Children at Risk From Salvaged Building Components 2/1/06

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I could hear the anxiety in her voice on the other end of the phone. Mary Niles was describing what she thought couldn't happen. Her 1 year old daughter Naomi, had been tested and found to have an elevated blood lead level of 13 micrograms per deciliter. "10 micrograms is considered the level of concern while 20 and above is considered poisoned." I explained "However", I continued, "Studies have shown that chronic exposure to levels even below 10 can cause neurological and developmental problems". "There wasn't any visible paint. How could one door have caused all of this?" she asked.

It doesn't look very dangerous, but this door contained enough lead to seriously contaminate Mary Niles' home.

It turned out that Naomi was poisoned by lead paint that had unknowingly been brought into their home on a door that was purchased from an architectural salvage yard. The door had come from a building that was built before the 1978 ban on the use of lead in paint.

Mary and her husband Jacob Racusin had been searching for a door with some character to highlight the entrance to the new home they have been building for the last few years in Montgomery Vermont. They eventually found a raised-panel door with a picture window at a salvage yard that seemed perfect for their needs. They especially liked the fact that they would be doing their part to help reduce the waste stream by reusing something from an old 1800's Vermont farm house. The door still had the original paint on it, but the paint was in pretty bad shape. "Despite the terrible condition of the paint, we could see it was sturdy and that there was beautiful wood-grain under the paint. We thought this was the diamond in the rough we were looking for" Mary explained. An employee of the salvage yard indicated that for an extra $100, the door could be chemically stripped of the paint. "We didn't think to ask about whether the paint might have contained lead. There were no warning signs or information regarding the possibility the door might contain lead paint". They paid the extra fee to have the paint removed and returned in 2 weeks to pick up what would turn out to be a disaster waiting to happen.

The chemical stripping had raised the grain of the wood and left splinters and wood fibers sticking up that needed to be sanded before the door could be finished and installed. Jacob brought the door to an upstairs room that was still under construction so he could sand and finish it. What he didn't realize was that while chemical stripping methods may remove all of the visible paint, a significant amount of lead from the paint can leach into the wood itself. Jacob spent several hours power sanding the door to get it smooth. Still unaware of the threat, Jacob didn't bother to take any precautions to prevent the spread of dust or to wear a respirator. As he worked, a fine layer of dust settled throughout the upstairs as the contamination of their home increased to dangerous levels.

The danger in their home might have gone unnoticed if it hadn't been for a timely mailing from the Vermont Department of Health that advises parents to have children screened for blood lead levels at ages 1 and 2. "I actually sat on the mailing for over a month because I didn't

think you needed to worry about testing if you lived in a new home without lead paint" Mary said. When she called the Health Department to inquire as to whether the test was necessary, they encouraged her to get the test anyway. They explained that even though lead-based paint is the most common cause of lead poisoning in children there can be other sources of lead exposure in homes.

The first sign of any trouble was when Naomi's blood test came back at 24 micrograms per deciliter. "We were shocked" Mary said. 24 is above what the Health Department considers poisoned. Her doctor explained that the type of test called a capillary draw (finger-stick) does have some false positives and advised that they follow up with a venous draw where the results are much more accurate. "We were panicked and unsure what the source was so we decided to test everyone in the family". Mary said. Follow-up testing found that Naomi's blood lead level was actually a 13, still a serious level, but not high enough to be classified as poisoned by the State standards. A bigger surprise was to learn that Jacob also had a blood level of 13 while Mary and her son Elijah had no detectable lead. That's when Mary started making calls.

Naomi, like many children with elevated blood lead levels exhibited no obvious symptoms of the lead that circulated in her blood when this picture was taken. This illustrates why blood lead testing of young children is so important

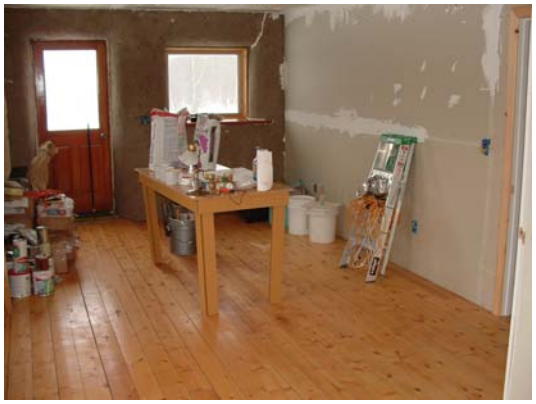
First, she called the Vermont Dept. of Health. "They were very helpful, I spent hours on the phone with them" Mary said. "They thought that Jacob might have been bringing lead contamination home from a renovation job that he was working on. We had learned, an old farmhouse had burned to the ground on the site." Was it possible that he was bringing contaminated dirt home with him? It seemed unlikely that Jacob would have gotten poisoned unless he was ingesting the contaminated dirt somehow. "In desperation, I went to the hardware store and bought all of the lead test swabs they had and started testing things around the home" Mary said. "We were still thinking it might be from dirt tracked into the home and I was trying to see if anything would test positive near the front entry when I decided to use the last swab on the door. The swab turned bright pink in seconds". Mary wondered if this could be the cause of all their troubles. A friend recommended that she call The Vermont Housing & Conservation Board's Lead Hazard Reduction Program. Mary's friend had mentioned that they had received a lot of help in reducing lead hazards in their home and that the Lead Program might have some ideas.

