

How Do I Know If the Construction Job I'm Working on Is Hazardous?



To figure out what the hazards of a particular construction job may be, ask these questions and check the chart on the following pages. The chart also suggests important control measures that can be taken to protect workers.

1 Is there a lot of dust in the air?

The air on construction sites, especially during demolition work, can contain *asbestos, silica, cement dust, fiberglass and wood dust*. Most of these dusts can irritate your eyes, nose and lungs. Some can cause bronchitis, asthma and even cancer.

2 Do any of the materials you work with contain solvents?

Varnishes, wood sealers, paints, thinners, adhesives and many other construction materials contain solvents. They can get into your body through your skin or when you breathe the vapors. Solvents can give you headaches and make you dizzy. If you work with them for many years, they may damage your liver or nervous system.

3 Do you use any materials that contain polyurethane or epoxy resins?

Many construction materials — like *adhesives, sealants, waterproofing agents, floor and wall coverings* — are made up of isocyanate (the raw material for polyurethane) or epoxy resin systems. The chemicals in these systems can get into your body through your skin, or when you breathe the mists or vapors. They can irritate your nose, eyes, throat and lungs. Some people may develop an allergic reaction, similar to asthma.

4 What are other trades doing nearby?

In construction work, someone else's work may produce welding fumes, chemical vapors, asphalt smoke or other toxic hazards. These can affect everyone in the vicinity. Be aware of what other trades are doing, and protect yourself.



5 Are you exposed to cigarette smoke?

If you or someone else smokes on the job, you're being exposed to many more toxic substances. Cigarette smoke contains over 4,000 chemicals.

Construction Hazards

METALS Dusts & Fumes	Source	Health Effects
CADMIUM, CHROMIUM, COPPER, ZINC, MAGNESIUM	Welding; drilling, cutting and sawing pipes; scraping rust or coatings.	Short-term: Metal dusts can be irritating to skin, nose, eyes and lungs. Effects of fumes differ depending on metal (see MSDS). Some metals (such as zinc, copper, and magnesium) cause metal fume fever (flu-like symptoms with fever, nausea, chills and muscular aches and pains). Long-term: Depends on metal (see MSDS). Cadmium and chromium can cause cancer.
LEAD	Cable splicing, demolition, remodeling, painting, pipefitting, plumbing, roofing, sheetmetal, iron work, welding on lead or surfaces with lead paint or coatings; brass fixtures may release lead.	Short-term: Effects are very rare. If exposure is high, symptoms similar to long-term effects may occur. Long-term: Damage to brain and nerves (tremors, muscular weakness, lack of coordination), damage to reproductive systems (men and women), stomach problems, anemia, damage to kidneys.

METALS Dusts & Fumes

CONTROLS FOR METALS	
METAL DUSTS	<p>Wear the correct respirator if required (not a paper dust mask). See page 34.</p> <p>Vacuum or wipe off surfaces using wet mop or rags. (Avoid sweeping and blowing away dusts to clear surfaces.)</p> <p>Keep work materials wet where possible when sanding, grinding, sawing, etc.</p> <p>Don't drink, eat or smoke in work area.</p> <p>Wash hands before eating and before breaks.</p> <p>Change clothing and, where possible, shower before going home.</p> <p>Use local exhaust ventilation if not working in an open area.</p> <p>Isolate dusty operations such as sawing and sanding to reduce worker exposure.</p>
METAL FUMES	<p>Avoid welding on toxic metals or coatings; brush or scrub off coatings first.</p> <p>Natural ventilation is often adequate in open areas.</p> <p>Position yourself so that fumes don't blow into your face.</p> <p>Use local exhaust ventilation in indoor areas or confined spaces.</p> <p>Wear the correct respirator when ventilation or other controls are not possible.</p> <p>Lead: Shower and change clothes to avoid bringing lead home to your family.</p>

Construction Hazards

SOLVENTS	Special Hazards	Source
BENZENE	Causes leukemia.	These solvents may be found in: Varnishes Finishes Wood sealers Thinners Paints Adhesives Cleaning and degreasing solutions Other products
METHYLENE CHLORIDE	May cause cancer.	
TOLUENE	Liver and kidney damage at high levels. May cause birth defects.	
TRICHLORO-ETHYLENE	Liver damage. May cause cancer.	

