



# Creating Healthier Work Environments

Choosing less-toxic alternatives at your workplace

**Disclaimer:** The information listed below is intended to provide guidelines and suggestions for reducing health hazards and environmental hazards at your business. This is not intended to be a comprehensive list of toxics reduction strategies.

Please note the **NONE** of the items listed below may be placed in the trash or black waste cart. Please see the individual item summary for safe disposal information and less toxic tips.

## Items Covered:

Aerosol Cans  
Air Fresheners  
Batteries  
Electronics

Fluorescent Lighting & Neon Signs  
Janitorial Chemicals  
Janitorial Paper Products  
Inks

Marking Pens  
Paints  
Pesticides

## Aerosol Cans

### Why Hazardous:

Aerosol mists can trigger asthma and other breathing problems because they contain product and propellant made up of very small droplets that are easily inhaled into the lungs. Aerosols can also be accidentally sprayed into the eyes or onto the skin, where they can cause burns and other damage. Common products such as pesticides, spray paint, cleaning supplies, and other products with hazardous ingredients are of particular concern because the products themselves can damage people's health if there is exposure to the skin, eyes, or respiratory system.

Up to 40% of the contents in an aerosol container can be propellants. The most common propellants are propane, butane, nitrous oxide, and carbon dioxide. Most propellants are petroleum products that are highly flammable. Aerosol propellants can themselves cause health problems, such as nervous system damage or asphyxiation at high concentrations, and dizziness and other narcotic effects in low concentrations.

### Disposal:

As of February 9, 2006, all aerosol cans have been banned from regular trash and must be recycled. In San Francisco, you can put empty aerosol cans in your blue recycling bin after removing the plastic nozzle. If the aerosol can has any contents left in it, it cannot be recycled. Please take aerosol cans with contents to the City's Household Hazardous Waste Collection Facility/Very Small Quantity Generator Hazardous Waste site. For more information, see <http://www.sfrecycling.com/sfhhw/vsqq.htm>.

### Less Toxic Tips:

- Avoid aerosol packaging whenever possible. While consumer products may be just as hazardous when dispensed from other containers, the use of aerosol containers may increase the likelihood that exposure will occur.
- **Pump spray bottles are less likely to cause direct health hazards because they are not pressured.** They lack propellants and they deliver the product in larger droplets that are less able to penetrate the lungs.

### Vendors:

See Janitorial Chemicals products for resources on less toxic household and industrial cleaning chemicals. Most cleaning and personal care products come in pump spray alternatives.



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## Air Fresheners



### Why Hazardous:

Air fresheners tend to be either a spray (see Aerosols, above), a wick, gel, or block that sends out continuous fumes. Air fresheners contain chemicals that deaden your sense of smell or drown out undesirable odors. Still others serve as propellants. Common ingredients in air fresheners cause nose and lung irritation, worsening asthma, lung infections or other respiratory problems. A common ingredient is formaldehyde, which is known to cause cancer and which also deadens your sense of smell, as well as being a respiratory irritant. Carrier solvents that carry the fragrance can contain phthalates, which are reproductive toxins. Among the worst deodorizers are blocks containing paradichlorobenzene, a known carcinogen, asthma-triggering agent, and nerve toxin that will no longer be legal for sale in the state of California after December 31, 2006.

### Disposal:

Dispose of air fresheners in regular trash; recycle plastic containers or aerosol cans.

### Less Toxic Tips:

- Regular cleaning should eliminate and prevent most unwanted odors.
- If air freshening is still desired, consider non-aerosol citrus oil air fresheners or odor-absorbing products such as baking soda. If odors are caused by pets, try enzyme-based products. Make sure you are not masking an underlying problem such as mold, which should be addressed immediately.

### Vendors:

Some citrus oil air fresheners are available at <http://www.greenhome.com>, Rainbow grocery (<http://www.rainbowgrocery.org>), or <http://www.gaiam.com>.

## Batteries (Household batteries from flashlights, radios, watches, clocks, toys, appliances.)



### Why Hazardous:

Over 3 billion batteries are sold a year. All batteries are considered corrosive; if they leak, they can cause burns to eyes and skin. Depending on the type, they can contain cadmium, mercury, cobalt, copper, zinc, lead, manganese, nickel, and/or lithium. These heavy metals may leach from landfills, contaminate soil, and pollute surface water and groundwater. If incinerated, these toxic chemicals can be released into the air.

