COMMONSENSE LEAD SAFETY

Running a lead-safe job site costs less than you might think and pays big dividends in comfort, cleanliness, and customer satisfaction

by Ron Haviland

Since June of 1999, remodeling contractors have been required to notify building occupants of possible lead hazards before doing all but minor work on buildings constructed before 1978. Under the terms of Rule 406, as it's commonly known, the contractor must give each household an EPA pamphlet entitled "Protect Your Family From Lead in Your Home" and obtain signatures to prove that the notification requirement was met (see "Get Ready for the Lead Information Rule," *Notebook*, 6/99).

Not surprisingly, receiving and signing for the pamphlet produces some anxiety on the part of many remodeling customers. To put them at ease — while protecting both their health and

that of our workers — our company, Design Plus Kitchens and Baths, follows a series of on-the-job safety procedures that we learned from a lead-safety consulting firm. It took some time and effort to get started, but the out-of-pocket cost was very reasonable. Apart from training costs, we spent about $2,000 to come up to speed originally, and yearly operating costs are a few hundred dollars at most.

That small investment provides several benefits. It practically guarantees that our customers and workers won't suffer from work-related health problems caused by lead exposure, and it protects us from associated legal and medical costs. Because lead-safe practices result in a clean, well-managed work site, it leads to happy customers and good referrals. Finally, it's a valuable marketing tool. I know of at least two jobs we got from competitors last year because their only response to customers who asked about lead containment was to tell them not to worry about it. If you can provide specific answers to people's concerns, you're adding value to your whole operation.

Figure 1. The work area is separated from the job site with site-built partitions of 1x3s and 6-mil poly. Closed-cell foam sill sealer between the strapping and door jamb provides a good seal.

Figure 2. Self-adhesive zipper doors are easily applied to poly partitions, providing access while maintaining negative pressure in the work area. Minor holes in the poly partition can be repaired with tape.

Laying the Groundwork

Unless a potential client brings it up, I don't say much about lead safety during initial sales calls except to mention that all of our people have been trained in lead-safe work practices. That prevents clients from being alarmed when you pull out the lead-safety pamphlet at contract time and ask them to sign off on it.

The real discussion usually takes place at the preconstruction meeting, a week or two before we start work. Our operations manager and the lead carpenter get together with the homeowners and brief them on the specific lead-control measures we'll be taking. We let them know where we'll be setting up dust-control partitions, which define the areas of the house they are free to use and those that are off limits to them during work hours. We've been telling clients those things for years, but when we explain them in terms of lead safety, people actually seem to listen.

It's important for the customer to understand that lead-safe practices are not the same as lead abatement, even though some tools and techniques are common to both. In lead abatement, the objective is to clean up and remove

a known lead hazard. This is a specialized discipline that requires extensive training and certification. The lead-safe remodeling practices we use are intended only to prevent paint particles and dust generated in the course of a job from contaminating the work area or spreading to other areas, including the outdoors.

Setting Up

Because lead was removed from paint in 1978, any house built after that date can be assumed to be lead free. In practice, though, we follow the same lead-control measures no matter what the age of the home is. That prevents our crews from developing bad habits that might carry over to other jobs. And because lead safety is largely a matter of thorough, systematic dust control, it means that all of our customers — not just those with pre-1978 homes — are rewarded with a virtually dust-free job site.

Dust partitions. Our average job runs for 10 weeks or more, so it's worth the time it takes us to build a good solid partition that will stand up for that time. None of the manufactured barrier wall systems that we've seen look rugged enough to stand up to long use, so we don't use them, even though they're faster to set up and take down.

Instead, we make our partitions from 6-mil poly and 1x3 wood strapping. If we're sealing a doorway or window opening that will later be refinished, we'll squeeze the edges of a poly sheet between four pieces of strapping, screwed to the jambs, with a gasket of foam sill-seal material between the strapping and the jambs to ensure a good tight fit (see Figure 1). At the end of the job, we putty the screw holes before painting. Where there's no need to worry about the existing wall finish, the poly can be taped directly to the wall.

