

HOPE Partnership

Supported by a Science Education Partnership Award (SEPA) from the National Center for Research Resources, National Institutes of Health (Grant No. R25 RR018490)

WHERE LEAD HIDES

General Warning

If you ever see a label on any product that states ***Proposition 65 Warning: Use of this product will expose you to lead, a chemical known to the State of California to cause birth defects or other reproductive harm*** or ***Not intended for food use***, heed the warning!

Paint

There is a federal regulation that bans specific uses of lead-based paint. The US Consumer Product safety Commission enforces this regulation.

- **What is covered and should not contain lead:**

Products sold directly to consumers or which consumers use in homes, schools, hospitals, parks, playgrounds, and other areas

Toys or other articles intended for use by children

Furniture coated with lead-based paint such as beds, bookcases, chairs, chests, tables, dressers, and console televisions

- **What isn't covered and may contain lead:**

Appliances such as ranges, refrigerators, and washers, fixtures such as built-in cabinets, window, and doors, and household products such as window shades and venetian blinds. Paints for boats and cars

- **Exempt from regulation but require warning label:**

Coatings used to refinish industrial or agricultural equipment

Building and equipment maintenance coatings

Products marketed solely for use on billboards, road signs, and similar products

Touch-up coatings for agricultural equipment, lawn and garden equipment, and appliances

Catalyzed coatings marketed solely for use on radio-controlled model powered airplanes.

- **Exempt but no warning label required:**

Mirrors with lead-containing backing paint

Artists paints

Metal furniture (other than children's furniture) that has a factory-applied coating that contains lead.

[http://www.cpsc.gov/BUSINFO/regsumleadpaint.pdf#search='lead%20in%20artists'%20paint'](http://www.cpsc.gov/BUSINFO/regsumleadpaint.pdf#search='lead%20in%20artists'%20paint)

Paint sources

- **Homes, daycare center, school, camp, relative or friend's home**

Lead increases the durability of paint so it was most often used on home exteriors, window and door trim, in bathrooms, and kitchens. For houses built before 1978, and especially those built before 1950, chances are good that lead paint was used. Lead paint becomes hazardous only if it is cracking or chipping, if it is disturbed (a painted wall is torn down or cut), or if it is on a high-friction area that produces lead dust (like the insides of windows and doors). Because of friction when windows are opened and closed, window troughs and sills are a common place for lead dust to accumulate.

Helpful hints: Wipe window sills and troughs often with a damp rag. Simple, inexpensive procedures exist to cover over lead surfaces. Avoid placing food items or allowing pets to rest there. Find and fix the source of failing paint. Never dry scrape, dry sand, or use a heat gun

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over 1100° F on lead paint. This creates lead dust or lead fumes. Clean with wet mops and a HEPA filtration system vacuum cleaner. Change contaminated clothing and wash separately from children's clothing.

- **Antique painted furniture (including cribs), buttons, hair ornaments**
- **Old painted toys**
- **Lead paint on kitchen utensils**
- **Imported painted toys**

Beware of toys sold during the holidays, especially during Christmas. Many of these toys are imported from foreign countries and may contain lead. These include toys such as wooden trains, toy soldiers, toy nutcrackers, and metal baby carriages.

http://www.seriaz.org/downloads/Lead_info.pdf#search='lead%20poisoning%20pipe%20organ

- **Automobiles primers and topcoats**
- **Marine primers and topcoats**

Red Lead Paint: Used on metal surfaces to inhibit rust. Teamac brand says the following, "Yes it is available and we stock it! No, contrary to what many people express it is not a banned product. The paint manufacturer has to pay a heavy duty to the Government to produce it. On my own boat I give two coats to all metal with this then two coats of Hammerite. In the past three years I have no rust to talk about."

- **Road-marking paint**
- **Playground equipment**
- **Industrial paints**

Lead was banned from residential paints in 1978 by the federal government, but it is still allowed in industrial, marine, and bridge paint. Fortunately, many owners no longer use lead paint on bridges and other structures.

- **Paint used on steel bridges**

Since lead-based paint inhibits rusting and corrosion on iron and steel, it has been used on bridges and other steel structures. It is estimated that more than 90,000 bridges - many in need of repairs - in the United States are coated with lead paint. Lead dust and fumes are released into the air whenever lead paint is disturbed during maintenance, reconstruction, and demolition of bridges and other steel structures.

