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# PCBs: The Unknown Building Material That Can Cost Millions to Address

Patricia L. Boye-Williams

Polychlorinated biphenyls (PCBs) were manufactured and used from the late 1920s until they were banned in the United States by the Toxic Substances Control Act (TSCA) in 1979. PCBs were added to solids and liquids to create stable, flexible materials. They were added to transformer oil, fluorescent light ballasts, caulks, paints, window glazing, cements, adhesives, and sealants, among other substances. Like asbestos-containing materials, these PCB-containing materials were flame resistant and long-lasting and made ideal building materials: if a building is old enough, caulk that looks "like new" may be decades old and contain PCBs. As a result of their long lifespan, PCB-containing materials remain in many buildings today. In particular, many buildings constructed or renovated between 1950 and 1979 (including schools, college campuses, public pools and recreational facilities, water treatment plants, apartment buildings, and commercial structures) have PCBs present. One report estimates that between 12,960 and 25,920 schools in the United States (15–20 percent of schools) have PCBs present in caulk. Office of Sen. Edward J. Markey, The ABCs of PCBs: A Toxic Threat to America's Schools 1 (2016) (Sen. Markey Report).

The U.S. Environmental Protection Agency (EPA) has determined that PCBs are probable human carcinogens, but, despite prohibiting their continued use, EPA does not mandate PCB testing. This article addresses the issues associated with the wide prevalence of PCBs in older buildings and how their presence impacts renovation projects and transactions, and provides suggestions on how to manage the risks associated with testing for (and discovering) PCBs in a building.

PCBs accumulate in the above-ground parts of plants and food crops; they accumulate in fish and small organisms; they also, therefore, bioaccumulate in people and animals who ingest plants, fish, and other animals that contain or have ingested PCBs. For these reasons, it is difficult, if not impossible, to eliminate all sources of PCB exposure. Nonetheless, given the persistence of PCBs in building materials, EPA has determined that it is critical to minimize exposure from controllable sources—and, as discussed below, with limited exceptions, regulations require remediation and/or removal of all PCB-containing materials.

Unlike asbestos—which is generally permitted to remain in place as long as it is non-friable, or cannot be reduced to powder by hand pressure—PCBs must be removed when discovered, absent approval from EPA and a relevant state agency or agencies. Moreover, it is not just the original PCB-containing material that must be removed: PCBs can migrate from caulk or paint into the surrounding substrate, off-gas into the air, or create PCB-contaminated dust on surrounding surfaces that can then be picked up onto hands and ingested, especially by young children. PCBs contained in liquid form in fluorescent light ballasts can leak and ultimately drip onto whatever lies beneath them (in at least one case, the desks of elementary school children in New York City). *See, e.g.*, *N.Y. Communities for Change v. N.Y. City Dep't of Educ.*, No. 11-CV-03494-SJ-CLP, 2013 WL 1232244, at *1 (E.D.N.Y. Mar. 26, 2013) and *N.Y. Communities for Change v. N.Y. City Dep't of Educ.*, No. 11-CV-03494-SJ-CLP, 2012 WL 7807955, at *2, *27 (E.D.N.Y. Aug. 29, 2012). EPA Region 1, in particular, is focused on all of these methods of exposure to PCBs and on ensuring that exposure is limited—and ultimately eliminated—via remediation of PCB-containing materials in accordance with applicable regulations. In fact, out of 286 incidents involving PCB contamination in schools as reported by EPA, ranging from a single classroom to a city-wide or school district-wide action, 186 are located in Region 1. Sen. Markey Report at 11.

Many owners of older buildings are now renovating or selling these buildings. Buyers likely will want to renovate (or in some cases, demolish) these structures as they plan new use for the property. Unfortunately for unsuspecting buyers, sellers, and renovators, EPA requires that any remediation of PCB-containing building materials be handled in accordance with EPA regulations designed to remediate PCB-contaminated soils. Interestingly, TSCA bans the continued use of PCBs but does not require testing for PCBs. Accordingly, most property owners do not know there are PCBs present in their buildings until a buyer requests testing, they start renovations, or they are asked if the materials they are disposing of contain PCBs. Once PCBs are discovered, renovation (or demolition) costs escalate quickly—and the time frame for completing the work expands exponentially if EPA (or state) approvals are required.

