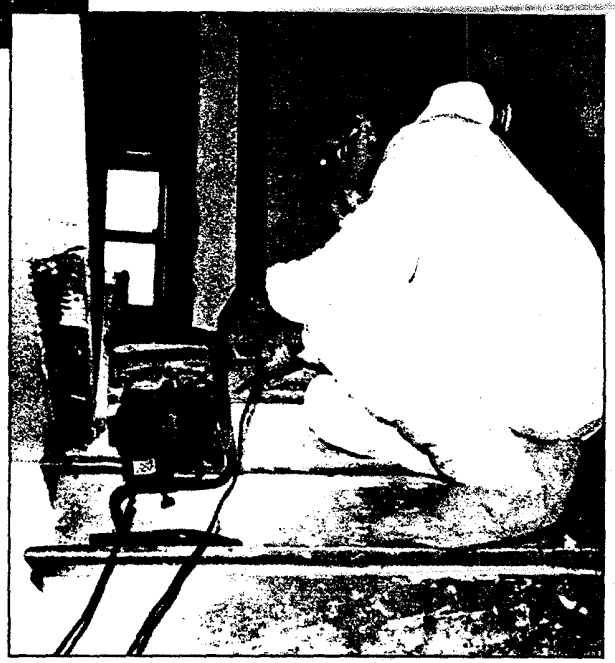
Building Owners Are Responsible For Controlling Lead Hazards

By Michael Howe



Physical risks related to lead exposure have become a significant environmental concern for all real property owners and managers. Studies show that exposure to lead may cause damage to the body's blood system and to the neural, urinary, and reproductive systems. In buildings, lead paint and domestic water systems are the primary sources of lead exposures.

Children and developing fetuses are particularly sensitive to the effects of lead exposure. The Environmental Defense Fund has estimated that approximately 17 percent of children under the age of six have levels of lead in their blood significant enough to cause some degree of brain damage and other adverse health affects. These findings are supported by research conducted by the National Centers for Disease Control.

Building owners are responsible for providing facilities free from recognized hazards, including the serious hazards associated with lead. By learning about potential sources of lead exposure, testing methods and abatement options, building owners and managers can minimize their liability risks and ensure a safe environment for building occupants.

Sources of Exposure

The two primary sources of lead exposure to building owners are lead-based paint and plumbing fixtures, such as water fountains. In residential settings, paint chips and dust from deteriorating paint and abrasion of painted surfaces are primary sources of lead poisoning. Children are at risk from playing on contaminated floors then putting hands in their mouths, and from chewing on painted surfaces. In business settings, workers can be exposed to airborne lead during construction, renovation, and maintenance work.

Drinking fountains are another common source of lead exposure. Newer units as well as old can cause problems; although the concentration of lead is now limited to eight percent in new plumbing fixtures, including brass, the Environmental Protection Agency (EPA) has found that some lead may still leach into water.

The first step in controlling lead hazards is to determine the presence of lead in the buildings you own or planning to purchase.

Pre-purchase Environmental Audits

Environmental audits have become standard procedure for most land and property purchases. Be sure to include an investigation for lead in all pre-purchase audits. Document your efforts in case you need to prove "due diligence" in the future over environmental liability.

Contact an environmental laboratory to discuss sample collection. There are specific guidelines on methods used to collect the samples and the quantity needed. Most labs will send fully prepared sample containers to keep the lead in suspension. Typical analyses cost around $25. Compare your results to the EPA's lead drinking water standard of 15 parts per billion (ppb).

Testing paint for lead content is critical prior to renovation or demolition activities. The Department of Housing and Urban Development (HUD) recommends paint testing using an X-ray fluorescence (XRF) analyzer. The XRF is able to analyze paint in place, as opposed to traditional laboratory meth-

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In 1775 an American patriotin Lexington, Massachusetts fired his musket, propelling a bullet in the form of a molded lead ball. That "shot heard round the world" took a life.

Today, more than 200 years later, lead again is affecting our lives. Lead-based paint ingested by young children can cause elevated blood-lead levels which can seriously damage the brain and central nervous system.

Recognizing the need to provide direction in this arena, the U.S. Department of Housing and Urban Development (HUD) issued in September, 1990 the "Lead-Based Paint: Interim Guidelines for Hazard Identification and Abatement in Public and Indian Housing." The guidelines recognized abatement as an important strategy for reducing the risk of lead poisoning from exposure to lead-based paint (LBP).

