

# Toolbox Talks

## Airborne Contaminants Part 1

### Lead Awareness

It used to be thought that only children were exposed to lead poisoning hazards which occurred mostly from eating lead based paint chips from doors or windows in the home. This is no longer the case. Studies conducted over the past few years now suggest many adults are exposed to lead in the work place & suffer from varying degrees of lead poisoning. These studies have also shown that eating lead based paint chips is not the only - or even the primary- way for lead to enter the body. Workers that use lead based paints, or work with items that may contain small amounts of lead, may be creating lead dust & lead fumes that settle on their clothing, furniture, carpets, drapes, & contaminate the air. Lead (Pb) is a heavy metal that can be inhaled or ingested/swallowed, & once inside the body tends to remain in tissue & organs. Eventually, after repeated exposures, lead build-up becomes toxic.

You can be exposed to lead in a variety of ways, including:

- Breathing workplace air (lead smelting, refining, & manufacturing industries)
- Eating lead-based paint chips
- Drinking water that comes from lead pipes or soldered fittings
- Breathing or ingesting contaminated soil, dust, air, or water near waste sites
- Breathing tobacco smoke
- Eating contaminated food grown on soil containing lead or eating food covered with lead containing dust

As exposure to lead continues, the amount stored in your body may increase. Even though you may not be aware of any immediate symptoms of the disease, the lead stored in your tissues can be slowly causing irreversible damage. Damage occurs to individual cells, then to your body's organs, & eventually your entire body system. The exposure can damage the nervous system, kidneys, immune system, reproductive system, & possibly cause cancer. Most of the people that work directly with lead recognize that it is hazardous & take precautions to protect themselves. It is the workers that are exposed to lead & are not aware of it that are at most risk.

### How You Can Protect Yourself

Lead exposure can be maintained at acceptable levels if the following practices are followed:

- Use an exhaust ventilation system where provided.
- Use a respirator that will properly protect you.
- Keep the worksite clean.
- Never use compressed air for cleaning.
- Eat, drink, or smoke in areas away from the worksite.
- Keep all lunch boxes & coffee cups away from the work area.
- Use protective clothing.
- Store street clothes separate from work clothes.
- Never wear contaminated clothing home.
- Follow all legislation set forth by the EPA.

### New Legislation

On April 22, 2010 new legislation was put forth for the regulation of handling & working with lead paint & lead products. The EPA (Environmental Protection Agency) now requires remodelers, carpenters, plumbers, heating & air-conditioning workers, window installers, & others to be trained & qualified, or it will be illegal for them to work in houses built before 1978, when lead-based paint was banned.

Under the new law, the EPA will require contractors to take precautions & get certified or potentially face a fine of up to \$37,500 per occurrence per day. The law applies to anyone who accepts payment for work in buildings constructed before 1978. It applies to any job that disturbs more than six square feet of space, & includes any window replacement.

The EPA estimates that 236,000 renovators nationwide need to get training. Most contractors, between 80-90%, aren't even aware of this rule. But the lack of awareness isn't the main problem for contractors. It's the cost. Companies or individuals who do work have to pay a \$300 registration fee with the EPA, on top of taking a \$200 certification course. Then there are added costs for protective plastics & vacuums. States have the option of enforcing the new regulations on contractors for the EPA & make them even stricter. So far, no states in the Northeast have taken that on.

### **The work practices contractors must follow include these 3 simple procedures:**

**1. Contain the work area.** The area must be contained so that dust & debris do not escape from that area. Warning signs, as shown below, must be put up & plastic or other impermeable material & tape must be used as appropriate to:

- Cover the floors & any furniture that cannot be moved.
- Seal off doors & heating & cooling system vents.
- For exterior renovations, cover the ground &, in some instances, erect vertical containment or equivalent extra precautions in containing the work area.

These work practices will help prevent dust or debris from getting outside the work area.

**2. Avoid renovation methods that generate large amounts of lead-contaminated dust.** Some methods generate so much lead-contaminated dust that their use is prohibited. They are:

- Open flame burning or torching.
- Sanding, grinding, planing, needle gunning, or blasting with power tools & equipment not equipped with a shroud & HEPA vacuum attachment.
- Using a heat gun at temperatures greater than 1100°F.

There is no way to eliminate dust, but some renovation methods make less dust than others. Contractors may choose to use various methods to minimize dust generation, including using water to mist areas before sanding or scraping; scoring paint before separating components; & prying & pulling apart components instead of breaking them.

**3. Clean up thoroughly.** The work area should be cleaned up daily to keep it as clean as possible. When all the work is done, the area must be cleaned up using special cleaning methods before taking down any plastic that isolates the work area from the rest of the home. The special cleaning methods should include:

- Using a HEPA vacuum to clean up dust & debris on all surfaces, followed by
- Wet wiping & wet mopping with plenty of rinse water.

When the final cleaning is done, look around. There should be no dust, paint chips, or debris in the work area. If you see any dust, paint chips, or debris, the area must be re-cleaned.

### Warning Signs

In areas where there is lead, signs must be posted bearing the legend:

**WARNING**  
**LEAD WORK AREA**  
**POISON**  
**NO SMOKING**  
**NO EATING**

Yes, exposure to too much lead is dangerous, it does build up in the body, & may gradually harm vital organs. **Despite these dangers, there is no need to panic if you use a healthy dose of caution & take advantage of all of the available means to protect yourself; you can work with lead in complete safety.** But if you are not sure about what you need to do, discuss your concerns with your supervisor.

# Toolbox Talks

## Airborne Contaminants Part 2

### Know the Risks of Asbestos

Some workplace hazards have an immediate effect, causing an injury or illness you can't miss. Others, such as asbestos, take many years to do their damage.