- **Artist's Paints and Supplies**

Lead is found in very few art materials, namely in certain ceramic glazes, flake white oil color and lead chromate colors in both oil and water colors. Flake white is an oil color, which some adult artists feel is essential in preparing an oil canvas to give the permanence necessary for a work of art and for which there is no substitute. Because of this fact, flake white was exempted from the ban on lead in paint under the U. S. Consumer Product Safety Act. However, it still must be labeled with health, cautionary and safe use information. Lead chromate colors are found in traditional artists color ranges and contain low levels of soluble lead. Many pastels contain asbestos, contaminated talc, lead and cadmium pigments.

<http://www.lead-safe.org/Parents/Sources/lead&art.html>

Pigments containing lead or arsenic have long been recognized as being dangerous. This group includes flake white or Cremnitz white (made of lead carbonate), Naples yellow (when made of lead antimoniate pigment), the chrome yellows (made of lead chromate), chrome green (made of mixtures containing lead chromate), cobalt violet (when it contains cobalt arsenate) and greens such as Schweinfurt green, emerald green, Paul Veronese green or Paris green (when made of arsenic compounds such as copper acetoarsenite). Since 1975

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many reports have called attention to the possible dangerous effects of pigments containing cadmium, chromium, manganese, and mercury. These colors include the cadmium reds, cadmium yellows, cadmium orange, viridian and chrome oxide opaque, manganese blue, manganese violet, burnt and raw umber, and vermilion (mercuric sulfide).

Pigments can enter the painter's body if they get into the artist's mouth, if they penetrate the skin through cuts and scratches, or if the painter inhales them. If artists frequently absorb pigments by any of these methods, they may develop various levels of health problems.
<http://www.noteaccess.com/MATERIALS/ToxicityPigmt.htm>

Old Holland Classic Oils are packed in soft lead tubes with a thin layer of pewter, as opposed to an aluminum tube which oxidizes within 15 years. "Lead tubes last a lifetime," the company boasts..

Helpful hint: The CP (Certified Product), AP (Approved Product), and HL Health Label (Non-Toxic) Seals identify art materials that are safe and that are certified in a toxicological evaluation by a medical expert to contain no materials in sufficient quantities to be toxic or injurious to humans, including children, or to cause acute or chronic health problems.



Avoid inhalation: When using the pigments in the form of dry powders, handle them with care so as to avoid raising a great deal of pigment dust. Keep yourself and work areas free of dust from pastels. Keep scraped paint particles out food, off skin, and out of lungs. If you use spray cans or air compressor sprayers, the finely divided pigment in the sprays can remain in the air, be inhaled, and can drift onto food or dishes closeby. If you burn paint, the fumes can be dangerous. Wear a NIOSH approved respirator if there will a lot of dust, spray, or fumes generated. Use damp cloths and mops for cleaning. Wash dirty cloths separate from childrens' clothes.

Avoid ingestion: Keep cigarettes, food, and drinks far from work areas. Never place paint brushes in your mouth or painted paint brush handles (in 1992 Grumbacher recalled paint brushes because their handles were coated with lead-based paint.) Wash all supplies away from food preparation areas. Scrub hands thoroughly.

Avoid absorption: Keep paint and pigments away from skin. Undesirable pigments can be absorbed through breaks in the skin, and some can cause allergic responses or dermatitis (inflammation of the skin.) If you have cuts or blisters on your hands and must handle colors keep the cuts bandaged or wear disposable gloves.

<http://www.noteaccess.com/MATERIALS/ToxicityPigmt.htm>

Paint driers

Black oil is a fast drying medium and varnish made from linseed oil and lead oxide, historically significant for icon painting and other historical painting techniques. Gel-painting medium combines drying oil with mastic varnish.

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Recent Recalls due to lead-based paint

- Kid's Essentials Five-Piece Folding Furniture Set made by Meco Corp., of Greeneville, Tenn., from China.