SOLVENTS

Health Effects	CONTROLS FOR SOLVENTS
<p>Most solvents you work with, including acetone, TCE or other degreasers, affect your health in similar ways:</p> <p>Short-term: Most organic solvents affect the brain the same way drinking alcohol does. Overexposure causes symptoms resembling drunkenness, including headaches, "feeling high," nausea, dizziness, and at high levels, loss of coordination. Other short-term health effects are eye, nose and throat irritation, and skin rash.</p> <p>Long-term: Repeated, frequent overexposure over months or years may cause long-lasting damage to the central nervous system (the brain and nerves).</p>	<p>Where possible, substitute materials that are less toxic.</p> <p>Use ventilation to remove vapors.</p> <p>Wear the correct respirator (refer to MSDS).</p> <p>Wear proper protective clothing, correct gloves, goggles, face shields.</p> <p>No smoking. No open flame nearby. Vapors can build up quickly and become extremely dangerous in confined spaces.</p> <p>Follow OSHA confined space entry procedures where required. (These include pretesting atmosphere before entry; mechanical ventilation of space; respirators; rescue person.) Many fatalities occur in confined spaces.</p>

Construction Hazards

OTHER CHEMICALS	Source	Health Effects
EPOXY RESINS	Impermeable paint, primer for hardwood floors, surface paint and adhesive for concrete walls..	Short-term: Irritation of eyes, nose and throat. Long-term: Asthma.
POLYURETHANES (ISOCYANATES)	Seam sealers, polyurethane insulation, electrical wire coatings.	Short-term: Irritation of eyes, nose and throat. Long-term: Asthma, other allergic lung diseases. May cause cancer. If workers get sensitized to these chemicals, they will become seriously ill at the slightest exposure.
COAL TAR PITCH	Roofing, road work.	Short-term: Irritation of eyes, nose, throat and lungs. Burns, skin irritation, increased sensitivity to sunlight. Long-term: Cancer of the lungs, skin and other parts of the body.

OTHER CHEMICALS

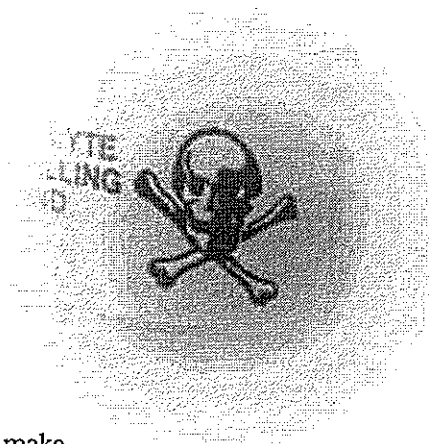
CONTROLS FOR OTHER CHEMICALS	
EPOXY RESINS AND POLYURETHANES	<p>When possible, use one-component products where chemicals are already polymerized.</p> <p>When spraying, use the correct air-supplied full face respirator (see MSDS).</p> <p>Avoid skin and eye contact.</p> <p>Wear safety goggles and gloves.</p> <p>Get proper training.</p> <p>Never smoke or use an open flame around these chemicals, which are fire and explosion hazards..</p> <p>DANGER! If you smell it, get out!</p>
COAL TAR PITCH	<p>Where possible, substitute less harmful materials such as coal tar enamel.</p> <p>Keep melt temperature as low as possible.</p> <p>Install devices to reduce exposure when loading.</p> <p>Keep kettle covers in good shape and closed whenever possible.</p> <p>Wet down old pitch roofs before and during tear-offs.</p> <p>If dust is high, wear the correct respirator.</p> <p>Wear eye protection.</p> <p>Protect the skin, even in hot weather.</p> <p>Laundry work clothes often.</p> <p>Wash up before eating, smoking, drinking and going home.</p> <p>If soap and water are not available use waterless cleaner, not gasoline.</p>

How to Make the Job Safer

There are different ways to reduce chemical hazards on the job. The best ways are to stop using the most toxic materials, or to design the work and equipment so that no one is exposed to toxics.

USE SAFER CHEMICALS.

Sometimes you can use a substance that is less toxic. For example, many of the materials you work with contain solvents. Water-based or alcohol-based solvents are usually safer than "chlorinated hydrocarbons" (solvents with chlorine in them) and "aromatic hydrocarbons" (like toluene and xylene). But always check out the hazards of the substitute to make sure it is really less hazardous.



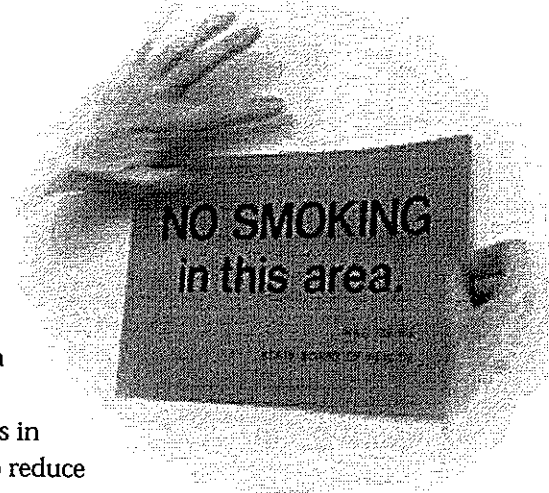
DESIGN THE JOB AND EQUIPMENT TO PREVENT EXPOSURE TO TOXICS.