Asbestos is a naturally-occurring mineral used for fireproofing & many other applications. It is mined from rock in the form of a fiber that can be spun or woven into fabric & other products. Its many qualities led to widespread use before the serious health effects were common knowledge. Asbestos doesn't burn; it's flexible, strong, resistant to chemical damage, an insulator against heat, & inexpensive.

Historians say asbestos was used first about 4,500 years ago in bricks & pottery. Its first application as a fire retardant was about 2,500 years ago. The first historical indication of asbestos-related lung disease was in the first century AD among slaves weaving the material into robes & burial garments.

By the late 1800s asbestos was being used widely for roofing, pipe covering, insulation, & textiles. After the Second World War, the amount of asbestos used, & the diversity of products, took a jump. Although asbestos has since been banned for many uses, it remains present in older construction, fireproofing, & insulation products. It causes no harm as long as it is contained, but if it is disturbed or disintegrating, asbestos can cause chronic & fatal lung disease.

That's why you need to know something about asbestos, particularly if you work in construction, maintenance, or demolition. Off-the-job renovation of houses, antiques, or vehicles can also put you at risk. Asbestos is usually mixed with other materials, for example, some floor tiles contain a small amount of asbestos. The mineral can be found in sprayed fireproofing, sprayed insulation, fire doors, pipe & boiler wrap, building insulation in walls & ceilings, cementing compounds used in plumbing, older shingles & siding, & brake linings & clutch pedals. When asbestos or asbestos-containing products break apart, they release tiny fibers that can be breathed in. These fibers lodge in the lung where they set off serious illness.

**Asbestosis is a chronic respiratory condition. The inhaled fibers irritate the lung tissues & cause scarring. Symptoms include shortness of breath & a crackling sound in the lungs when inhaling. The disease is disabling & usually fatal. Workers who have renovated or demolished buildings containing asbestos may be at risk.**

Lung cancer is the cause of most deaths from asbestos exposure. Mining, milling, manufacturing, & use of asbestos & asbestos products puts the worker at risk. Symptoms include a cough, change in breathing, & shortness of breath. Smoking in combination with asbestos exposure increases risk of lung cancer.

Mesothelioma is a rare form of cancer, usually occurring in the thin membrane lining of the lungs, chest, or abdomen. It is almost always linked to asbestos exposure. At risk are miners & textile workers.

Operations such as the following release asbestos fibers from asbestos-containing materials:

▫ drilling    ▫ grinding    ▫ buffing    ▫ cutting    ▫ sawing    ▫ striking

To protect yourself from exposure, you need to know where asbestos is likely to be found in the facility. Head warning signs & markings. If in doubt, ask your supervisor or EHS professional before attempting to replace a fallen ceiling tile or crumbled insulation. If something is identified as asbestos in the facility & you see some damage to it, report it immediately.

### Is Fiberglass a Health Hazard?

Everyone has heard about the association between lung cancer & asbestos. Since some forms of asbestos are similar in appearance to fiberglass fibers, many people wonder if handling fiber-glass could also result in the development of cancer or other serious health hazards. Scientists have made over 400 studies of fiberglass in an attempt to answer this question. The conclusion is that it will not, because its properties are very different from asbestos. OSHA confirmed these findings in 1991 when it decided to regulate fiberglass as a nuisance dust, & not as a cancer causing agent.

The principal difference between glass fibers & asbestos fibers is their size & the way the fibers break down. Glass fibers are cylindrical *single* fibers that can never split lengthwise; they only break across the fiber. As they break, they form tiny fragments that no longer have the properties of a fiber. Asbestos fibers, on the other hand, are always present as bundles, never as a single fiber. Asbestos fibers fracture only *lengthwise* when the bundles break apart, releasing thousands of long tiny fibers. When these are inhaled, they become trapped in the small sacs of the lungs known as alveoli. Because asbestos fibers are long, sharp, & irritating to lung tissue, the alveoli close up & trap them in the lungs. This eventually results in the lungs becoming hard, fibrous, & inelastic. Over time, the continued irritations cause cancer in some individuals. Because fiberglass breaks *across* the fiber to form tiny fragments, the tissue response is very different when these particles are inhaled. When fiberglass fragments are inhaled & deposited in the small air sacs of the lung, the alveoli do not close up & trap the particles. The particles are expelled from the alveoli & there is a rapid clearance of fiberglass dust particles from the lungs.

However, fiberglass presents other problems—such as irritations of the eyes, skin, or respiratory tract. The mechanical action of the fibers scraping against skin may cause a condition known as dermatitis. To protect yourself, wear long sleeve shirts & pants to keep the fibers off your skin, & wear clean clothes every day. Gloves & eye protection may also help. Use soap & warm water to remove any fibers that you do get on your skin. Dust is produced when mat or cloth is rolled out, where chopper guns are used, & in finishing operations where flashing is removed or sanding occurs. So always wear a dust mask in these areas to help avoid inhaling glass fibers.

The primary hazard associated with fiberglass is the chemicals used during the fabrication or lay up process. Styrene monomer, or raw resin, is catalyzed with an organic peroxide; the most common is *methyl ethyl ketone peroxide*. *Cobalt* compounds, often used as accelerators, can result in allergic dermatitis or asthma like conditions. *Acetone* is a central nervous system depressant used for clean up of tools, utensils, & spray equipment. The important thing to remember about these chemicals is that they are health hazards when inhaled; proper respiratory equipment must be worn & adequate ventilation provided. You should also be aware that these chemicals can form flammable or explosive concentrations at normal room temperatures, so proper handling & ventilation is essential.

Working with fiberglass material should not be dangerous *if* you are properly trained, & *if* you use appropriate protective equipment. Be sure to do so!