### Disposal:

As of February 9, 2006, all batteries have been banned from regular trash and must be recycled. A new California state law requires all retailers that sell rechargeable batteries or cell phones to accept batteries for recycling through the national Rechargeable Battery Recycling Corporation Program. For more information on the RBRC program, see <http://www.rbr.org/call2recycle/>. For a directory of locations where businesses can dispose of batteries, see [http://www.sfenvironment.com/aboutus/recycling/business/recycling\\_directory.pdf](http://www.sfenvironment.com/aboutus/recycling/business/recycling_directory.pdf).

### Less Toxic Tips:

- Whenever possible, choose products that operate without batteries. Some calculators and other items are solar-powered. Choose flashlights containing Light-Emitting Diode (LED) lights because they require very little energy to operate and will make your batteries last longer.
- Use rechargeable batteries whenever possible. Nickel-metal-hydride and lithium rechargeables are preferable to nickel cadmium batteries because they are less toxic and can be more easily recharged without losing their power. Keep batteries in the recharger until you need them so you don't drain their energy.
- If rechargeables are not available for a certain application, choose long-lasting batteries that won't have to be replaced as often.

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## Electronics (Computers, laptops, keyboards, fax machines, copiers, other peripherals, cell phones.)



### Why Hazardous:

Can contain toxic heavy metals such as lead, mercury, and cadmium, as well as flame retardants that are persistent in the environment, bio-accumulate in humans and wildlife, and are endocrine disruptors.

### Disposal:

As of February 9, 2006, all electronic equipment has been banned from regular trash and must be recycled. Computers are accepted for recycling in the Bulky Item Collection program (see <http://www.sfrecycling.com/bulkyitems.htm>) offered through your garbage company.

- **Donate:** Computer recyclers as well as charitable organizations that accept donations may also take your unwanted computers.
- **Return to manufacturer:** Some computer manufacturing companies like HP, DELL, and Apple have started take-back campaigns to take their products back.
- **Recycle:** Unwanted monitors, TVs, and laptop computers can be dropped off for free at SF Recycling & Disposal, located at 501 Tunnel Ave. in San Francisco. NOTE: Desktop computers are not accepted for free - a minimum fee of \$18 will be charged for up to 500 pounds of trash. They are open Mon-Fri 7-4:30 and Sat-Sun, 8-4:30. For more information or directions call (415) 330-1400. See <http://www.sfenvironment.com/directories/computers.htm> for a list of local recycling companies. For more information about computer recycling, go to <http://www.ciwmb.ca.gov/Electronics/Recovery/>.

### Less Toxic Tips:

- Some electronics companies are phasing out heavy metals and other toxic compounds. See [http://www.svtc.org/cleancc/pubs/2005%20\\_ReportCard.htm](http://www.svtc.org/cleancc/pubs/2005%20_ReportCard.htm) for a list of companies and links to company web sites.
- Electronic equipment with a metal housing is naturally flame-resistant and does not need added flame retardants.

### Vendors:

Choose a vendor that is phasing toxic materials out of their products and has a recycling program for your old electronics. The US Environmental Protection Agency (US EPA) has developed an Electronic Products Environmental Assessment Tool (EPEAT) that is in the process of certifying green computers and other electronic products so they can be easily identified and purchased. The program, which is now being run by the Green Electronics Council, is creating an online registry of products that meet the EPEAT criteria. For EPEAT-certified products see [www.epeat.net](http://www.epeat.net).

## Fluorescent Lighting and Neon Signs



### Why Hazardous:

Several types of "lamps" contain mercury and/or lead, toxic heavy metals that persist in the environment and concentrate in the food chain – particularly in fish (<http://www.oehha.ca.gov/>). Mercury-added lamps include all fluorescents (including linear tubes, circular and u-shaped models, and compact fluorescent lamps), high-intensity discharge lamps (HIDs, such as mercury vapor, metal halide, and high-pressure sodium), and neon signs (particularly those with a blue color). Incandescent and halogen lamps are mercury-free but they are much less energy-efficient than fluorescent lamps, so their use is discouraged. Mercury contained in a lamp cannot cause harm unless the lamp breaks, which can occur during transportation, installation, storage or disposal. Lamps with a screw-in base sometimes contain lead solder; other lamps that are designed to operate under high temperatures, including HIDs and neon, sometimes are made with leaded glass. Exit signs contain mercury only if they contain fluorescent lights inside. Older exit signs – with either incandescent or fluorescent lights inside – should be replaced with LED exit signs or retrofitted to use LED lamps.