EPA regulations prohibit continued use of materials containing PCBs unless they are fully enclosed (e.g., non-leaking fluorescent light ballasts) or an "excluded PCB product." An excluded PCB product means materials that contain PCBs at concentrations less than 50 parts per million (ppm), provided that the product (1) was legally distributed prior to October 1, 1984, or pursuant to other approval from EPA; and (2) the PCBs that are present are not the result of dilution, leaks, or spills that had an original concentration of PCBs over 50 ppm. 40 C.F.R. § 761.3. Accordingly, federal law requires the removal of all materials containing PCBs at a concentration greater than 50 ppm. States may regulate lower concentrations of PCBs—for example, Connecticut prohibits continued use of materials containing PCBs with a concentration greater than 1 ppm.

*Ms. Boye-Williams, counsel at Murtha Cullina in Hartford, Connecticut, is a member of the firm's Environmental, Municipal, and Retail and Hospitality Practice Groups. She may be reached at pboyewilliams@murthalaw.com.*

## *Regulatory Guidance*

EPA has created a plethora of guidance documents that explain how to handle the removal of PCB-containing materials from schools, but cautions that these guidance materials apply *only* to schools. Further, the regulations banning the use of PCBs explain the triggers that require removal of PCB-containing materials and provide options for remediation, yet the majority of the regulations focus on remediation of PCBs in the environment (primarily soil), not buildings. Finally, EPA itself has recognized the burden of removal, noting, "[w]hile the continued use of unauthorized pre-TSCA PCB materials is a violation of the existing PCB regulations, in most cases, premature removal of the media containing PCBs could only be achieved with great difficulty and at enormous expense. . . ." Disposal of Polychlorinated Biphenyls, 59 Fed. Reg. 62,788, 62,810 (Dec. 6, 1994).

Although property owners typically are familiar with lead paint and asbestos removal requirements, the presence of PCBs creates a new layer of regulatory obligations. Failure to consider PCBs can quickly change the economics of a transaction or make renovation (or even continued use of a building) cost prohibitive. For example, the cost of remediating PCB-containing caulk in an apartment building can quickly approach, if not exceed, the fair market value of the building. Similarly, in 2015, Clark Elementary School in Hartford, Connecticut, was shuttered unexpectedly following the discovery of PCBs. Although school officials originally planned to renovate the school, it was determined that remediation costs were too high (over five million dollars) and the decision was made to demolish the building.

Costs associated with remediating PCBs include preliminary testing of air and/or surfaces, preparing draft remediation proposals, remediation work, and disposal costs associated with the PCB-containing materials. Indirect costs arise if the building is occupied—remediation usually cannot occur in an occupied building. At a minimum, the floors above and below the floor(s) being remediated often must remain vacant, potentially resulting in a loss of rental or other income. If the building is partially occupied, efforts need to be taken to ensure that occupied areas are not contaminated with remediation dust.

Because of the extensive costs associated with remediation, owners of older property are placed in a difficult spot: there is no requirement to test for PCBs, and EPA does not require action unless the property owner knows PCBs exist. However, older buildings eventually will require renovation or repairs, or will be sold to a new owner. Any of these situations can trigger a request or an obligation to test the building materials for the potential existence of PCBs. Similarly, well-informed property owners may also be concerned about occupants' exposure to PCBs.

The potential existence of PCBs must be considered for any project that may result in the disruption or removal of materials that may contain PCBs, such as door or window replacement projects, removal of caulk, or stripping of sealants and/or paints. For this reason, purchasers who intend to renovate or demolish an older building also must consider the potential existence of PCBs as part of any transaction.

Options for addressing concerns associated with PCBs include choosing not to test but disposing of the material as if it contains PCBs, air testing, choosing not to renovate or demolish (and therefore, not testing), or sampling materials present in a building and being prepared to deal with the outcome. The choice of which of these options to follow (or development of another option with input from experienced advisors) often depends on a variety of factors that can include the age of the building, intended or existing use of the building, size of the proposed project, and condition of materials within the building.