In August 2004 this set was recalled because the red paint on the chair (red folding chair with a metal frame and vinyl padded seat back and base) contains excessive lead levels. The chair was sold as a part of a five-piece juvenile table furniture set with a green table, blue chair, yellow chair, green chair and red chair. Only the red chairs with model numbers 11-88-3E1 and 11-88S3E1 and date codes H3, B4, D4 or E4 printed underneath the seat bottom are included in the recall. "Meco" or "Samsonite" brand names are also printed on the seat label. These were sold at furniture and wholesale club stores nationwide from July 2003 through June 2004 for between \$25 and \$40. Consumers should stop using this red chair immediately and contact the firm for instructions on returning the red chair and receiving a free replacement chair. Call Meco at (800) 251-7558 between 8 a.m. and 6 p.m. ET Monday through Friday or visit Meco's Web site at www.meco.net

- The paint on the fishing poles in the **Shakespeare brand fishing kits** contains lead. The kits were recalled in June 2005. These rods feature the following characters: TAZ (Tazmanian Devil), Tweety, Mucha Lucha and Spider-Man. Other fishing kits feature Fishing Heroes, sold with a silver-colored badge; Kids Kits, sold with tackle boxes; and Shark and Dolphin Kits, which have reels in the shape of a shark or dolphin. The fishing kits have brightly colored red and yellow fishing rods, and "Shakespeare" is written on the reels. Fishing kits with purple, blue and pink rods are not included in this recall. Certain translucent red and yellow and metallic-colored red rods also are not included in this recall. These were made in China and sold at discount department, sporting good and toy stores nationwide from August 2001 through June 2005 for between \$9 and \$13.

Consumers should stop using the recalled fishing poles and contact Shakespeare Fishing Tackle for information on receiving a free replacement fishing kit. For more information, call Shakespeare Fishing Tackle toll-free at (866) 466-0559 between 8 a.m. and 5 p.m. ET Monday through Friday, or visit the firm's Web site at <http://www.shakespeare-fishing.com/recall>

- In April 2005, the **Nu-Tronix Karaoke Cassette Player/Recorder** was recalled. The paint on the five



control buttons of the karaoke player contains excessive lead, posing a lead poisoning hazard to young children. This recall includes the Nu-tronix Karaoke Cassette Player and Recorder with digital radio and alarm features. A microphone, with a white cord is attached to the cassette player. "Nu-tronix™" is printed on the front of the product. The karaoke player is gray with a purple handle and a purple cassette cover. The karaoke player is sold with two cassette tapes with children's songs, a multifunctional microphone and lyric sheets.

This product, manufactured in China, was sold at Wal-Mart stores nationwide from June 2003 through March 2005 for about \$20. Consumers should return the recalled karaoke players to their nearest Wal-Mart store to receive a refund. Contact Wal-Mart at (800) 925-6278 between 7 a.m. and 9 p.m. CT Monday through Friday. or visit the firm's Web site at

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www.walmartstores.com and click on “Product Recalls” for more information or submit questions on the “Store Feedback” link.

- In April 2005, there was a recall on **Zebco fishing poles**. The paint on the rods contains lead. The recalled fishing poles, which were made in China, are brightly colored and feature pictures of the following cartoon characters on the reels: from Nickelodeon’s *SpongeBob Squarepants*® are *SpongeBob*, Patrick Star and Sandy Cheeks; Nick Jr.’s *Dora the Explorer*®; Disney’s Tigger; and the cast of Nickelodeon’s *Rocket Power*®. “ZEBCO®” and “Floating Catch ‘Em Kit™” are written on the handles of these poles with the exception of the Rocket Power poles. The Rocket Power poles have a two-piece rod, were sold with sunglasses and “Rocket Power” is written on the rod. Newer fishing poles with a date code on the rod (near the handle) are not included in the recall.

