

# Removing Graffiti Safely



## About This Booklet

This is a booklet for workers who use chemicals to remove graffiti. Many workers in California use graffiti removal products daily. They may be painters, laborers, custodians, bus cleaners, phone booth cleaners, or others. Some workers remove graffiti as one small part of their jobs, but others do so for the entire work day. The products used to remove graffiti, and the job conditions, can be hazardous to your health and safety.

This booklet will help you understand these hazards. It was prepared by the Occupational Health Branch of the California Department of Health Services and the Labor Occupational Health Program at the University of California, Berkeley.

### What's Inside?

- Chemicals Can Be Hazardous
- Health Effects of Chemicals
- Chemicals in Graffiti Removers
- Your Right To Know
- Other Hazards
- Respirators
- Personal Protective Equipment
- Cal/OSHA
- Information and Help
- Checklist

## One Worker's Story

A school custodian developed occupational asthma from using cleaning products to remove graffiti. He had been using these products up to four hours every day. Sometimes he worked in tight spaces, such as bathroom stalls and stairways, where there was not much airflow. After a while, he began to have symptoms such as wheezing, coughing, and tightness in his chest.

Now that he has asthma, the custodian cannot use any graffiti removal product without getting very sick. He can no longer work removing graffiti. He had never been told what chemicals were in the cleaning products, their health effects, or how to use them safely.

## Chemicals Can Be Hazardous

Most products used to remove graffiti contain harmful chemicals. These products may be liquids or solids. Liquids include cleaning solutions in bottles, in sprays, or in special towels that come pre-soaked with chemicals. Solids used to remove graffiti are usually in the form of a paste.

## How Chemicals Get Into Your Body

Chemicals can get into your body in four main ways:

### Breathing (Inhalation)

Chemicals can get into the air from a product you are using. You then breathe their vapors or fumes. You may be breathing chemicals even if you can't see or smell them.

From your lungs, chemicals can get into your blood. They then travel to many organs in your body, where they can cause damage.

You may remove graffiti in confined areas with little air movement, such as inside buses. It is easier for chemicals to increase to a harmful level in the air inside an enclosed area.





## Skin

You may accidentally get chemicals on your skin. Even if you wear gloves or protective clothing, they can get soaked with chemicals, which can get through to your skin. Chemicals can also get onto your skin when you are removing wet gloves or clothing.

Chemicals can be absorbed into your body through your skin. Some chemicals go through the skin very fast, and others slowly. Your blood then carries the chemicals throughout your body. Some chemicals can hurt your skin itself. They can cause irritation or serious burns.

## Eyes

Your eyes can be seriously injured by chemicals. Chemicals may splash into your eyes, or you may accidentally touch your eyes when you have chemicals on your hands. Chemical vapors in the air can also harm your eyes. If you remove graffiti outside and it's windy, the wind can blow chemicals into your eyes. If you remove graffiti overhead, chemicals can drip into your eyes.



## Swallowing (Ingestion)

Sometimes people swallow chemicals that have gotten into their food or drink, or onto their cigarettes. You may swallow chemicals if you eat, drink, or smoke without washing your hands.

### Can You Tell By the Smell?

**NO!** Don't depend on smell to tell you if a product is safe or unsafe. Many chemicals are very toxic even though they have no odor or smell good. Other chemicals have a strong smell but are fairly harmless.