If we can't drive screws into the finish, we cut the strapping to fit tightly and tap a few slightly oversized crosspieces into the opening to exert enough pressure to hold everything in place. When the work area is negatively pressurized during work hours, the poly will tend to bulge into the room, so it's important to apply it to the outside of the strapping instead of the inside. Air pressure will then hold it against the framing, rather than pushing it away. We don't use staples, which weaken the poly by making holes.

Zipper doors and tee locks. To provide limited access between the work area and the living space beyond, we use self-adhesive zipper doors we get from a local supplier (Zip-Up doors from Pro-Tect). They're easy to use — you just peel off the backing, stick the seven-foot zipper to the poly, unzip it, and slit the poly with a utility knife to make the opening (Figure 2).

Zipper doors are convenient, but it's difficult to carry material and debris through them. For our main access point, we use a poly "tee lock" that workers can push through when their hands are full (Figure 3). We try to plan

Figure 3. The "tee lock" that serves as the main entrance to the work area starts as a double layer of poly stretched across a doorway. The outer layer is then cut loose on the sides and bottom, forming a flap. The inner layer is slit across the bottom and up the center, in the shape of an upside-down letter T. It admits needed makeup air when the air handler is operating but not so much that the work area loses its negative pressure.

the job so that the homeowner doesn't have to pass through the work area to reach other areas of the house, but sometimes it's unavoidable. When it is, we'll sometimes mount a poly-covered screen door in a partition, allowing for easy passage after we've vacuumed the site and gone home for the day (Figure 4).

Mats and floor protection. If the existing flooring is going to be saved, we protect it with a rubberized felt material that we buy from Pro-Tect in 2- and 3-foot rolls. It lies nice and flat and is easily vacuumed. We place a tacky mat on the clean side of each zipper door to catch any possibly lead-laden dust that might otherwise get tracked out of the work area.

Figure 4. A poly-covered screen door on spring-loaded hinges can be useful if the homeowner has to pass through the work area during off hours. The poly should be applied to the living-space side of the partition, so air pressure sucks it inward against the framing.

Dust-Free Demo

Our heavy weapon for dust control, especially during the demo phase, is a 2,000-cfm negative air machine that keeps the entire work area under negative pressure (Figure 5). This $750 unit (from Abatement Technologies) is a lot pricier than the familiar window-mounted exhaust fan, but it's a much more capable machine.

Unlike a conventional fan — which blows dust out onto the lawn — the negative air machine forces the intake air through a high-efficiency filtration system that removes virtually all particulates. (The outer prefilter has to be changed at least once a day during demo work, but the more expensive inner filter lasts about a year.) The clean exhaust air is vented through a 12-inch mylar hose mounted in a window

Figure 5. A 2,000-cfm air handler (near right) keeps the work area under constant negative pressure to prevent dust from escaping. The filtered exhaust air is vented through a 12-inch mylar hose (middle), which is securely taped to a plywood panel mounted in an open window. Besides reducing the lead hazard, the air handler makes demo work much less uncomfortable. The layer of dust on the air handler prefilter (far right) represents an hour's worth of tearing down ceiling drywall backed with blown fiberglass. In an unventilated area, most of that would be clogging the air.

opening. To make sure the negative pressure won't cause backdrafting of the furnace, water heater, or other fuel-burning appliances, we temporarily seal any ductwork with tape. This also keeps dust out of the ductwork and prevents it from spreading throughout the house.

Mist and dust. Because it pumps air through the space so quickly, the air handler scrubs most dust out of the air before it has a chance to settle. If we're doing really dusty work, like tearing down old horsehair plaster, we use a hand-pumped garden sprayer to prevent dust from forming in the first place. The trick is to apply a fine mist that dampens the surface thoroughly without leaving it dripping wet (Figure 6). Paint prep is another major source of possibly lead-laden dust, so we have our painting sub wet-sand whenever possible.

These measures work so effectively that you can walk onto a site where demo is going on and not smell any dust. Although our workers occasionally wear nuisance-dust masks, we never need respirators. In fact, our lead-safety trainer tells us that "respirator" is a bad word. If you're producing enough airborne dust to require one, you're doing something wrong.

Figure 6. Drywall, plaster, and other dusty materials are misted with water before removal to keep airborne dust to a minimum. Material on the floor is misted again before being shoveled into bags for disposal.