Rods were sold in discount department, sporting good and toy stores nationwide from August 2001 through March 2005 for between \$9 and \$13. Consumers should stop using the recalled fishing poles and contact Zebco for information on receiving a free replacement fishing pole. For more information, call Zebco at (800) 444-5581 Ext. 6217 between 8 a.m. and 4 p.m. CT Monday through Friday, or visit the firm’s Web site at www.zebco.com/recall

Varnish

Soil may contain lead due to

- Deposits from the air from industrial sources. Burning coal and petroleum releases lead to the air.
- Some previous use that involved lead products
- Some current use, like an auto body shop, hobbies that use lead, etc.
- Lead paint chipping off a building or structure
- Remnants of leaded gasoline (the USA stopped using leaded gasoline in the 1980s and Mexico in 1996. Soil may still contain lead.)
- Pesticide and/or herbicide use
- Natural geological sources

Helpful hints: Avoid growing edible plants in contaminated soils, especially near roadways or near houses with chipping lead-based paint. Always wash hands, toys, pets, and crops thoroughly and leave shoes by the door.

Pets

Animals can carry lead dust in their fur which can easily be transferred to anyone handling them.

Tobacco, Cigarette Smoke, and Ash

Lead is present in tobacco volatilizes during the burning of the cigarette. The most common way lead gets into tobacco is through arsenate pesticides. Approximately 5% of this lead may be inhaled; the remainder occurs in the ash and side-stream smoke (Mussalo-Rauhamaa et al., 1986). http://www.seriaz.org/downloads/Lead_info.pdf#search=lead%20poisoning%20pipe%20organ

Helpful hints: Make a pledge to only smoke outdoors.

Vinyl products (Polyvinyl Chloride or PVC)

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Lead is used as a stabilizer in PVC. When PVC is exposed to sunlight, it begins to break down and produce lead dust that can be inhaled or passed from fingers to mouth. Chewing on vinyl items can also expose us to lead.

- **Telephone cords**
- **Electrical wires**
- **X-Mas light wires and artificial trees**
- **Some children's toys (soft vinyl PVC products)**

Health Canada issued an advisory about soft vinyl plastic toys that could be sucked or chewed on by a very young child for prolonged periods of time on a daily basis, thus exposing the child to surface lead, if any. While some of these products were found to contain lead, the majority of the tested products were found to not have extractable lead that exceeded the international standard of 90 ppm lead.

<http://www.leadpoisoningnews.com/whatis.html>

- **Shower curtains**
- **Rain jackets or boots**
- **Imported miniblinds:** Millions of non-glossy vinyl miniblinds, that have lead added to stabilize the plastic in the blinds, are imported each year from China, Taiwan, Mexico, and Indonesia. Studies have found that over time the plastic deteriorates from exposure to sunlight and heat to form lead dust on the surface of the blind. The amount of lead dust that formed from the deterioration varied from blind to blind. When purchasing miniblinds, make sure the label states "new formulation," "nonleaded formula," "no lead added," or "new! non-leaded vinyl formulation." New blinds without lead should sell in the same price range as the old blinds at about \$5 to \$10 each.
- **Garden hoses:** Lead leaching into hose water can come from the vinyl (PVC) material used to make the hose or from brass nozzles on hoses. In sunshine, lead in hose water is a particular concern, as heat can cause hoses to leach even higher levels of lead. Because of an August 2004 settlement, hose companies have agreed to reformulate their products to reduce lead exposures below California's Prop 65 standard by 2007. In addition, any hoses that could cause exposures above the standard carries a prominent warning label reading, "Do not drink water from this hose. Wash hands after use." <http://www.cehca.org/news.htm>

Helpful hints: Avoid purchasing vinyl items when possible or make sure box states that no lead additives were used. Wash hands after handling vinyl products.

Recall Requested due to Lead in Vinyl Lunch Boxes

In September 2005 a warning came out about **children's soft vinyl lunch boxes**. The Center for Environmental Health (CEH) filed a lawsuit against producers Igloo and InGear and retailers Toys "R" Us, Warner Brothers, DC Comics, Time Warner, Walgreens, and others. This involves many lunch boxes featuring children's characters such as Superman, Tweety Bird, Powerpuff Girls, and Hamtaro. CEH is calling on these companies to recall these products and take action to eliminate lead from their products in the future.

The independent laboratory commissioned for the testing found seventeen lunch boxes with high lead levels, and the investigation is ongoing. The level of lead in an Angela Anaconda box made by Targus International was 56,400 parts per million (ppm) of lead, more than 90 times the 600 ppm legal limit for lead in paint in children's products. Tests on other lunch boxes

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showed levels of lead between two and twenty-five times the legal limit. Most often, the highest lead levels were found in the lining of lunch boxes.

