

Malibu Unites Board Members Hope Edelman and Jennifer deNicola were in Woods Hole, Massachusetts to attend a PCB Workshop that brought together leading scientists and policy makers from all over the world. Directors and administrators from EPA Regions 1 and 2 were there, as were the environmental consultants who have tested and remediated many East Coast schools. We were invited to present by the University of Iowa Superfund Research Team that is studying the effects of PCBs in schools in East Chicago, IL. This workshop is held every other year. This year's topic was "PCBs in Schools."

We brought back videos of the sessions we thought were most relevant and accessible for everyone at home, and we'll post them online for you to watch. In the meantime, here's a brief summary of some of the main points of the workshop and our takeaways. I've put the most important sentences in bold for you:

- The opening session on Sunday evening covered the history of PCBs, from their identification as a dangerous contaminant in the mid-1960s up to the policy issues of the 21<sup>st</sup> century. **As one of the conference co-hosts told us, "Coordination seems to be an issue of 'who is in charge.'"**
- Monday's sessions were mostly scientific and highly technical. E.g., the Session titles were "Analytical Methods and Environmental Responses" and "Overview of Mechanisms of Toxicity" Studies have been done on the negative effects of PCBs on the endocrine system, on pregnancy outcomes, and on diabetes. These presentations focused very much on the lab processes and scientific methodologies because this is such cutting-edge research.
- Monday night featured talks about PCBs and Anniston, Alabama, the site of one of two plants that produced PCBs in the US. David Carpenter, MD, of the State University of New York at Albany, one of our advisory board members, talked about the relationship between PCBs and human health in the town, based on results from the Anniston Community Health Survey conducted between 2005 and 2007. This study looked at PCB blood serum levels in 774 adults and found higher levels in older people, women, African-Americans, residents who'd lived closest to the plant, smokers, and long-time Anniston residents. It found a strong connection between PCBs and hypertension. **Carpenter said his suspicion is that gene induction plays a big role in PCB-related illnesses and that Congener 126 changes an enormous number of genes that control almost every bodily function, but the exact mechanism is not yet known.**
- Linda Birnbaum, PhD, DABT, ATS, director of the National Institute for Environmental Health Studies (NIEHS) then talked about the follow-up to this study, conducted earlier this year. 359 of the original 774 participated. The thyroid panel for this group is being analyzed at USC. All results are still being analyzed. One takeaway from this talk was the statement that **when doing these studies, you can't use a control group of unexposed individuals when doing PCB studies because none exists. There is no unexposed group. You have to compare the more exposed with the less exposed, instead.**
- Tuesday began with the international perspective. Scientists and regulators from Denmark and Sweden gave presentations. Both countries have launched large initiatives to remove PCBs from schools and other buildings. It's a big job – in Denmark, for example, more than 75% of the buildings from the PCB era are contaminated, up to 35% of them above 50 ppm. They have found that concentrations of high PCBs in building

materials result in high concentrations of PCBs in indoor air. Elastic sealants are causing the highest air concentrations there.