### Disposal:

As of February 9, 2006, all fluorescent lamps and signs have been banned from regular trash and must be recycled. All fluorescent, HID, and neon signs must be recycled. Spent fluorescent lamps and neon signs are usually considered hazardous waste because of mercury and lead content. For more information on how to recycle lamps in San Francisco, see [http://www.sfenvironment.com/aboutus/recycling/business/recycling\\_directory.pdf](http://www.sfenvironment.com/aboutus/recycling/business/recycling_directory.pdf).

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Ballasts manufactured before 1978 likely contain PCBs that can cause cancer and reproductive or developmental problems. Therefore, PCB-containing ballasts must be disposed of as hazardous waste (<http://www.sfenvironment.com/directories/fluorescent.pdf>.)

### Less Toxic Tips:

(Also, see Fluorescents Lamp Brochure for Businesses (pdf) at <http://www.sfenvironment.com/directories/lighting.htm>).

- **Buy Fluorescent:** Whenever possible, replace your regular light bulbs with compact fluorescent bulbs (CFLs), which use about 75% less energy for the same amount of light and last 10 times longer.
- **Low Mercury:** Since all fluorescent lamps contain mercury, the best option is to identify and purchase low-mercury models (under 5 mg). Unfortunately, national fluorescent lamp labeling regulations do not require manufacturers to indicate how much mercury is in it; only that it contains mercury at all. This information can only be gathered from manufacturers themselves. At the very least, look for models with a low-mercury designation such as ALTO or ECO; many of these have either green tips or green writing on the lamp.
- **Choose Long Lamplife:** Choose lamps with the longest lamp-life possible (at least 24,000 hours for 4-foot linear T8s and 10,000 hours for compact fluorescents lamps. CFLs should also have an Energy Star designation (<http://www.energystar.gov>).
- **Look for Lead-Free:** Look for CFLs and other lamps with a screw-in base that are labeled lead-free. If buying a new fixture, choose one that uses high-efficiency T8 lamps (which are 1" in diameter) rather than the older T12 models (which are less efficient and usually have more mercury). You can tell high efficiency lighting fixtures because they use electronic (instant start) ballasts rather than older, less-efficient magnetic ballasts or preheat starters.

### Vendors:

It is easier to find environmentally preferable lamps—that are highly efficient, long-lasting and low-mercury—through commercial lighting distributors than at regular hardware stores. Lighting distributors also often offer discounts on these products for large purchases.



## Inks

### Why Hazardous:

Printing inks may contain heavy metals such as barium, cadmium, chromium, lead and potentially hazardous solvents such as alcohols and hydrocarbons that are toxic or flammable, or contain volatile organic compounds (VOCs) which can combine with other pollutants in the atmosphere to create ozone. Improper disposal of spent inks can cause serious contamination of surface water, ground water, or soil.

### Less Toxic Tips:

Request printing with soy-based or water-based inks.

### Vendors:

Consider using a printer certified by the Bay Area Green Business Program. Green printers are listed by county at <http://www.greenbiz.ca.gov/>.



## Janitorial Chemicals

### Why Hazardous:

Commonly available janitorial cleaning chemicals contain ingredients that can harm the user, and may also affect building occupants. These harmful ingredients include hydrochloric acid, sodium hydroxide, and other chemicals that instantly burn the eyes, skin, and lungs. Other ingredients, such as glycol ethers (e.g., butoxyethanol), diethanolamine, or nonyl phenol ethoxylates can cause cancer, asthma, reproductive effects, nerve damage, or other long-term problems. Some of the janitorial products with the most hazardous ingredients are specialty cleaners such as graffiti and spot removers, floor strippers, degreasers, and metal polish.

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**Antibacterial Soaps:** The US Food and Drug Administration warns that antibacterial soaps and disinfecting cleaners offer no more protection against bacteria than regular soap and they may be creating germs that are resistant to antibiotics.