Entek Environmental & Technical Services Inc. is involved in a LBP abatement project which employs not only a combination of abatement strategies but also an alternative design approach noted in the HUD guidelines. As such, this alternative approach should provide information useful for future projects.

Pilot Project May Pave The Way For Future Abatement Jobs

By Roy J. Krasse

A Guide To Removing Lead-Based Paint

Over the past several months, the nation's attention has been focused on the hazards of lead-based paint. The following is a guide that building owners can follow to protect workers and tenants from lead-based paint.

❑ 1. Test The Paint

Health departments can analyze paint chips. The paint chips can also be tested by using a portable x-ray fluorescence (XRF) analyzer. A rating of 1.0 mg/cm2 is considered positive under federal standards. Another test is to apply a 10 percent solution of sodium sulfide to paint layers, which will turn black if there is lead present.

❑ 2. Weigh The Options

If the tests are positive, you must weigh your options. Many experts believe that if the paint is intact with no signs of peeling, chipping or bubbling, it is best not to disturb it. However, this is not a common case scenario. Many areas, such as windowsills or door frames are easily damaged, allowing paint to become dislodged. If this is the case, paint removal is your only option.

❑ 3. Remove The Paint

Removal of lead paint is a serious process. If you have no young children in the building and the surfaces are generally intact, a thorough scraping, followed by replastering and repainting may be sufficient. If a child under the age of seven or a pregnant woman is in the building, you should undertake a more extensive paint abatement program, as follows:

A. Remove children, pregnant women, pets and adults with heart or lung conditions and do not allow them to return until the site has been cleaned.

B. Make sure there is plenty of ventilation and install a window exhaust fan. Air conditioners are not effective.

C. Wear a National Institute fo Occupational Safety and Healtl (NIOSH)-approved respirator. Wear disposable garments that should be bagged sealed and left at the work site each day then thrown away at the end of the job Workers should also wear goggles anc rubber gloves.

D. Upon leaving the site, wash hands and face thoroughly before eating, anc bathe and wash hair before interacting with family members. No food, smoking or beverages in the work area.

E. Build breaks into the work schedule, to reduce overall lead exposure.

F. Remove all portable items — rugs, furniture, drapes, decorations — from room. Seal permanent fixtures securely with plastic sheeting and tape.

G. Work on one area at a time, sealing the area off from the rest of the house. Cover floor with several layers of heavy gauge plastic.

H. Remove and replace trim work where heavy lead paint has been used.

I. For all non-replaceable areas, begin by scraping off the larger sections of paint to remove as much as possible in strips or panels.

J. Limit the amount of sanding and solvents. Sanding creates amounts of additional lead dust and solvents are generally toxic and highly flammable.

K. Avoid blowtorch applications unless being performed by a professional. Use heat guns only with the proper respirators and ventilation.

L. After each section is deleaded, go over all surfaces with a HEPA filtered vacuum cleaner.

M. After thorough vacuuming, wet mop all exposed surfaces using a high phosphate detergent.

N. After wet mopping the area, repeat vacuuming and then wet mop again.

O. Repaint all cleaned surfaces with lead-free paint.

P. Revacuum the newly painted area.

Q. Bag and dispose of all contaminated clothes or other materials.

R. Retest to ensure lead levels have been reduced to acceptable standards.

S. If any symptoms of lead poisoning appear, see a doctor and have blood levels checked.

These standards have been compiled from data provided by the Baltimore Department of Housing and Community Development, the Environmental Protection Agency, the National Institute of Building Sciences, the Massachusetts Department of Occupational Hygiene and the Alliance to End Childhood Lead Poisoning. Nilfisk of America manufactures a line of HEPA vacuums for small and large lead paint abatement jobs.

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ods, which require the removal of small patches of paint. The XRF instrument is expensive and requires a radiation license, but provides immediate results. XRF analysis is most useful and cost-effective when an entire building or group of buildings is being surveyed. For smaller projects, sample collection and laboratory analysis will be more accurate and economical. Compare your results to the HUD abatement action level of 1.0 milligram per square centimeter.

