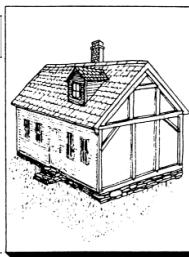


# The Hazards of Home Repair

by The Old-House Journal Technical Staff



This is a scare article. We don't want to scare you into abandoning restoration. Rather, we want to scare you into taking sensible precautions for your own well-being. (After reviewing a lot of literature on health hazards, we succeeded in scaring ourselves.) The information is not going to stop our restoration activities, but it is going to change *how* we do some things.

What follows is by no means an exhaustive survey of all physical and chemical hazards encountered in restoration work. But it does summarize some of the most common dangers that all of us face.

## The Worst: Paint Removal

Removing surface coatings probably is the single most dangerous restoration activity. There are toxicity hazards from both the chemical removers themselves and the paints being removed. For extra excitement, there is the added danger of fire.

The fumes from many, if not all, commercial paint removers are toxic to one degree or another. Severe damage to lung tissue has resulted from prolonged exposure to such fumes. Even more serious is the fact that methylene chloride—the active ingredient in many removers—can be *fatal*, even from short-term exposure.

When inhaled, methylene chloride is broken down in the body to form carbon monoxide, a toxic substance. Exposure for two to three hours can result in levels of carbon monoxide in the blood that strain the cardiovascular system. This can be quite serious for people with a weakened or diseased heart. Cases of fatal heart attacks following exposure to paint-removing substances have been reported in the medical literature.

Methylene chloride is not the only bad actor. The solvent benzene is especially

solvents through the skin. Be wary of pinhole leaks in rubber gloves: they immediately render the gloves useless. Whenever a fingertip or other part of the hand feels cool, there probably is a leak.

- Wear a respirator with a cartridge specifically designed to filter lead. An ordinary dust mask may not be good enough.

- Seal off the room being stripped from the rest of the house. *Be thorough.* Lead dust is insidious.

- Children under the age of six and pregnant women should not be in the house the entire period when paint is being stripped.

- Wear a separate set of work clothes for stripping, including full leg-and-arm protection and a different pair of shoes. Wash all these separately from the rest of your laundry. Don't walk around uncontaminated parts of the house in work clothes.

- Do not eat or smoke anywhere near the stripping site—not even after daily cleanup. And never smoke unless you've scrubbed up first.

- Dispose of paint residue every day in the outside trash. Damp-mop floors and horizontal surfaces to keep the dust down.

- Treat paint scrapings, dust, chemical residue, and cleanup materials (such as rags and water) as toxic waste. Dispose of them immediately and properly.

Some absorption of lead is inevitable, so if you're doing a lot of stripping, have your blood tested for elevated lead levels every four to six weeks.

**Fire Hazards:** Flammable paint removers (the benzol-containing types) and organic solvents (such as alcohol, mineral spirits, etc.) present special fire hazards.

There also is a potentially lethal combination in flammable remover, steel wool

in the area. An eye cup (available at any drugstore) is valuable for rinsing out the eyes and should be a standard piece of safety equipment.

**Lead Poisoning:** Lead poisoning, one of mankind's oldest environmental problems, is another hazard associated with paint removal. Physicians of ancient Greece and Rome recognized the toxic nature of lead, and lead has long been acknowledged as an occupational hazard for painters. But many people do not realize that they also are exposed to possible lead poisoning when they are removing paint.

The usual clinical symptoms of lead poisoning include dizziness, aching joints, headaches, abdominal cramps or nausea, and a bluish line on the gums. But for reasons not fully understood, adult paint-strippers with elevated blood lead levels won't always have these symptoms. Prolonged exposure to lead-paint particles can cause permanent damage to vital organs and to the central nervous system.

You have to assume that any house built before 1950 has lead-based paint. Stripping the paint by any means releases some lead, which may be absorbed by swallowing or breathing lead-containing dust.

Some methods of stripping paint carry a higher risk of lead poisoning than others. The worst is probably the use of a propane torch, which vaporizes lead in the old paint, making it very breathable. A close runner-up is paint removal by scraping and sanding, because a lot of lead-laden dust is created.

In a National Bureau of Standards report on lead-paint hazards (NBSIR-75-974), electric hot-air guns were rated

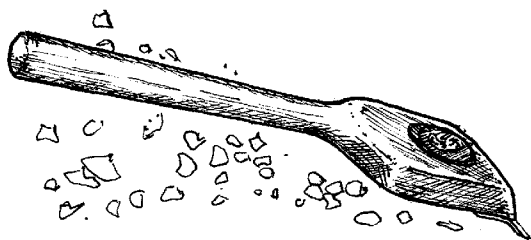
infection and then go away.

Cryptococcosis, however, can attack the nervous system, becoming cryptococcal meningitis—which is more serious but still quite treatable. The disease can go into a latency period of months or even years, but whenever it surfaces, it can be treated in an otherwise healthy person. Tests will indicate the presence of the disease only when the patient is manifesting symptoms.

**Do not burn treated wood, and don't dispose of treated-wood scraps in a place where unsuspecting people may pick it up as kindling. Severe poisoning from copper and arsenic compounds is possible.**

The danger is genuine: People with diabetes, blood disease, respiratory disease or other underlying diseases, or who are taking steroids or immunosuppressant drugs, can die from these diseases.

Because the organisms that cause the diseases are airborne, coveralls or other protective clothing and footwear should be worn when entering buildings contain-



dangerous. Benzene can be absorbed through the skin—and the presence of just 25 parts per million (p.p.m.) in the air is considered dangerous. Benzene has been linked to some forms of liver cancer and to bone-marrow failure.