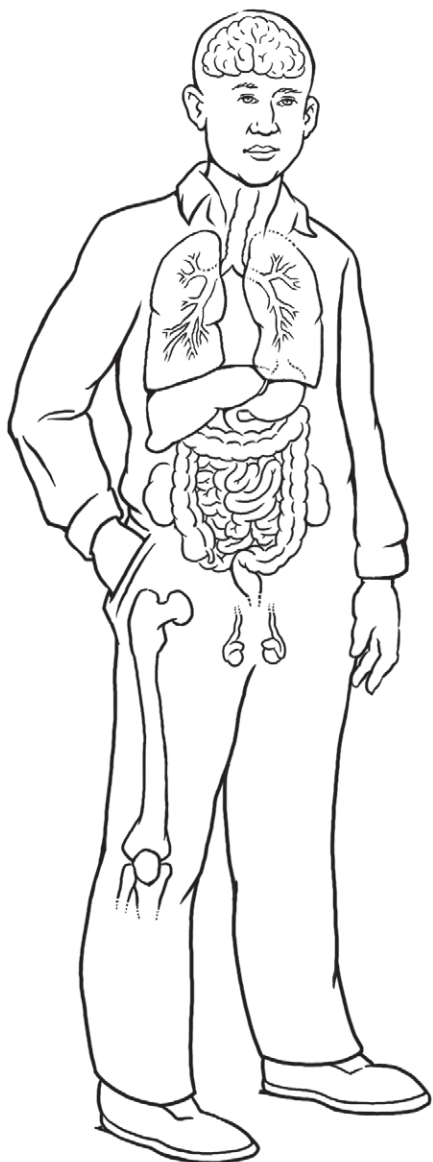
Some people have a better sense of smell than others. Also, you may get used to the odor. You may lose your ability to smell certain chemicals if you are around them for a while.

# What Can Chemicals Do To You?

Many chemicals can hurt your body. With some chemicals, a small amount can harm you. These chemicals are said to be very toxic. With other chemicals, it takes a much larger amount to harm you. These are said to be less toxic.

Effects of chemicals can be either **short term** or **long term**. Some chemicals cause symptoms right away (like a burn or a cough). Other chemicals damage your health slowly. You can use them for months, or even years, before symptoms show up.

Graffiti cleaners can harm many different parts of your body, depending on the particular chemicals they contain. Here are a few examples. Some of the symptoms listed here may be warning signs of more serious health problems. If you feel these effects, get medical advice.



**Brain and Nervous System.** Vapors of some chemicals can cause headache, dizziness, drowsiness, lack of coordination, or nausea.

**Eyes.** Some chemicals can burn your eyes or cause redness, watering, or itching.

**Skin.** If you get certain chemicals on your skin, they can cause redness, itching, dryness, cracking, flaking, or burns.

**Nose, Throat, and Lungs.** Some chemical vapors can cause a runny nose, scratchy throat, coughing, or shortness of breath. A few can cause asthma and other allergies. If you become allergic to a particular chemical, you may have an allergic reaction every time you use it.

**Blood-Forming System.** One class of chemicals, ethylene glycol ethers, can damage the bone marrow, where blood cells are formed. They can also damage the red blood cells themselves. This can cause anemia.

**Liver and Kidneys.** A few chemicals can cause permanent liver and kidney damage.

**Reproductive System.** Some chemicals can damage eggs and sperm, or cause birth defects. This is not common.

**Cancer.** Certain chemicals, such as methylene chloride, can cause cancer.



## Some Dangerous Chemicals in Graffiti Removers



**D-limonene.** Can cause eye, nose, and throat irritation, skin allergies, and dermatitis.

**Ethylene Glycol Ethers.** Can damage sperm, cause birth defects, and harm the blood-forming system. Easily absorbed through the skin. Can also cause nose and throat irritation. Other glycol ethers are much less harmful.

**Isocyanates.** Found in some anti-graffiti coatings. May cause nose and throat irritation. Powerful cause of asthma and skin allergies.

**Methylene Chloride.** Can cause cancer. Can cause eye, nose, throat, and skin irritation, headache, loss of balance, and other brain effects. High exposure can cause liver and kidney damage. Changes to carbon monoxide in the blood, lowering the blood's ability to carry oxygen.

**Methyl Ethyl Ketone (MEK).** Can cause eye, nose, and throat irritation, headache, loss of balance, and other brain effects.

**N-methylpyrrolidone.** Suspected to cause reproductive problems and harm unborn children. Skin contact can cause swelling, blistering, and burns.

**Toluene.** Can cause eye, nose, and throat irritation, skin irritation and dermatitis, headache, loss of balance, and other brain effects.

## Your Right To Know

How can you find out what chemicals are in a product? According to California health and safety regulations, you have the **right to know** about the chemicals you work with. Your employer must, by law, give you information about these chemicals, their health effects, and how to protect yourself.