That's when my phone rang and Mary began to explain the situation. After a few questions it seemed likely that the door sanding was the source of the problem, so I offered to bring out a HEPA vacuum and show them how to clean for lead dust. I also offered to collect dust samples to determine the extent of the likely contamination.

The samples confirmed Mary and Jacob's worst fears. Sanding the old door upstairs had spread dangerous levels of lead dust throughout the house. Some of the levels were 5 or 6 times higher than what is considered hazardous. "Jacob's elevated lead level had come from the dust he inhaled while he was sanding, and Naomi had ingested the settled dust while crawling around on the floors." I explained. "We were so surprised to learn that even though there was no paint visible, that so much contamination could happen." Mary said.

I also explained that the likely reason for Mary and Elijah not being poisoned was that Mary had not been in the work area to breathe in any airborne dust and Elijah at age 6, spends less time putting things in his mouth as compared to the one year old. Hand to mouth behavior is recognized as the primary pathway that small children ingest lead dust.

Mary and Jacob threw themselves into the huge task of cleaning and wet wiping all of the surfaces in the affected rooms they now referred to as "Ground Zero". Luckily, the dust sampling indicated that the contamination was limited to the upstairs rooms so they were able to keep the children downstairs while they cleaned. I gave them detailed instructions for cleaning lead dust. "You have to meticulously wipe down the walls and surfaces where dust collects, and HEPA vacuum and mop the floors." I explained.



"Ground Zero" after intensive cleaning. Prior to cleaning, the window sill had over 1330 micrograms of lead dust per square foot.

I agreed to return for additional sampling after the cleaning was completed to make sure that all of the contamination was removed. "It took us almost a week to clean up all the contamination" Mary said. "At first it seemed an overwhelming task, but we fell into a routine of cleaning" Mary said. "I'll have to admit I was getting pretty grumpy after 10 hours of vacuuming in one day though". She continued.

Analysis of the second round of dust samples indicated that the contamination was finally cleaned up and their home was once again safe. While their home may be safe, the long term health effects the contamination may have caused are uncertain.

Studies have linked chronic exposure to even low levels of lead to developmental and neurological problems in children. "We would have never bought that door if we had known how dangerous it could be" Mary said. "People should think twice and ask about lead paint when they buy old building components". As for the door that caused all trouble, "The salvage yard agreed to buy it back when I explained what happened" Mary said. "I told them they should warn people about how dangerous old building components could be, but they seemed surprised that lead would be a problem after the paint was stripped off" An employee of the salvage yard indicated that "we strip components all the time" and then added, "I wonder if I should get myself tested?"

Medical journals have documented cases of employees that were working with chemically stripped furniture had not only poisoned themselves but had inadvertently taken lead home from work on their clothes and had poisoned their children as well. Anyone that works with older building components or antique furniture, even with no paint visible should be aware that lead can cause serious contamination and poisoning. Lead safe work practices that minimize the spread of dust and contamination should always be used. If you think it isn't a big deal, just ask Mary Niles and Jacob Racusin.

Close up detail of the door exterior

A dust sample from the interior surface of the door analyzed as having 268 micrograms of lead per square foot which is almost 7 times higher than the 40 microgram hazard level set for floors. You have to look closely to see that only small amounts of the original lead paint is still visible in the seams and joints.

Epilogue

By autumn of 2006, both Jacob and Naomi's blood lead levels had returned to undetectable levels. At last report Naomi's language and speech skills were developing normally.

In the spring of 2006 I became a member of the "Get the lead out of Vermont" joint committee announced by the VT Attorney General and the VT Dept. of Health. This committee was charged with finding ways to reduce Vermonter's exposure to lead from all sources. The committee issued its report on February 1, 2007. Among the numerous recommendations suggested by the

committee was a requirement for point-of-sale warnings regarding lead on salvaged components.

In February 2007, a consumer products bill S.152, was introduced into the VT legislature requiring point-of-sale warnings for salvaged components. By the spring of 2008, s.152 had passed both houses of the Vermont legislature and was sent to the Governor. On June 7, 2008 Vermont Governor Jim Douglas signed s. 152 into law.

This new law lowered the cap on lead in children's products to 600 ppm starting October 1, 2008, and phases to a lower standard of 100 ppm by January 1, 2010. It also contains lead-related provisions on non-children's jewelry, wheel weights, plumbing fixtures, non-residential paints and the salvage building materials warning requirement.

§ 2470h. (4) of the new law states: *"Salvage building materials. As prescribed by the attorney general, beginning January 1, 2009, any person in commerce who sells or offers for sale in or into the state of Vermont, salvage building materials made prior to 1978, shall clearly and conspicuously post a warning at the point of sale, stating that these products may contain lead and shall also provide to each buyer prior to sale information on the risks of lead exposure."*

For the CDC medical journal article regarding lead exposure and furniture refinishing see:

http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5013a2.htm

For a copy of the entire "Get the Lead Out of Vermont" report visit:

http://www.atg.state.vt.us/display.php?smod=218