### Disposal:

Take unused or leftover cleaning supplies to the City's Household Hazardous Waste/very small quantity generator hazardous waste site. For more information, see <http://www.sfrecycling.com/sfhw/vsqq.htm>.

### Less Toxic Tips:

- Buy the product with the least toxic ingredients you can find. Reading the product label and Material Safety Data Sheet (MSDS) can help you make this determination. Some MSDSs can be found online by searching for the product name + MSDS. The MSDSs of many cleaning products that are sold to the general public can be found in the National Institutes of Health's Household Products Database at <http://householdproducts.nlm.nih.gov/>.
- Always wear gloves and eye protection, even when using 'mild' products (if mixing or dilution is required). Follow manufacturer instructions for safe mixing and use of the product. Don't mix the products too strong. Never mix bleach and ammonia together as the mixture can create a lethal gas.
- Call the manufacturer's or distributor's service desk to ask about any less toxic alternatives they offer. Many vendors have several product lines, one of which may contain less harmful ingredients than the others.
- Check the Janitorial Pollution Prevention Website. This public service website has fact sheets on safe and effective cleaning techniques for windows, carpets, restrooms, and other cleaning jobs <http://www.westp2net.org/Janitorial/jp4.cfm>.
- Ask SF Environment to send you the "Clean It" guide for maintaining your home or small business. Email [environment@sfgov.org](mailto:environment@sfgov.org).

### Vendors:

Check the list of institutional cleaning products that have been certified by Green Seal as meeting their Standard GS-37 for general cleaners and GS-40 for floor care products. This list is available at <http://www.greenseal.org>. Additional environmentally preferable cleaning products are listed by the Center for a New American Dream's Institutional Purchasing website at <http://www.newdream.org/procure/products/approved.php>. A report on less-toxic graffiti removers can also be found on this website at <http://www.newdream.org/procure/graffiti.php>. Model specifications for green cleaning products were adopted by the Commonwealth of Massachusetts; for more information, see <http://www.mass.gov/epp/products/cleaning.htm>.



## Janitorial Paper Products:

### Why Hazardous:

The manufacture of janitorial paper products, including paper towels, toilet paper, napkins, and toilet seat covers can create hazardous byproducts that are often discharged directly into surface waters such as rivers or the ocean. The use of chlorine-containing bleaching agents to turn paper products bright white can generate a toxic soup of various chlorinated pollutants (including chloroform and chlorinated furans). These substances tend to persist in the environment, where they can harm wildlife and humans.

Janitorial paper products are often made from virgin tree fiber, contributing to deforestation and destruction of wildlife habitat. Some of these products are even made from old-growth trees such as redwoods.

### Disposal:

Soiled paper products are allowed to go into the trash. But a better solution is to include them in a composting program so they can be diverted from landfills and contribute to the creation of compost—a natural fertilizer and soil enhancer.

### Less Toxic Tips:

Choose janitorial paper products with the highest recycled content possible in order to conserve natural resources and create markets for paper collected in office and curbside collection programs. (Recycled paper products also can be made with less harsh bleaching methods compared to virgin fibers.) Look for brands that are unbleached or that are whitened using only oxygen, ozone, hydrogen peroxide, or another chlorine-free process. (These products are sometimes labeled PCF for processed chlorine-free.) Some environmentally preferable janitorial paper products are also made with some or all tree-free fibers, which save trees and are often easier to bleach than virgin tree fiber.

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## Marking Pens (Flip chart markers, package markers, white board markers, highlighters, etc.)



### Why Hazardous:

Can contain xylene, propylene glycol, alcohol; levels are not likely to cause acute health problems, but could be a skin, eye, and respiratory irritant. For a fact sheet on "Industrial Markers and Respiratory Hazards," see <http://www.informinc.org/pamarkers.pdf>. Look for water-based markers, rather than those containing solvents. If water-based markers are not available, consider those containing alcohol-based solvents rather than petroleum-based solvents. The Oregon Toxics Coalition has published a fact sheet explaining the hazards associated with markers and other art supplies: <http://www.oregontoxics.org/artscrafts.html>.

### Disposal:

These can be disposed of in the regular trash. While in use, try to keep cap securely on the marker so that it does not dry up prematurely while its contents are released into the air.