It's better to prevent the hazard from ever reaching a worker than to rely on protective clothing or gear. For example, local exhaust ventilation (a "sucker" that pulls dust or welding fumes away right at the source) gets rid of a toxic substance before anyone has a chance to breathe it.

ENFORCE SAFETY RULES.

Work rules and procedures can help cut down on your exposure to toxics. For example, keeping the workplace clean can limit the amount of dusts in the air and help reduce other safety hazards.

Workers should never eat or smoke in the work area. California's law prohibiting smoking in indoor workplaces eliminates exposure to secondhand smoke. Some employers and local governments also ban smoking in outdoor areas.



GIVE WORKERS PERSONAL PROTECTIVE EQUIPMENT IF NECESSARY.

Goggles, gloves, respirators and other personal protective equipment can help protect you against toxic hazards on the job, but they don't usually protect you completely. They shield you from hazards rather than eliminating them. That's why you should rely on personal protective equipment only if there is no better way to control the problem.

The chart on pages 12-19 has details on how best to deal with some specific substances.

Use the Right Respirator



Respirators can be hot and uncomfortable. You don't want to wear one if you don't have to. They also aren't as effective as some other kinds of protection. But if there is no way to remove a harmful material from the air you are breathing (by using a safer chemical, better ventilation or other controls), you will need to use a respirator to protect yourself. Here are some guidelines to help you decide if you're getting the right protection.

1 Your employer must set up a respiratory protection program.

If you need to use a respirator on the job, Cal/OSHA requires your employer to set up a "respiratory protection program." The program should help you choose the right respirator, make sure it fits, and get training about how to use it and take care of it.

2 No one respirator is right for all kinds of hazards.

You can check the label on the respirator or on its cartridge to find out what hazards it protects you from. Make sure it is approved by "NIOSH" for protection against the hazards you're working with.

CAUTION: If you have heart disease or respiratory problems, you should check with your doctor before using a respirator.

- **DUST MASKS** protect *only* against wood dusts and other dusts that are not very toxic. They *don't* protect you against spray mists or toxic dusts like asbestos, silica or lead. They also will *not* protect you against chemical vapors or secondhand smoke. If you use a dust mask, make sure it has a double strap and a good nose grip. *Never* rely on single strap masks.



- **DUAL CARTRIDGE RESPIRATORS** protect against various hazards. These respirators use pairs of filters or cartridges. Different filters and cartridges protect against different hazards.

Use the right **MECHANICAL FILTER** for dusts, metal fumes and mists.

Use the right **CHEMICAL CARTRIDGE** for toxic gases and vapors from solvents or paints.

Use a **COMBINATION RESPIRATOR** for all the above — dusts, fumes, mists, gases and vapors. Combination respirators are available for any set of inhalation hazards.

- **AIR-SUPPLIED RESPIRATORS** give you fresh air from a tank or through an airline. Use them when you work in a confined space where there is not enough oxygen to breathe.



CAUTION: If there is a rip or tear in the mask, it will not protect you from any hazards.

3 Make sure your respirator fits properly.

No one respirator will fit everyone. If your respirator does not fit properly on your face, it will leak. You cannot tell if it fits by how it feels. The law requires your employer to test the fit to make sure no vapors or dusts can leak in around the edges.

4 Make sure your respirator is maintained properly.

Your respirator must be kept clean, and the cartridges or filters should be changed regularly. A respirator with a worn-out cartridge is worse than no respirator at all. (It's not protecting you, but it's making it harder to breathe.)

CAUTION: If you have a beard, it is impossible to get a proper fit with most respirators.



"Just my brothers work there. It's my father's shop. He never wears a respirator. We never wore respirators. Only those little paper dust masks. We just assumed that was enough protection. My father has been in the business all his life and he's healthy as a horse. But I got asthma and the doctor says it's from the fumes. We should have paid more attention to those MSDS's."

Tips for Taking Action

Once you have decided to try to improve health and safety on the job, you need to do some planning. Here are some tips for coming up with a realistic action plan.

Get support of co-workers.

No matter whether you're trying to get your employer to supply respirators that fit, install a ventilation system or establish an outdoor workplace smoking policy, the first and **most important** step to take is to get the support of your co-workers.

Change takes time.

It takes time to convince co-workers that it's worth taking some action to eliminate a hazard. In many workplaces, people have found it useful to:

- Seek help from the union (or consider organizing one).
- Take a survey of the workforce to document the symptoms and illnesses that seem to be related to each worker's job.
- Identify other workers who are concerned.



"Basically, you come to your job to work—not to die, not to get hurt. I missed a year and a half of work because some supervisor was stupid. And I followed his instructions instead of following my own common sense. During the year and a half I was out of work, I lost my marriage, I lost my house, I lost a whole lot besides my pay. Because when you're disabled, you lose your dignity, your lose your money, you lose everything."