caused harm in human populations or in animals. Given the low exposure level, no health effects would be expected.

Considering thyroid cancers specifically, in response to concerns about thyroid cancers in Malibu, the Los Angeles Department of Public Health (DPH) conducted an evaluation of thyroid cancer in SMMUSD and concluded that "DPH does not find evidence of unusual cancer rates or occurrences at Malibu."

Additional information:

Because exposure levels at the schools are so low, PCB exposures in the schools would not be expected to cause any adverse effects. Studies showing cancer effects of PCBs in laboratory animals involved significantly higher exposures than those in the school setting. In fact, while EPA, and the California Office of Environmental Health and Hazard Assessment (OEHHA) have concluded it is likely PCBs are carcinogenic in humans based on evidence of carcinogenicity in animals, studies of people exposed to high levels of PCBs in the workplace or in accidental exposures have not shown a consistent increase in cancer (USEPA 2012, OEHHA 2007).

As noted above, in response to concerns about thyroid cancers in Malibu, the Los Angeles DPH conducted an evaluation of thyroid cancer in SMMUSD and concluded that "DPH does not find evidence of unusual cancer rates or occurrences at Malibu." Los Angeles DPH notes that within "thyroid cancer" there are many variants: papillary, follicular, medullary, and anaplastic.

General background cancer risks are about 1 in 2 for men and 1 in 3 for women (American Cancer Society 2013a). As to thyroid cancer specifically, a recent study in South Korea conducted by Ahn et al. (2014) suggested that the apparent increase in thyroid cancer in South Korea was related to increased screening and diagnosis. The authors' research indicated that similar increases in diagnosis rates were identified in many countries, including the United States. Despite this increased diagnosis rate, there was no increase in mortality from thyroid cancer. The increase in thyroid cancer detection reflects more intensive cancer screening which can detect cancers, such as small papillary thyroid cancers, that otherwise likely would never have been apparent during the person's lifetime.

Given the much lower exposures in schools that also occur for a shorter time period, any cancer risks associated with exposure are between low, and too low to measure.

- Hyeong Sik Ahn, M.D., Ph.D., Hyun Jung Kim, M.P.H., Ph.D., and H. Gilbert Welch, M.D., M.P.H. Ahn SS, Kim EK, Kang DR, Lim SK, Kwak JY, Kim MJ. 2014. Korea's Thyroid-Cancer "Epidemic" — Screening and Overdiagnosis The New England Journal of Medicine

² (<http://www.epa.gov/pcbsincaulk/maxconcentrations.htm>)

³ (<http://www.epa.gov/pcbsincaulk/maxconcentrations.htm>)

- American Cancer Society. 2013a. Lifetime Risk of Developing or Dying From Cancer <http://www.cancer.org/cancer/cancerbasics/lifetime-probability-of-developing-or-dying-from-cancer>
- American Cancer Society. 2013b. Thyroid Cancer. Available online: <http://www.cancer.org/cancer/thyroidcancer/index>
- California Office of Environmental Health and Hazard Assessment (OEHHA). 2007. PCBs in Fish Caught in California: Information for People Who Eat Fish. Available online: <http://oehha.ca.gov/fish/pcb/>
- Los Angeles Health Department: Public Health Response to Reported Concerns About Cancer presentation by Cyrus Rangan, M.D., F.A.A.P., F.A.C.M.T. and Marita Santos, R.N., M.S.N. Available online: <http://www.smmusd.org/PublicNotices/DPHResponse-Cancer0214.pdf>
- United States Environmental Protection Agency (USEPA). 2012. EPA Integrated Risk Information System, Polychlorinated Biphenyls. Available online: <http://www.epa.gov/iris/subst/0294.htm>

6. It has been said that the District sent in cleaning crews to the schools right before ENVIRON came to test over the winter break. Can you explain this?

The District is simply performing the cleaning required in accordance with the EPA-approved Specific Plan.⁴ This cleaning is required to occur at regular intervals, sometimes as frequently as weekly; more extensive cleanings occur on monthly and annual basis. The District is conducting frequent cleaning as required under the Specific Plan, not conducting cleaning in rooms just before they are sampled to attempt to skew results. The sampling was conducted to confirm that the BMPs (weekly, monthly, annual) are effective in maintaining concentrations of PCBs within levels identified as acceptable by EPA. All confirmation sampling conducted to date have indicated that BMPs are effective at keeping concentrations at safe levels.