Whenever you work with chemicals, your employer must give you training about their hazards and must make sure that all containers are labeled with chemical names and hazard warnings. Your employer must also have a **Material Safety Data Sheet (MSDS)** for each chemical product used. An MSDS gives information about the ingredients and hazards of the product. You have the right to see the MSDS and to make a copy.

Unfortunately, MSDSs can be hard to read and may have incomplete or inaccurate information. Sometimes manufacturers don't list all ingredients because they consider them "trade secrets." Also, MSDSs can quickly get outdated because product formulas change. Make sure you have the most recent MSDS.

For other sources of information on chemical products, see "Information and Help" on page 9.

## Other Hazards

Besides chemicals, you can face other hazards when removing graffiti. Here are a few.

**Repetitive Stress Injuries (RSIs).** When you remove graffiti, you may spend a lot of time standing, bending, reaching, scrubbing, and repeating the same motions over and over. These activities can cause fatigue, pain, numbness, or tingling in your hands, wrists, elbows, shoulders, neck, back, feet, and legs.

Over time, you may develop a painful RSI, which can even cause permanent disability.

You can often prevent RSIs by using better equipment, such as longer handles or padded grips. Also try working in a better position or taking frequent breaks to stretch.



**Fall Hazards.** Graffiti is often located on the sides of buildings, on freeway overpasses, or in other areas that are hard or dangerous to reach. Even working on a ladder can pose a serious fall hazard.

Sometimes you may need fall protection. This can include another person working with you, a safety belt, harness, and lifeline.

You must be trained to work with fall protection equipment before starting the job. State regulations also require your employer to use only approved equipment and to keep it in good condition.

**Lead.** Before you remove graffiti from painted surfaces, your employer should test the underlying paint to find out if it contains lead. If lead is present, it is illegal to disturb the paint without special precautions and special training. Some removal methods, such as sanding, soda blasting, and pressure washing are especially dangerous.

**Noise.** To remove graffiti you may use soda blasting or hot water pressure washing. The high noise levels from these machines can damage your hearing. You may not notice hearing loss right away because it usually happens slowly over a period of time. You should wear hearing protection if you work in noisy conditions.

**Heat.** Working in hot temperatures puts you at risk of heat stroke and related problems. Your employer should train you in how to respond to the symptoms of heat-related illness. There should always be enough drinking water available.

# Understanding Respirators

For some graffiti removal work, you may need a respirator. A respirator is a face mask that provides you with clean air when you work around chemicals. If your respirator fits well and works right, it reduces the chemical vapors and dusts that you breathe.



HALF-MASK



FULL-FACE

If you need a respirator for graffiti work, you will probably be given one that filters air with cartridges. These respirators come in two styles. A half-mask respirator just filters the air. A full-face respirator also provides eye protection.

Cartridges come in different colors. Different colored cartridges protect you from different chemicals. For graffiti removal, you probably will use a black organic vapor cartridge.

# Wearing a Respirator

The law requires your employer to give you a respirator if you need one for the job. The employer must supply the right type of respirator and cartridge.

If you are given a respirator to use, the law says you must also get:

- ◆ A medical evaluation. Respirators are not safe for some people. They can make your lungs and heart work harder. This can be dangerous for anyone with breathing problems or heart trouble.
- ◆ A fit test. A trained person must make sure your respirator is the right size, fits tightly to your face, and doesn't leak. Facial hair can sometimes prevent a good fit.
- ◆ Training. Your employer must explain what type of respirator you have been given, what it does, how to put it on, and how to clean it.