Regarding the age of a structure, if a building was constructed after 1979, it can be assumed that PCBs do not exist in building materials and no testing should be necessary. By comparison, if a building was built or renovated between 1950 and 1979, it should be assumed that PCBs may be present unless renovations since that time specifically addressed all potential sources of PCBs, especially fluorescent light ballasts, floor and wall paint and sealants (e.g., gym floors), and caulk. Buildings constructed prior to 1950 may or may not have PCB-containing materials, because PCBs most commonly were added to building materials after 1950. Regardless of when the building was constructed, some disposal sites may require a certification that the materials being disposed of do not contain PCBs.

Concerning the intended use of the building, owners must evaluate who is exposed as well as the degree of exposure. As previously mentioned, EPA has created a significant amount of guidance on how to deal with PCBs in schools; accordingly, school districts with buildings constructed between 1950 and 1979 should be particularly conscious of the potential for PCBs to be present. Furthermore, EPA Region 1e has indicated that any time children are exposed to PCBs—whether in a residential building or a school—it is especially concerned about ensuring that they are protected from exposure to PCBs.

Whether to test for PCBs depends on the size of a current project and the intentions for future renovation of the building. If a project is small enough and there are no plans or desire to renovate in the future, owners may choose to treat building materials as if they include PCBs and dispose of them as required by TSCA. In so doing, owners avoid the need to test materials for PCBs, potentially triggering a much costlier project. In particular, once PCBs are found in a portion of the building, EPA may require testing of the entire building. Any discovery of PCBs in other parts of the building likely will necessitate addressing the PCBs throughout the building. By disposing of items as if PCBs are present, owners stay in compliance with applicable disposal requirements without risking a more expensive remediation project. For larger projects, treating materials as if PCBs are present, without confirming that they are, can be cost-prohibitive given the expense associated with disposing of materials containing PCBs.

From the perspective of a building owner or purchaser who has no intent of renovating or demolishing the property but wants to ensure that its occupants are protected from exposure, another consideration is the condition of the materials in the building. Such inquiries may include: Is the caulk crumbling? Are fluorescent light ballasts leaking? Is paint peeling? If these materials are in good condition, the risk of exposure via dust or escaped liquids is decreased significantly, and further testing may not be required.

If additional testing is warranted or desired, a currently acceptable option for a building owner or purchaser is to follow EPA guidance for surface and air testing. The critical decision point here, however, is to determine an appropriate action level if PCBs are detected. If PCBs in the air are below the

predetermined levels, then the testing can be used to demonstrate that further sampling and investigation is not required. However, although EPA has published guidance for indoor air levels for schools, no regulatory requirements exist, and these limits should not necessarily be applied to non-school buildings. Nevertheless, by demonstrating a conscious recognition of the risk of PCBs being present and taking steps to show that the occupants of a building are not exposed to elevated levels of PCBs in air or dust, a building owner is better able to show that he or she has acted responsibly, provided the owner has no actual knowledge that PCBs are present.

### *PCBs in Schools*

Schools may warrant special consideration if PCBs might be present. Although it is beyond the scope of this article to address litigation over school PCB contamination in detail, parents and, in at least one case, teachers have sued school districts for failing to test for and/or remediate PCBs. The legal fees can be high, apart from any remediation. For example, the costs associated with hiring an environmental consultant, testing, and the initial legal fees to defend a complaint brought by parents against the Santa Monica-Malibu United School District are estimated to have exceeded eight million dollars. *Malibu Schools Drain $8 Million from SMMUSD in Legal Fees*, Santa Monica Mirror (Mar. 4, 2016).