- From the Mass. Department of Public Health we learned about Sherwood Middle School in Shrewsbury, where concern about PCBs and breast cancer risk surfaced and air and wipe tests were conducted. Light ballasts were found to be the primary source of PCBs at the school. The conclusion was that exposure to PCBs at levels detected in the Sherwood Middle School did not present unusual cancer or non-cancer concerns for students or teachers in the short or long term. In New Bedford High School in New Bedford, Mass., 21 teachers and parents wrote a letter asking for testing after PCBs were found in the soil. The Mass. Department of Public Health conducted a study of the school from 2006-2009 and took multiple bulk samples and calculated that at maximum exposure to PCB levels at the school, the result would be 5-6 excess cancers in a population of 100,000. All NBHS staff tested had serum PCB levels within the typical range seen in the US population. David Carpenter objected during the Q&A to some of the methodology and conclusions.
- **Kent Thomas, research scientist at the USEPA, found a linear correlation between concentrations of PCB in caulk and emission factors. He also found a 5- to 9-fold increase in emissions rates with a 10-degree Celsius change in temperature, which is highly relevant for seasonal changes.** In other words, PCB air concentrations are higher in warmer months. He had data from the five NYC pilot schools, where interior caulk was less than 50ppm 80 percent of the time. Paints, mosaics, and laminate also tested positive for PCBs as secondary sources that had absorbed PCBs from leaking light ballasts and caulk over the past 40-60 years.
- The temperature issue was backed up by a Danish researcher who presented next. She took measurements in a PCB-contaminated room and raised the temperature from 68F to 71.6F to 77F to 82.4F and kept testing the air, and **found a significant and considerable increase in air PCB concentrations as the temperature went up.**
- Niklas Johansson researcher at the Karolinka Institute in Sweden and the Swedish EPA, shared a history of PCB regulations in Sweden, where a voluntary undertaking began in 2000 to perform inventories and remediation of all affected buildings, countrywide. He pointed out that Sweden remediates based on ppm concentrations of PCBs in building materials, while Switzerland, Germany and Denmark set their action levels based on indoor air concentrations.
- **Linda Birnbaum pointed out that we in the U.S. need to do more as a country to deal with the overarching issue of PCB contamination, more along the lines of how Sweden is responding.**
- Jennifer deNicola did a 30-minute presentation that gave an overview of the MHS situation since 2009 and helped everyone understand the current position of Malibu Unites. She explained that the testing and remediation plan proposed is not protective of all students and staff health. She presented the districts testing plan and removal plan showing how Rooms 1 and 5 in Building E, for example, have been tested, were found to be in violation of TSCA, and are proposed for remediation by June 2015. While Room 3 that sits right in between those two rooms has not been tested, will not be remediated and the district will not test this room. **She emphasized that schools in Southern CA are different from schools on the East Coast and as such, risk and exposure assessments should be done to reflect these differences 1) CA is a warm weather climate and our**

students are in school during our hottest months 2) there is no ventilation system to help reduce PCB exposure 3) many of our schools have an indoor/outdoor construction with no indoor hallways and therefore students track PCB contaminated soil and in and out of classrooms all day; meaning 4) it is harder to manage dust and keep our classrooms clean than classrooms that exist inside a sealed box (like the schools on the East Coast). The exposure pathways are different in California as ours include soil in addition to dust and air and therefore using East Coast analysis on a West Coast school will not yield an accurate risk assessment, which could result in less protection for students and staff. Jennifer also made the point that all the good science in the world won't matter if standards for testing, oversight, and remediation are left in the hands of 15,000 individual school districts with varying financial and political agendas and there is not consistent oversight. It was the goal to engage the scientific community in showing them that their research matters and that parents need this research to make protective decisions for their children. The audience was very engaged and asked questions and offered ideas to help solve our situation. It was a general conscience that all high levels of PCB caulking must be removed ASAP.

- Dr. Robert Herrick, MS, ScD, CIH, of the Harvard School of Public Health, who has been studying this issue longer than most in the room, gave a comprehensive history of PCB research, starting with a symposium at the Harvard School of Public Health in 1937. **He estimates that about 48,000 U.S. schools (62% of the nation's total) were constructed between 1950 and 1984 and estimates that somewhere between 12,960 and 25,920 schools built during the PCB period will have PCBs in their caulking. Based on his studies, about 30 percent are likely to have levels greater than 50ppm.**
- Kim Tisa, the PCB Coordinator for EPA Region 1, which includes Massachusetts, shared her experience with schools in Mass. and Connecticut. She offered some caveats: 1. That new replacement caulking can resorb PCBs left behind after removals; 2. That when schools discover PCBs, interim measures should be taken until the finances of remediation are figured out; 3. We need better encapsulation techniques that will be effective over time and that will always include long-term monitoring, especially when the adjacent substrate is too contaminated to effectively remove. **She stressed that all schools are different and that no one-size-fits-all approach for assessing schools and managing PCBs has been found. Site specific plans must be developed.** She also stressed that knowledge about PCBs is evolving and big data gaps exist; effective planning is important for financial reasons; and effective communication with stakeholders is very important. Tisa stressed that you can not visually inspect for PCBs in caulking or other building materials. The only way to know if they exist is to test.
- Mark Maddaloni, PhD, senior toxicologist at EPA Region 2 who has been involved with the NYC schools, took us on an historical tour of PCBs in schools, dating back to Robert Herrick's 2004 article about PCB contamination in Boston schools, which led to a parent (Dan Lefkowitz) testing caulk removed from his son's Westchester elementary school in 2005 and soil from right outside the building, which led—with some intermediary steps—to parents at PS 199 in NYC taking their own samples. (You can read much more about PCBs in NYC schools online.) Early in the NYC the focus was on the caulking and in 2011 leaking light ballasts were added. More than 1,100 air samples have been collected in NYC so far as part of the pilot study. **Best Management Practices as applied to NYC include inspection and remediation of caulk as necessary, and**