### Less Toxic Tips:

Look for less-toxic options. Some markers are labeled as "ASTM D-4236 compliant." This means that they have passed an acute toxicity test. This test may not consider exposure to solvents or other impacts on respiratory problems. Consider using wax lumber markers on wood, metal, glass, and other surfaces, when a non-permanent mark is needed.

### Vendors:

Several vendors offer water-based and low-odor markers designed for use on overhead projector sheets, white boards, and other surfaces. You can find them by doing an Internet search for "water-based markers." Two office supply stores in the region that offer them include Waldeck's (<http://www.waldecks.com>) and Green Earth Office Supply (<http://www.greenearthofficesupply.com>).

## Paints



### Why Hazardous:

Paint pigments (the parts that provide the color) can contain toxic heavy metals, while the solvents, particularly in oil-based paints, can consist of toxic and flammable petroleum-based products such as mineral spirits, toluene, and xylene that emit volatile organic compounds (VOCs) which can combine with other pollutants in the atmosphere to create ozone.

### Disposal:

- Leftover paint can be donated to a local community service group, theater group, or other non-profit.
- Paint can also be disposed of at the Household Hazardous Waste Collection Facility/Very Small Quantity Generator Hazardous Waste site see <http://www.sfrecycling.com/sfhhw/vsqq.htm>. The City donates usable paint to local non-profits.

### Less Toxic Tips:

Buy only as much paint as you need. Buy zero- or low-VOC paints whenever possible. Buy and use latex or water-based paints, finishes, and varnishes rather than oil-based. Donate unused paint.

### Vendors:

Each major paint manufacturer has a zero- or low VOC line. Other options for less toxic paints are listed at [http://eartheasy.com/live\\_nontoxic\\_paints.htm#2d](http://eartheasy.com/live_nontoxic_paints.htm#2d).

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## Pesticides



### Why Hazardous:

Many widely used pesticides are carcinogenic, reproductive toxins, can disrupt hormones and the immune system, damage the nervous system, or cause irritation of eyes and skin. Three hundred and eighty million pounds of pesticides known to be carcinogens and 650 million pounds of pesticides known to be reproductive toxins are applied to homes, lawns, and gardens each year.

### Disposal:

Pesticides can be disposed of at the City's Household Hazardous Waste facility/Very Small Quantity Generator Hazardous Waste site. For more information, see <http://www.sfrecycling.com/sfhhw/vsqq.htm>.

### Less Toxic Tips:

For less toxic pest control methods for your home, look at the resources at the Northwest Coalition for Alternatives to Pesticides at [www.pesticide.org](http://www.pesticide.org).

For your business, consider implementing an Integrated Pest Management Program. Key elements of such a program should include:

- At least monthly monitoring for pest infestations and thorough inspection to identify sanitation conditions or building repairs that are needed to prevent future infestations.
- If arranging with a contractor, ensure the contractor supplies information on the pests found, locations, repairs necessary, name, EPA number and type of pesticide applied, and a material safety data sheet (MSDS) for each product used on the business premises.
- Require that a pesticide contractor use non-chemical means of pest control and prevention whenever possible (i.e. HEPA vacuums, caulking, traps).
- Require that a contractor not use spray formulations of contact insecticides inside of a building, will use baits in containers, cracks, crevices, and wall voids. Have the contractor use a pesticide listed on San Francisco's approved list of pesticides [http://www.sfenvironment.com/aboutus/innovative/ipm/pest\\_list06/index.htm](http://www.sfenvironment.com/aboutus/innovative/ipm/pest_list06/index.htm).
- Require that a contractor use only those products on the most up to date list of pesticides approved for use by the San Francisco Commission on the Environment [http://www.sfenvironment.com/aboutus/innovative/ipm/pest\\_list06/index.htm](http://www.sfenvironment.com/aboutus/innovative/ipm/pest_list06/index.htm).
- Avoid perimeter spraying for ants and cockroaches.

## Want to do more?

- Enroll in the **Green Business Program** and learn how to save on energy, water, and garbage costs as well as reducing your hazardous waste. Visit <http://www.sfgreenbiz.org>.
- **Remodel Green:** call us to learn about Green Building Certification

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