Precautions to be observed in handling chemical paint and finish removers are:

- Use adequate ventilation. Preferably, work outdoors. And never use paint removers in an enclosed basement workshop. Vapors from the organic solvents are heavier than air and tend to accumulate at floor level; if you work in a cellar, these vapors can be ignited by a furnace or water heater.

If you are stripping wood inside the house, be sure to have windows open—and use a fan to disperse the chemical vapors. It may be difficult to ventilate properly in cold weather, but it is better to open the windows wide and work shivering in layers of sweatshirts than to risk breathing chemical fumes in a warm, enclosed room.

- Use rubber gloves to avoid absorbing

and electrical outlets. If you are removing paint from paneling and your steel wool contacts an electrical outlet, the resulting sparks can ignite any flammable remover spread on the adjacent woodwork. Several serious fires have been started in this way.

To avoid fire hazards, use only non-flammable removers whenever possible when you are working inside. If a particular procedure dictates the use of a flammable remover or solvent, be sure to work with the windows open and a fan blowing to avoid buildup of combustible vapors at floor level. And, again, *never* use flammable removers in the cellar.

Finally, if you must work with steel wool and flammable materials near electrical outlets, cut off the power by pulling fuses or throwing the circuit breakers.

In handling paint removers, keep the material off the skin—and especially out of the eyes. Make sure there is a source of running water at hand to immediately flush away any accidental spills on the body. If there isn't any running water, keep a large bucket of clean, fresh water



"safer" than solvents, propane torches, infrared heaters or dip-tank methods. No method came near the "perfect safety" rating, however; every method is risky.

## Pigeon Poop

Pigeon excrement in old buildings can foster fungi that cause *cryptococcosis* or *histoplasmosis*, both potentially fatal diseases of the lungs and central nervous system. Healthy people will not always contract these diseases upon contact, and, fortunately, both diseases usually are self-limiting: they act like a respiratory

ing pigeon or other bird excrement. A breathing mask that can screen out particles one micron or greater should be used, and it should be the last item removed after exit from the building.

## Wood Preservatives

In remodeling jobs, existing wood can be treated with compounds that will repel water and mildew, thereby slowing the weathering process and helping a new paint job last longer.

The preservatives used are fungicides—and usually, in fact, pesticides. Each of the chemicals used is to some degree toxic to plants, animals and humans.

Pentachlorophenol generally is consi-

dered to have the greatest human toxicity; it should never be used indoors or on unpainted wood that will come into human contact. "Penta" can be absorbed through the skin, as well as inhaled or ingested, and it's cumulative over a lifetime: your body can't get rid of it. So it's very important to wear gloves, and to scrupulously follow the label, when handling it.

Copper and zinc salts, while not as toxic to humans as penta, also are fungicides and should be handled with respect.

With any of these chemical preservatives, don't spray without special equipment, and don't breathe the dust created when you cut treated wood. Wear protective gloves, an apron and a face shield when you treat or handle wood that is still wet with a preservative solution. Immediately wash your skin with soap and water if it comes into contact with a preservative solution.

One last caution: *Do not burn* treated wood, and don't dispose of treated-wood scraps in a place where unsuspecting people may pick it up as kindling. Severe poisoning from copper and arsenic compounds is possible.

#### Other Health Hazards

Puncture wounds are an occupational hazard of restoration work—and so is the lockjaw that can result. Be sure your tetanus shots are up-to-date. Richard Byrne, a leading restoration consultant, notes that he will not allow a worker on one of his jobs unless the worker can show evidence of having received a tetanus shot within the last two years.

Finally, you don't want to inhale plaster dust, because your lungs have no way to eliminate it. In extreme cases, silicosis could result. If you are going to be generating large amounts of plaster dust during demolition work, be sure to wear a good-quality, snug-fitting dust mask. ■

*Not every possible restoration hazard is covered in this article, of course; the hazards of asbestos, perhaps the most obvious omission, will be covered in a future article.*

## Testing for Lead Paint

If a house was built before 1940, some lead paint probably is present. If there is any doubt and you want to test for lead-based paint, a simple procedure called the "sodium-sulfide test" or "spot test" can be used. It is based on the principle that a drop of sodium-sulfide solution, which is nearly colorless by itself, will turn black in contact with lead paint.

### Mixing the Solution

Local pharmacists can prepare the spot-test solution by dissolving sodium sulfide in distilled water to form a 5 to 8 percent concentration. An ounce of

glass container with one pint of distilled water. Pour Part B toner into the water while stirring with a glass or plastic stirrer. Do not expose the solution to sunlight, and keep it away from anything metal.

### Testing Procedure

Roger A. Rensberger of the Lead Paint Poisoning Project at the National Bureau of Standards describes the spot test as follows:

- Wash any dirt, grease or oil off the area to be tested, and dry it thoroughly.

- Scratch a corner of the painted surface to expose any hidden layers of paint. (The test also may be performed at the edges of cracked or chipped paint, provided that *all* layers of paint are exposed.)

- Apply a drop of the sodium-sulfide solution on the fractured paint surface with a medicine dropper. After 90 seconds, check the solution drop for color. It will turn gray to black if lead paint is present. If it remains colorless, there probably is no lead compound in the paint.

Note: The sodium-sulfide solution will not change color if the old lead paint has been covered with a non-lead paint. That's why it is necessary to scratch through all layers to expose a sample of every paint that is present.

One caution in interpreting results:

A few, uncommon forms of lead in paint will not give a color change in the spot test. Also, if the paint is dark in color, it may be difficult to observe the color change in the sodium-sulfide drop. ■

**It's important to scratch through all layers to expose a sample of every paint, because the solution will not change color if any lead paint is covered with non-lead paint.**

the solution will be enough for several dozen tests.

It also is possible to make the test solution from a photographic chemical (Kodak Sepia Toner No. 1691757). To mix the solution, use only Part B of the two-part package. Fill a clean