Similar considerations apply during real estate transactions. If, after taking into consideration all of the relevant factors, the parties to a transaction agree that testing should occur, then the parties also should establish parameters and criteria. For example, if a seller is going to be responsible for remediating PCB-containing materials, the seller also should have the right to walk away from the transaction if costs get too high. The parties should have a clear understanding of the subsequent use of the property: If the buyer intends to demolish the structure, then the seller should not be responsible for replacing the PCB-contaminated materials when they are removed or encapsulating PCB-containing materials that remain in place. If the buyer intends to continue to use the building, then the parties should agree on the level of remediation required. "Remediation in compliance with environmental laws" (a term often used in remediation agreements) does not require the removal of all PCBs. If EPA approves, a remediation plan that allows some PCB-containing materials to remain in place—perhaps encapsulated—can be used to demonstrate compliance with environmental laws. Problems can arise when a seller submits a risk-based plan that leaves PCBs in place, but the buyer expects all PCBs to be removed from a building. To avoid this situation, it is critical that contract documents clearly spell out the agreement reached by the parties.

The timing of remediation also should be considered. Critically, does the remediation have to be completed before closing? If so, EPA review and approval of remediation plans can take several months. If both parties have rights under the transaction documents to review and comment on a remediation plan, then even preparing the draft for submittal to EPA can take months. If EPA has questions about whether risks are adequately addressed, it likely will require additional testing. Depending on the size of the building and the extent of additional testing, this can add at least a couple of weeks to the schedule. Further, only certain labs can provide the full range of tests for PCBs that EPA requires. EPA Region 1 requires testing for the congeners or homologs (the chemical compound) of PCBs rather than Aroclors (a trade name). Because congener testing is more expensive than testing for Aroclors, property owners often choose Aroclors testing to save money without realizing that EPA likely will require retesting to capture the congeners.

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In determining the most appropriate course of action for evaluating potential PCB contamination and, if found, remediating it, the final major consideration is how the property is priced. Does the sale price contemplate a clean building, or is it being sold "as is"? What if the costs of remediation escalate? In some cases, a remediation originally estimated at under one million dollars quickly can exceed two millions dollars if more PCBs (or other hazardous building materials such as lead paint or asbestos) are found in unexpected areas. Disposal costs for PCB-containing materials are high, and if asbestos or lead paint must also be disposed of, then costs escalate even faster. Disposal of substances contaminated with both PCBs, which are regulated as a toxic material under TSCA, and lead paint or another hazardous material regulated under the Resource Conservation and Recovery Act (RCRA) may require burial in enclosed containers to comply with different disposal requirements under TSCA and RCRA. These are only the more common issues likely to arise during the sale of property that may contain PCBs. Each situation is different and requires a different analysis.

Once the decision has been made to test for PCBs, and PCBs are found to be present, there are more decisions to be made. Depending on the occupants, the building's owners will need to decide whether to provide notice. There is no current federal requirement to notify the building's occupants that PCBs are present, and in at least one state with which the author is familiar, Connecticut, there is no state requirement. (Other state law requirements, however, should be examined, especially in the case of landlord-tenant obligations.) Notifying occupiers—especially tenants and parents of school children—can demonstrate that the owner is doing the "right thing" and fulfilling its legal obligation to remove or otherwise address the PCBs. Because there is no obligation to provide notice, owners have an opportunity to develop a plan before notifying occupants that PCBs are present.

Housekeeping and best management practices also should be implemented as interim measures for as long as PCBs

remain in place. In particular, using HEPA filters, ensuring proper ventilation, and avoiding dry dusting can reduce the amount of PCB-contaminated dust and minimize exposure. In multistory buildings, owners may consider leaving certain floors vacant to make it easier to conduct remediation. In Connecticut, for example, regulators take the position that typical custodial staff are not properly trained on how to handle hazardous or toxic materials and therefore cannot handle contaminated materials, including such tasks as surface dusting and vacuuming of PCB-containing materials.

## *Remedial Approaches*

Remediation itself can take one of three approaches: performance-based, a self-implementing plan (SIP), or risk-based. Only the performance-based approach does not require notice or approval by EPA. In order to meet the requirements of the performance-based approach, all PCBs greater than 50 ppm if in the original material, or greater than 1 ppm if present due to a spill or migration, must be removed and disposed of under EPA regulations. No regulated PCBs can remain at the site under the performance-based approach. This is often the method implemented if only small quantities of PCBs are present or if the building is going to be demolished. Otherwise, a performance-based remediation may prove to be cost prohibitive.