Children may be exposed to lead from lunch boxes when they eat food that has been stored in them. Handling the lunchboxes just before eating could also be an exposure risk. CEH advises parents to avoid vinyl lunch boxes and suggests reusable cloth bags instead. Parents can test for lead in their children's lunch boxes using LeadCheck swabs (sold at Lowes or online at www.leadcheck.com) or PACE's Lead Alert.

Contact: Lara Cushing , 510-594-9864; 510-499-6832 (cell); Michael Green , 510-594-9864; 510-378-7333

Tattoo Ink

Nine tattoo ink and pigment manufacturers were sued in August 2004 for allegedly exposing people to potentially dangerous levels of lead and other metals. The American Environmental Safety Institute, which filed the suit, is asking for an order to require warnings on the products before they can be sold or applied to a customer's skin. Health risks are widespread, with at least 16 percent of Americans having one or more tattoos. Thirty-six percent of adults ages 25-29 reportedly have at least one tattoo.

Most tattoo inks technically aren't inks. They are composed of pigments that are suspended in a carrier solution. Today's pigments are usually not vegetable dyes, rather they are metal salts. However, some pigments are plastics and there are probably some vegetable dyes too. The pigment provides the color of the tattoo.

The carrier keeps the pigment evenly distributed in a fluid matrix, inhibits the growth of pathogens, prevents clumping of pigment, and aids in application to the skin. When alcohol is used in the ink or to disinfect the skin's surface, it makes skin more permeable and allows more chemicals to cross into the bloodstream.

Manufacturers of inks and pigments are not required to reveal the contents - the information is proprietary (trade secrets). A professional who mixes his or her own inks from dry pigments will be most likely to know the composition of the inks. Check out the Material Safety Data Sheet (MSDS) for any pigment or carrier. The MSDS won't be able to identify all chemical reactions or risks associated with chemical interactions within the ink or the skin, but it will give some basic information about each component of the ink. Pigments and tattoo inks are not regulated by the US Food and Drug Administration. Here's a table listing the colors of common pigments used in tattoo inks. Many inks mix one or more pigment. Pb=lead, Cd= cadmium, Hg=mercury
<http://chemistry.about.com/library/weekly/aa121602a.htm>

Hair dye

Lead acetate is used as a color additive in "progressive" hair dye products such as Grecian Formula. These products are applied over a period of time to achieve a gradual coloring effect. Tests on people who used these products under controlled conditions showed they had "no significant increase in blood levels of lead" and the lead was not shown to be absorbed into the body through such use. The FDA therefore allows this ingredient but requires the following caution statement on product labels:

Caution: Contains lead acetate. For external use only. Keep this product out of children's reach. Do not use on cut or abraded scalp. If skin irritation develops, discontinue use. Do not use to color mustaches, eyelashes, eyebrows, or hair on parts of the body other than

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the scalp. Do not get in eyes. Follow instructions carefully and wash hands thoroughly after use.

Consumers can determine if lead acetate is used in a particular hair dye product by reviewing the product ingredient declaration appearing on the label of the cosmetic package.

<http://vm.cfsan.fda.gov/~dms/cos-lead.html>, <http://www.cehca.org/consumer.htm#espresso>

Helpful hints: To ensure safe use of these products, it is important that consumers follow the directions carefully. While considered safe for use by adults, keep away from children.

Inexpensive Jewelry (trinkets, necklaces, bracelets, brooches, metallic hair accessories, big finger rings)

Inexpensive children's jewelry can contain high amounts of lead, which poses a risk if toddlers, young children or teens suck or chew on it. Lead tastes sweet and appeals to children. A survey of inexpensive jewelry - a range of items costing less than \$20 - found 70% contained lead! A similar nationwide survey in Canada revealed that 66 of the 95 samples collected had a lead content ranging from 50% to 100%. Ingesting even low amounts of lead may have harmful health effects on the intellectual and behavioral development of infants and young children.

The US recalled 150 million pieces of toy jewelry from vending machines in early July 2004 because half contained dangerous levels of lead. Action was taken after a four-year-old Oregon boy nearly died from swallowing a 25-cent pendant made with 39 per cent lead. The recall was extended to Canada.