Handling waste. If we're going to discard lengths of standing trim or other bulky material, we place a big sheet of our 6-mil poly in the middle of the floor, pile the scrap on top of it, and mist it. When the pile gets big enough, we roll up the poly and seal it with tape so we can carry it out to the dumpster without sprinkling the floor with paint chips. Smaller pieces of waste, like old plaster, are also misted before they're shoveled into 4-mil contractor bags, sealed with duct tape, and hauled to the dumpster.

Cleanup and Monitoring

Daily cleanup at a lead-safe job site is almost identical to cleanup on any well-managed job site. The big difference is that instead of going over the site with an ordinary shop vac, we use a HEPA (short for "high-efficiency particle arrestance") vac, which is said to filter out 99.97% of all particles down to 0.3 microns. The ten-gallon HEPA vacs we use (from Pullman-Holt) cost us $320 each — pricier than a Craftsman shop vac but manageable for a piece of

Figure 7. Each job has its own ten-gallon HEPA vac. Unlike that of an ordinary shop vac, its exhaust is almost entirely free of even the tiniest dust particles. Because the used vacuum bags and filters may contain lead dust, they are considered low-level hazardous waste.

Sources of Supply

Abatement Technologies
2220 Northmont Parkway, Suite 100
Duluth, GA 30096-5895
800/634-9091
www.abatement.com
Negative air machines and filters

Pro-Tect
P.O. Box 8382
Northfield, IL 60093
800/545-0826
www.pro-tect.com
Floor protection mats, self-adhesive zipper doors

Pullman-Holt
10702 N. 46th St.
Tampa, FL 33617
800/237-7582
www.white-pullmanholt.com
HEPA vacs, bags, and filters

equipment that will last for several years (Figure 7).

During demolition, we may vacuum several times a day, but we always vacuum thoroughly before leaving for the night. That keeps the clients from tracking lead-laden dust into the living space when they look over the site after we've left.

Hazardous waste. Even if they contain some lead-based paint, lumber, plaster, and other ordinary demolition waste don't require any special handling by our waste hauler. But the concentrated dust collected by our air handlers and HEPA vacs is considered to be hazardous waste, because it may contain a lot of paint particles. The vacuum bags and used filters are sealed into the same kind of heavy-duty bags we use for construction debris and brought back to our shop, where we put them in a 55-gallon drum with a band seal provided by a local environmental firm. When it gets full, we call the firm, and someone comes to take it away and bring us a new one. Each drum holds the waste from about ten of our projects and costs us about $200 to have emptied.

Personal hygiene. We require all of our workers to wash their hands and faces before breaks and meals and at the end of the day. We also provide a dispenser of moist hand wipes that work well and are easy to use. It wasn't easy to get everyone to go along with this at first, but we were persistent. Once it becomes a habit, there's no problem.

Because lead-containing dust can cling to a worker's clothes and affect family members at home, we also require everyone to vacuum their clothing with the HEPA vac at the end of the day. We recommend that workers change into clean clothes before leaving work for the day and bag their work clothes for transportation home. You can't really control behavior off the job, but we also recommend that clothing worn during demolition be washed separately, so that no lead gets transferred to other clothing.

Blood testing. All of our employees have their blood lead level tested within 30 days of coming to work for us and every six months after that. Tracking lead levels protects the employee, but it also protects us. If you don't keep records and an employee develops symptoms of lead poisoning, you don't know whether it resulted from working with you, exposure to lead paint at home, stripping paint on a moonlighting job, or a hobby of casting little lead soldiers.

Periodic testing takes away some of that uncertainty. It's never happened to us, but if testing showed an increase in an employee's lead level, we could compare it to the records of other workers on the same job. If their levels were unchanged, that would suggest that the first employee's lead exposure was unrelated to work.

When our trainer urged us to set up a testing program, we were worried that it would mean a lot of expense and added paperwork, but it doesn't cost us anything. The employees go to their primary care physician, who performs a test to rule out lead poisoning and sends the bill directly to our HMO. The initial test reports go in the employees' personnel files, and 30 days before they're due for another test we remind them to make an appointment with their doctor. If they don't get tested, they can't come to work.

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