Under a SIP, PCBs must be removed to meet appropriate standards, which depend on the use of the area where PCBs are located. If PCBs are left in place at levels above one ppm, a use restriction must be recorded on the land records. A SIP requires users to follow EPA's Standard Operating Procedures for sampling and site characterization and provide notice of the plan to EPA as well as to state and local officials. Under federal regulations, approval of the SIP can be presumed if EPA does not respond within 30 days, but in practice EPA often takes longer than 30 days to respond, and any comments received from EPA that indicate the plan does not comply with EPA regulations must be addressed in the final remediation plan. Accordingly, it is generally prudent to wait for EPA's approval before commencing remediation under a SIP.

The third approach, the risk-based approach, is often employed for widespread PCBs within a building. This method allows users to seek a site-specific approval from EPA to sample, clean up, or dispose of PCB remediation waste in a manner other than the self-implementing or performance-based disposal options. The plan must be approved by EPA before the work can begin. One particular advantage of this approach, if approved by EPA, is that it allows for encapsulation of the substrate if PCBs have migrated from the caulk into concrete or other materials, rather than having to remove all of the substrate at the time of remediation. This can reduce costs associated with remediation and preserve the structural integrity of a building. If encapsulation is chosen, the property owner must also file a deed notice on the land records notifying future owners of the location of the PCBs that remain in place and proper maintenance of the encapsulation. Owners also must physically mark the encapsulated area, as required by regulations. Additionally, EPA may require ongoing air monitoring to confirm that the remediation and encapsulation were effective. Under both a SIP and a risk-based approach, users should pay close attention to the categories of PCB waste being generated to ensure that the most cost-effective disposal option is applied.

Regarding waste disposal, PCB-containing caulk with concentrations of PCBs exceeding 50 ppm is considered "PCB bulk product waste." The disposal restrictions associated with bulk product waste are more manageable and often less costly (roughly $125–$175 per ton), because bulk product waste can be disposed of at a solid waste landfill if the landfill is permitted by the state to accept it. Substrate disposed of *at the same time* as caulk is also considered bulk product waste.

However, the disposal of materials that contain PCBs due to a spill (including the migration of PCBs from caulk to substrate that is disposed of at a later time) are considered "PCB remediation waste" and must be disposed of at a TSCA-approved landfill, often at a higher disposal cost (roughly $260 per ton). For these reasons, the choice to encapsulate and save money now should be weighed against the costs associated with disposing of the substrate as remediation waste at a later time.

A final thought regarding the remediation of PCBs: Individuals must evaluate whether the PCBs were originally present in the existing caulk or if they migrated to the caulk from another source. Both EPA Region 1 and the Connecticut Department of Energy and Environmental Protection have highlighted uncertainty over the source of the PCBs as a concern when reviewing remediation plans. For example, most PCB-contaminated caulk has very high levels of PCBs. If PCBs are at low concentrations, it is possible that old caulk contained high levels of PCBs that then migrated into the underlying substrate. If the old caulk was removed, the PCBs could migrate from the substrate into the new caulk, thereby contaminating the new caulk. The new caulk would then be considered contaminated as a result of a release and must be removed, potentially as remediation waste, instead of being allowed to remain in place even if the concentration is below 50 ppm.

To meet potential obligations associated with structures with possible PCB contamination, the most important thing is to be aware of the issue and know that if you plan to renovate or demolish a building, you either must treat the materials as if they contain PCBs if the age of the building so warrants, or test the materials for PCBs in order to ensure that they are properly disposed of. If the occupants of your building are part of a sensitive population (such as school children, for example), then consider whether testing building materials is warranted or whether air testing is sufficient to demonstrate there is no risk to the occupants. Parties to transactions need to know what the terms of the deal are and understand what the options are for remediation. Considering the myriad of options in advance—taking into account the long-term consequences of any decisions—can result in avoiding extensive, unexpected remediation costs.