7. How representative is the air and wipe testing conducted to date? Are there any circumstances under which cleaning and retesting would be conducted?

A high percentage of regularly occupied rooms at MHS and JCES have been tested. All pre-1981 buildings have been tested. During 2014 Summer Break, pre-BMP sampling included approximately 20 to 100% high occupancy rooms (e.g., classrooms and offices) in each building (average of 41%), and post -BMP sampling included approximately 30 to 100% high occupancy rooms in each building (average of 65%). See slides 24 and 25 of ENVIRON's March 19, 2015 presentation to the SMMUSD Board of Education.⁵

Re-cleaning of rooms with PCB concentrations that exceed EPA's air or surface wipe PCB health protective benchmarks for schools is part of the EPA-approved Site Specific Plan. For example, the Air and Wipe Sampling MHS Pilot Study Sampling Plan, which is Appendix D of the Site Specific Plan, states that "[i]f any of the post-cleaning sample results exceed relevant health-based criteria, the schedule allows for some second round of cleaning and then re-testing." The BMPs are conducted to maintain concentrations within acceptable levels. One aspect of the sampling conducted to date is to measure the effectiveness of BMPs and if additional cleaning, as required by the EPA-approved plan, is needed.

Moreover, a majority of the regularly occupied rooms sampled during the 2014 Summer Break had pre-BMP cleaning air and surface wipe sample results below EPA's benchmarks, indicating exposures were acceptable even **before** implementation of annual BMP cleaning. This includes rooms in all of the buildings at JCES, as well as Building D (100 and 200, Mako Shark), Building E (000, Blue Shark), Building H (Auditorium/Cafeteria), and Building I (400, Leopard Shark) at MHS.

⁴ <http://www.smmusd.org/PublicNotices/PCBRemediationPlan070314.pdf>

⁵ <http://www.smmusd.org/PublicNotices/EnvDocs/031915EnvStudySession.pdf>

8. SMMUSD is renovating buildings at three Santa Monica schools and announced there would be testing for PCBs in the materials prior to demolition or modernization. How does this impact the remediation work at JCES and MHS?

Similar to Question #3 above, at MHS and JCES, the air and wipe sampling were conducted to address health concerns raised by teachers and staff, so testing focused on the primary potential exposure pathways for schools – the air and dust – consistent with EPA policy.

Prior to renovating or demolishing a school building, testing of building materials is conducted to characterize the material for proper off-site disposal as described in the SMMUSD's Comprehensive Plan. This is similar for other chemicals present, such as asbestos and lead, all of which are tested for prior to renovation/demolition and are managed in place until removed. It is our understanding that the renovations or demolition of the three schools referred to above will occur this summer (Santa Monica H.S. (SAMOHI) and Olympic H.S.) or has already occurred (Edison Language Academy (formerly Edison Elementary)).

9. What are the estimated costs of complete caulk removal and replacement at JCES and MHS?

ENVIRON developed cost estimates for three potential remedial options for PCB-impacted caulk and associated PCB-impacted substrate in MHS and JCES for presentation to the SMMUSD Board of Education on March 19, 2015⁶:

- Option A is based on the removal and replacement of all PCB-impacted caulk containing greater than or equal to 50 ppm PCBs, as determined through pre-remedial testing; subsequent encapsulation of the contaminated substrate materials (brick, cement, wallboard, etc. located adjacent to the caulk) using an EPA-approved encapsulant; and completion of various concurrent activities that would be required with the pre-remedial testing and remediation. This option assumed that 40% to 100% of the caulk in the school buildings would have a PCB concentration that exceeds 50 ppm.
- Option B is based on the complete removal and replacement of all PCB-impacted caulk, assuming that all that 40% to 100% of the caulk contains greater than or equal to 50 ppm PCBs, and the removal and replacement of adjacent PCB-contaminated substrate material containing greater than 1 ppm PCBs, as determined through pre-remedial testing, as required under TSCA.
- Because PCBs can be contained in many other building materials in addition to caulk, and 100% of all locations and concentrations of PCBs in building materials cannot be reasonably determined even with testing, Option C was developed to assure a 100% PCB removal and is, therefore, based on the demolition of MHS and JCES buildings constructed prior to 1981 and construction of new replacement school buildings with non-PCB containing building materials.