Items are available in a variety of shapes and sizes and may be metal plated or coated with enamel. These items are exceptionally dangerous if the coating wears off, is broken or scratched. Even handling leaded jewelry can be risky if children put their hands in their mouths without washing them.

Although no U.S. standard exists for lead content in children's jewelry, it's illegal for an item to have accessible lead that is deemed hazardous.

The state of California is suing 13 major retailers, including Wal-Mart, Target, Kmart, and Sears for failing to warn customers of hazardous levels of lead found in numerous brands of costume jewelry marketed to young children and teenagers. Tests found levels of lead "well above" those requiring consumer warnings.

http://www.hc-sc.gc.ca/english/protection/warnings/2001/2001_02e.htm

Recalled jewelry

Necklaces with a heart-shaped silver-colored medallion on a dark blue string. The medallion is embossed with daisies. The necklace, including the medallion, is 14 1/2 inches in length.

In January 2005, there was a recall on children's **bracelets**, made in China, which have heart, oval, and rectangular shaped charms that have the phrases; "I like sports," "I like movies," "I like shopping" and "I like music" printed on them. The bracelet also contains various colored plastic trinkets. They were sold at Belk, Bloomingdales, Carson Pirie Scott, Kohl's, Parisians and Proffitts Department stores nationwide from October 2003 through November 2004 for about \$6. Consumers should immediately take these bracelets away from young children and contact the company to receive a refund. Call Riviera toll-free at (800) 524-0110 between 8

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a.m. and 5 p.m. ET Monday through Friday.

In May 2005, there was a recall on **heart-shaped pendants** that are silver-colored, ribbed on the front, hollow on the back, and hang on a pink suede cord with a silver-colored clasp. They are made in China and were sold at Dollar General stores nationwide from May 2003 through April 2005 for about \$1. Consumers should take these necklaces away from children immediately and return them to Dollar General stores for a refund. Call (800) 678-9258 between 9 a.m. and 6 p.m. ET Monday through Friday, or visit their Web site at www.dollargeneral.com.

Helpful hints: Avoid purchasing and discourage children from sucking on any questionable jewelry.

Brass Items

Brass is a metal alloy meaning it is a mixture of more than one metal. Brass is made of copper and zinc. Lead is a natural contaminant in zinc because the two are mined together from the earth.

- **Car Keys**
Brass is a soft metal so lead is added to give keys more strength. Some keys have a silver-colored nickel coating over top the brass, but this wears away. Sucking on car keys is dangerous. Even handling car keys can leave lead on one's hands. Not all keys are brass – some are aluminum and are lighter weight.
- **Bells**
- **Musical instruments**
- **Faucets**

Helpful hints: Never give a child real car keys or brass items to play with. Adults should wash hands after handling keys or other brass items, especially if pregnant.

Pewter Items

Pewter is a metal alloy, which means it is a combination of more than one metal. Depending on its use, pewter may be composed of various amounts of tin, antimony, bismuth, copper, and/or lead. Over the years, these combinations have varied greatly. Through the mid 17th century, there were two grades of pewter: Fine pewter and Lay metal or trifles. Fine pewter was used for flatware - plates, chargers etc and also for important flagons and for spoons. Its composition was approximately: Tin 96-98%, Copper 1-4%, Lead <1%, Bismuth <0.5%.

Lay metal was used for hollowware - measures and similar utensils. This was supposed contain at least 80% tin alloyed with lead. However analyses of hollowware yielded the following composition: Tin 60-70%, Lead 30-40%, Tin <1%, Bismuth <0.03%.

Today's Pewter alloy is comprised mainly of tin. To meet American Pewter standards, it must contain 92% tin. Older pewters are usually very dark gray with tarnishing (lead tarnishes easily.) Modern pewters do not contain enough metals that tarnish as easily, and therefore seldom need to be polished.