In industrial settings, test paint and metal content of tanks, building components, and other metal surfaces prior to cutting, welding or sand blasting. These activities can expose workers to dangerously high levels of lead. Many states and counties offer lead testing programs. Contact your local health department to see what services are available.

Controlling Lead in Water

The results of your water tests will determine which remedial actions, if any, are needed. If your water results are high, contact your regional water authority. If elevated lead levels are present throughout the water district, the authority will need to implement corrosion control methods. If the lead contamination is a local problem, you have several options. Piping systems may need to be replaced if the problem is severe. However, your lab results may show that just letting the water run for a minute results in decreased lead levels. Filtration systems can also be installed to purify water from lead contamination.

Lead Paint Abatement

If lead-containing paint is in good condition (no significant cracking or peeling), good housekeeping is the most cost-effective method of controlling lead paint dust levels. Mopping floors and wet-cleaning window components should be sufficient. However, if children reside in the building, more stringent precautions may be needed. For example, Massachusetts requires the removal of lead paint to a height of five feet and on all movable window

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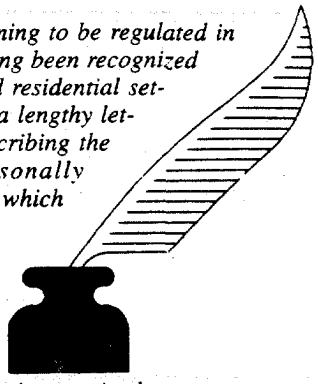
Lead Concerns Date Back To The Days Of Ben Franklin



Although lead hazards are only beginning to be regulated in the United States, exposure to lead has long been recognized as a health risk in both occupational and residential settings. In 1786, Benjamin Franklin wrote a lengthy letter to his friend, Benjamin Vaughan, describing the effects of lead exposure he had personally observed, including the following excerpt which describes exposures from paint and water sources: Benjamin Vaughan was a youthful admirer and close friend of Franklin, who was 80 years old when he wrote to Vaughan. The letter press copy of Franklin's communication is in the Library of Congress, the holograph not having survived.

The letter is reproduced here with the original capitalization and spelling.

Phil July 31. 1786

Dear Friend,

I recollect that when I had the great Pleasure of seeing you at Southampton, now a 12 month since, we had some Conversation on the bad Effects of Lead taken inwardly; and that at your Request I promis'd to send you in writing a particular Account of several Facts I then mention'd to you, of which you thought some good Use might be made. I now sit down to fulfil that Promise.-

The first Thing I remember of this kind, was a general Discourse in Boston when I was a Boy, of a Complaint from North Carolina against New England Rum, that it poison'd their People, giving them the Dry Bellyach, with a Loss of the Use of their Limbs. The Distilleries being examin'd on the Occasion, it was found that several of them used leaden Still-heads and Worms, and the Physicians were of Opinion that the Mischief was occasion'd by that Use of Lead. The Legislature of the Massachusetts thereupon pass'd an Act prohibiting under severe Penalties the Use of such Still-heads and Worms thereafter. Inclos'd I send you a Copy of the Act, taken from my printed Law books.

In 1724, being in London, I went to work in the Printing-House of M Palmer, Bartholomew Close as a Compositor. I there found a Practice I had never seen before, of drying a Case of Types, (which are wet in Distribution) by placing it sloping before the Fire. I found this had the additional Advantage, when the Types were not only dry'd but heated, of being comfortable to the Hands working over them in cold weather. I therefore sometimes heated my Case when the Types did not want drying. But an old Workman observing it, advis'd me not to do so, telling me I might lose the Use of my Hands by it, as two of our Companions had nearly done, one of whom that us'd to earn his Guinea a Week could not then make more than ten Shillings and the other, who had the Dangles, but Seven and sixpense. This, with a kind of obscure Pain that I had sometimes felt as it were in the Bones of my hand when working over the Types made very hot, induc'd me to omit the Practice. But talking afterwards with M James, a Letter-founder in the same Close, and asking him if his People, who work'd over the little Furnaces of melted Metal, were not subject to that Disorder; he made light of any Danger from the Effluvia, but ascrib'd it to Particles of the Metal swallow'd with their Food by slovenly Workmen, who went to their Meals after handling the Metal, without well-washing their Fingers, so that some of the met-

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