## Are Dust Masks OK?

**NO!** A dust mask doesn't protect you from chemical vapors at all. Chemicals go right through the mask.

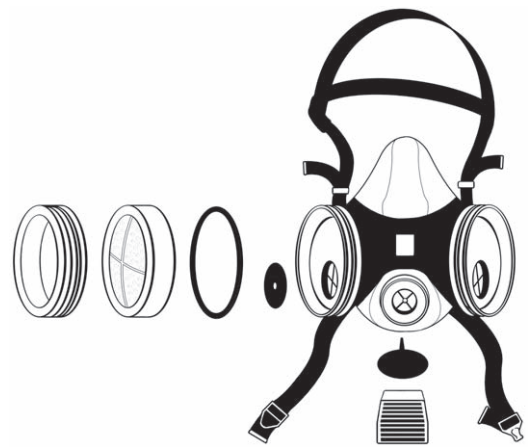
If the vapors are hazardous, you need a respirator with chemical cartridges.



## Caring for Your Respirator

Know how to take care of your respirator and cartridges. For example, they:

- ◆ Shouldn't be stored in direct sunlight, in a toolbox, or anywhere they could be crushed.
- ◆ Should be replaced when they are damaged or worn out.
- ◆ Should be cleaned before re-use, especially if they have been in contact with chemicals.



PARTS OF A RESPIRATOR

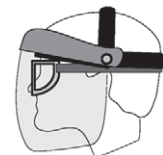
## Personal Protective Equipment

In addition to respirators, other personal protective equipment (PPE) can help keep you safe when you work. Because graffiti removal is done in many different ways, your employer should study each job and **must give** you the right PPE. You may need:

**Eye Protection.** If you spray or pour chemicals you should wear chemical goggles, not just safety glasses. Goggles seal the whole area around your eyes. Safety glasses only shield your eyes from objects like particles or dust.



**Face Protection.** A face shield can give even more protection to your face when spraying chemicals. Wear the face shield over your chemical goggles.



**Hand Protection.** Use special gloves that protect your hands against chemicals. Many chemicals can go right through ordinary gloves, such as latex, household, cotton, and leather gloves. Your employer must give you gloves that provide proper protection for the chemicals you are using. Change gloves when they become torn, cracked, soaked, discolored, or worn out.



**Hearing Protection.** Soda blasters and pressure washers produce high noise levels. You may need to use earplugs or other hearing protection. Your employer must train you on the proper way to use hearing protection. Hearing protection that doesn't properly seal your ears won't protect you from the noise.



Depending on where and how you are working, your employer may also need to provide:

- ◆ Safety shoes
- ◆ Fall protection (safety belt, harness, and lifeline)
- ◆ Coveralls
- ◆ An emergency eye wash
- ◆ A hard hat
- ◆ Training in how to use your PPE.



# What Is Cal/OSHA?

California law says that every worker has the right to a safe and healthy workplace. The Division of Occupational Safety and Health, usually called Cal/OSHA, is the state agency that enforces this law. It covers nearly every worker in California, including those in private industry and those who work for state, county, and city governments.

Cal/OSHA has many workplace health and safety regulations, which are called standards. For example, there are standards that require employers to:

- ◆ Provide necessary PPE, safety equipment, and training at no cost.
- ◆ Limit workers' exposure to chemicals, noise, and other hazards.
- ◆ Set up an Injury and Illness Prevention Program (IIPP).
- ◆ Take steps to prevent RSIs and other ergonomic problems.



If you think there is a health and safety hazard on your job, ask your employer about it first. You can also contact Cal/OSHA to get information or make a complaint. Cal/OSHA will not tell your employer who made the complaint. The law says you can't be fired or punished for making a complaint. Cal/OSHA may send an inspector to your workplace. If there are violations, your employer will be required to correct them and may have to pay a fine.

## Information and Help

**Occupational Health Branch (OHB).** This program, a part of the California Department of Public Health, provides information on workplace health hazards to workers, employers, and health professionals in California. OHB has many publications on work-related hazards.

Office phone: (510) 620-5743 [www.cdph.ca.gov/ohb](http://www.cdph.ca.gov/ohb)

**Hazard Evaluation System and Information Service (HESIS).** This unit in OHB provides information by phone on specific chemicals and other workplace health hazards.

Question line: (510) 620-5757 [www.cdph.ca.gov/hesis](http://www.cdph.ca.gov/hesis)

**Cal/OSHA.** This agency gives information, responds to confidential health and safety complaints, and inspects workplaces. To make a complaint, contact your local Cal/OSHA enforcement office. The Cal/OSHA Consultation Service offers free advice to employers (not related to enforcement).