ENVIRON incorporated reasonable assumptions in creating each of these cost estimates. These assumptions included, as applicable to the relevant option, the following: the linear footage of caulk in each building; the linear footage of caulk and substrate that would require removal and replacement; the number of pre-remedial caulk samples; the number of verification samples of caulk, air, and surface wipes; the public participation and consulting effort required (e.g., preparation of a PCB plans and reports, associated communications and meetings with the public and EPA); and the unit cost for demolition and reconstruction of buildings.

The cost estimates for Option A range from \$2.9M to \$12.6M; Option B ranges from \$4.4M to \$25.4M; and Option C ranges from \$171M to \$295M. These costs represent potential consultant and contractor costs to the District only; they do not include costs for relocation of students, portable units to be used during relocation, or the

⁶ Slides 38-41 - <http://www.smmusd.org/PublicNotices/EnvDocs/031915EnvStudySession.pdf>

District's administration costs for overseeing the project. As shown in ENVIRON's March 19, 2014 presentation, these estimates are similar to public information available for several other schools in the United States. However, it should be noted that all other schools cited in the presentation had air concentrations above EPA's Public Health Levels for Schools while air concentrations at MHS and JCES have been either below the laboratory reporting limit or below EPA Public Health Levels for PCBs in School Indoor Air.

After ENVIRON presented these costs, Board Member Ralph Mechur commented that "these are real costs," and noted that the Edison construction cost was \$34 million and the cost for one building at SaMoHi (the science building) was \$57 million.

10. Clark Elementary School in Hartford, CT found PCBs in late December 2014. We've heard that their superintendent immediately closed the school and hired experts to identify the source of PCBs and create a plan to remove them within 60 days at a complete cost of \$40,000. What are the facts of that situation?

Based on publicly released documents and media stories concerning Clark Elementary School, we understand that they are in the beginning phase of addressing the PCBs found in building materials present at this school. In December 2014, PCBs were detected in paint samples at Clark Elementary School during pre-renovation building materials testing required by the Connecticut Department of Education Office of School Facilities for projects seeking State reimbursement for renovations projects. Limited additional testing in December 2014 and January 2015, showed PCBs detected in caulk (31,000 – 97,000 ppm). This investigation also included testing for PCBs in indoor air (110 to 571 ng/m³) which, unlike MHS and JCES, where all air tests are well within EPA's health-based levels, showed results above EPA's Public Health Levels for PCBs in School Indoor Air⁷. Based on Clark Elementary's air testing results, the school was closed and students relocated to other schools despite the Connecticut Department of Public Health's statement that air levels were "way below a level that could cause health problems".⁸ Since the report on this initial testing, published in March 2015, the following additional next steps have been identified for Clark Elementary School:

- Conduct additional sampling (soil, substrate, etc.) necessary to finalize PCB remediation plan and get EPA approval;
- Develop a pilot study to determine effective remediation techniques;
- Seek bids from PCB removal firms to prepare detailed cleanup plan for EPA approval;
- School superintendent estimated it could take more than a year before school can be re-occupied;
- Hartford Courant reported a "ballpark" figure of \$4M for remediation that could easily change⁹; and
- Goal is to "get air levels to an acceptable level" as quoted in Hartford Courant article.¹⁰ By contrast, air levels at MHS and JCES are already at an acceptable level within EPA's health-protective exposure thresholds.

⁷ 100, 300, 450, 600, and 450 ng/m³ for children 3 to less than 6 years old, elementary school (6 to less than 12 years old), middle school, high school, and faculty/adults, respectively

⁸ [http://www.hartfordschools.org/files/News/PCBs in Clark school - explanation of graph - complete.pdf](http://www.hartfordschools.org/files/News/PCBs%20in%20Clark%20school%20-%20explanation%20of%20graph%20-%20complete.pdf)

⁹ <http://www.courant.com/community/hartford/hartford-cityline/hc-hartford-clark-pcbs-0317-20150316-story.html>

¹⁰ <http://www.courant.com/community/hartford/hartford-cityline/hc-hartford-clark-pcbs-0317-20150316-story.html>