**inspection and maintenance of ventilation systems per design. His opinion is that if you find a hot spot (like high PCBs in the caulking) in a school, get rid of it. He also said—as did a number of people at the conference—that TSCA is a very difficult regulation that needs to be revisited.**

- Geniece Lehmann, PhD, the IRIS Chemical Manager for PCBs at the USEPA, said in her presentation that the health effects of absorption and metabolization of PCBs are expected to be the same with oral and inhalation exposure routes. (Translation: whether you breathe them in or get them through food or ingesting dust, you can expect the same results in the body.) She talked about the EPA’s precautionary health levels for indoor air and how they are set according to age. **She emphasized the importance of calculating total PCB exposure, which includes indoor air, outdoor air, dust, soil, and food and comparing that number to reference doses, not just determining safe exposure via a single exposure route as SMMUSD has been doing.** (This is related to the total risk assessment that MU has been asking for.) We have asked her about doing a site-specific assessment for Malibu.
- Kent Thomas presented again and said that dust is an important part of an exposure assessment. The data the EPA uses is 20-year-old data and there are no inhalation studies, so the EPA relies on ingestion data to set their inhalation screening levels.
- Kathleen Brown, PhD, staff scientist at Environmental Health and Engineering, a firm that has tested and remediated schools in Massachusetts, emphasized that each school is a unique case and operating conditions can vary dramatically. She talked about the importance of identifying the nature and extent of the contamination so proper planning for health and safety and remediation can occur. She talked about the cost of remediation and gave examples of aggregate estimated remediation costs: Estabrook School in Lexington, Mass., \$1.676 million; Thomas Prince School in Princeton, Mass., \$700,000; Westport Middle School in Westport, Mass., \$3.1 million; Lake Regional High School in Naples, Maine, \$1.1 million.

#### **A few other, broad takeaways from the workshop:**

- There seemed to be general agreement that TSCA, as an unfunded mandate, creates a disincentive for schools to test for PCBs in building materials, and therefore needs to be revisited and revised. Schools are afraid to test because they might be required by law to remediate, and remediation is expensive. So we must find ways to help strapped school districts pay for remediation.
- Most of the people—other than the Europeans and Japanese—had heard of Malibu High and were familiar with the case. We heard people refer to it as a playbook for “what not to do.” At the Harvard School of Public Health, Malibu is being studied by one class as a case study of poor execution of public health and poor communication with stakeholders. This was really troubling to hear.
- General agreement was that it is too easy right now to manipulate air testing methods for PCBs by testing with windows open, and by testing late in the week after classrooms have been aired out all week (versus testing on a Monday morning after they’ve been closed up all weekend). Several scientists said we cannot rely on a single air sample as evidence of “safe” measures since air

concentrations can vary widely over short periods of time and from season to season. The NYC studies showed variance within just a ten-day period.

- People at the conference kept commenting on how reasonable and educated we (Jen and I) were about the issues. Many told us we were on the right track, encouraged our group to not give up, and said our group has the power to make real change in Malibu and in all schools. This was very validating.