Complaints: Check local phone book [www.dir.ca.gov/dosh](http://www.dir.ca.gov/dosh)  
Consultation: (800) 963-9424

**Labor Occupational Health Program (LOHP).** This program at the University of California, Berkeley has factsheets and other publications, gives free advice, and has a library open to the public.

Office phone: (510) 642-5507 [www.lohp.org](http://www.lohp.org)

# Staying Safe--A Checklist

There **are** hazards in graffiti removal work. Use this checklist to make sure you understand how to work safely. Review the checklist before each job.

Check the box if the answer is YES.



**Is there a safer product?**

There are many graffiti cleaners on the market. Some are safer than others. There may be a safer product that works just as well as a hazardous one for removing graffiti. It's your employer's responsibility to provide a safe product.

**Do you know what chemicals are in the product you are using?**

You have the right to know what hazardous chemicals a product contains and how to protect yourself from them. Your employer must have a Material Safety Data Sheet (MSDS) for each product and let you read it. You must also be given training about chemical hazards.

**Are you using as little of the product as possible?**

Use the smallest amount of a product that will effectively remove the graffiti. The less chemical exposure, the better.

**Is there good ventilation?**

When you remove graffiti inside a building, use a fan or similar ventilation device to move chemicals out of your work area and bring in fresh air. If you can't get good ventilation, limit the time of your exposure. When you work outdoors, position yourself so the wind is blowing chemicals away from you, not toward you.

**Do you need a respirator?**

In some situations, you may need a respirator. It depends on the chemical, how much you are using, how long you may be exposed, and the amount of ventilation. If you use a respirator, you must be given a medical evaluation, a fit test, and training.

**Do you have the right personal protective equipment (PPE)?**

Use PPE every time you need it—don't cut corners just because you're in a hurry. Use the right PPE for the type of work you are doing and the particular chemicals involved. You may need a respirator, chemical resistant gloves, goggles, a face shield, and an apron or coveralls. Sometimes you may also need fall protection.

Your employer is responsible for providing all of this equipment and training you in how to use it.

**Are there special conditions that could increase your chemical exposure?**

Chemicals can build up in enclosed areas with little air movement, like bathroom stalls, buses, and phone booths. If you are cleaning graffiti overhead, chemicals can drip on you. If you are working outdoors and it's windy, the wind can blow chemicals into your eyes.

**Is the surface lead-free?**

If you remove graffiti from a surface that has lead paint, special precautions and special worker training are necessary. Some removal methods, such as sanding, soda blasting, and pressure washing are especially dangerous. Your employer must find out if there is lead in the paint and tell you.

**Do you practice good hygiene at work?**

Change your clothes right away if they get wet with chemicals or covered with paint dust. Never bring contaminated clothing or shoes home. They can expose your family to chemicals.

When working around chemicals or dust, always wash your hands before you eat, drink, or smoke. No one hand cleaner is best for all chemicals. The best thing is to prevent chemicals from getting on your skin in the first place.

**Are people nearby given warning?**

There should be a system to warn pedestrians and others nearby when workers are using chemicals. In some cases access to the immediate work area should be restricted.

**Do you practice good housekeeping?**

Keep your work area free of objects that might make people trip or fall. Clean up slippery areas frequently. Clean up any chemical spills right away.

**Are chemicals stored safely?**

Graffiti removal products should be stored in tightly closed, labeled containers in a cool, well-ventilated area. They should never be kept near sparks and other fire sources. Containers should be stored securely so they can't fall and break. A locked cabinet is best. Don't store PPE near chemicals.

**Are used chemicals disposed of properly?**

In some cases, chemical products, bottles, dirty rags, dropcloths, and other items you have used when removing graffiti may be considered hazardous waste. This waste should be labeled and stored in sealed containers. Your employer should dispose of it according to local and state hazardous waste regulations. The MSDS has disposal information.

Be especially careful if you transport these waste materials in a vehicle. Some chemical waste that is not tightly sealed can give off fumes inside a vehicle.

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