<http://www.megalink.net/~sjcphp/Pewter.html>, http://www.dmgovan.com/?page=what_is

Machined Steel

Steel manufacturers add lead to steel when producing steel bars to make them easier to cut and

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and shape. The steel bars are sent to machine shops, where machinists create screws, cogs, flywheels and other parts for machines. The most common use for the steel is in automobile parts. An estimated 3 million tons of leaded steel, mainly a grade known as 12L14, are used by the nation's 700 machine shops each year. Under a car or in an engine, for instance, threaded fittings and all the long rods with machined ends are made of machining steel. Leaded steel is a small percentage of all steels – approximately 3%.

Somewhere in history, lead became a key ingredient in steel that could be easily machined without rapidly wearing out cutting tools. Scientists have found that tin, which is less toxic than lead, can have this same beneficial effect and have created lead-free or green steel. <http://www.postgazette.com/healthscience/19990719steel1.asp>

Roofing and Prefabricated Building Materials

- **Metal Roofs, Metal Building material**

Metal roofs are made of steel coated with “galvalume” to prevent corrosion. Galvalume is 55% aluminum, 43.4% zinc, 1.6% silicon. After that, the roof is coated with a colored resin based fluorocarbon or fluoropolymer finish (paint), like Kynar or Trinar. Many prefabricated metal buildings are made using the same process as that for metal roofs. Lead may be present, depending on the color used and the manufacturer. Akzo Nobel’s paint chemist told me they try not to use lead in their paints but if a customer requests a particular color, lead pigments may be the only option. After discussion, if the customer gives the okay, leaded pigments will be used. Colors most likely to contain lead are bright yellows and oranges. Sometimes you’ll find lead in bright reds. Usually you will not find lead in earth tones like brown, black, grey, green, or barn red. Copper roofing was soldered with lead, probably still is. If you are unsure, find out who supplied the metal panels and ask the building/roof maker about lead content. (Akzo Nobel 614-294-3361)



That said, on the web is a company from England, Sharp’s Leadwork, that states “Established in 2003, we are a relatively new company specializing in lead roofing and lead applications. We pride ourselves on using traditional methods to work the lead as well as embracing new technology. Our work comprises of sandcast lead and milled lead applications.”

Here is one of their workers without gloves.

- **Flashing**

Lead flashing is used around vent pipes and roof drains because it withstands hot temperatures. Lead-coated copper flashing as well as lead flashing is used around masonry.

- **Roofing nails**

Lead is used in the roofing nails that have the rubber washers. The heads of the nails are pure lead. The lead is soft and designed to flatten when hit to create a seal. These are used on metal roofs.

- **Gutters**

Some copper gutters are lead coated.

Glass

- **Lead Crystal Glasses, decanters & pitchers**

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Lead crystal is also called *crystal*, *flint glass* or *lead glass* and is a soft, fusible, lustrous, brilliant lead-oxide optical glass with high refraction and low dispersion. An Englishman of the early 1600's added lead oxide to molten glass, thereby increasing its luster, brilliance, and refractive potential. The lead made the glass optically denser (more resistant to light rays passing through it). The rays bent as they passed through the lead glass, creating spectrums of pure color and brilliant reflected light. Acidic juices & wines stored in leaded crystal will become contaminated with lead.

Helpful hint: Never store liquids in lead crystal glasses or bottles, drink from lead crystal on a daily basis, (especially if you are pregnant!), or feed an infant or child from a lead crystal baby bottle or cup.

- **Optical Glass (for lenses)**

Because of its sophisticated processing and high lead content, lead crystal optical glass is more pure and radiant than lead crystal. Optical glass is unsurpassed in its ability to gather and transmit light. It is used in telescope lenses and in laser technologies, as well as in optic fiber cables that transmit light hundreds of feet even miles - with no loss of intensity. It is also sometimes used by sculptors. Some optical crystal is lead free.

Antiques

- Painted furniture
- Painted or metal toys
- Brass or copper musical instruments
- Old crayons
- Old pewter items
- Coins (We tested a 4th century Roman coin, AD 348, and found 84.5% copper and 11.7% lead)

Glazes

Lead is used in some hobby and artists ceramic glazes because it is required to allow glazes to mature at lower kiln temperatures, to fire properly in kilns without precise firing temperatures, to prevent cracking, to provide certain colors not otherwise attainable, and to withstand repeated dishwasher use. Thus, lead is essential to providing a high quality, safe glaze, and no other ingredient supplies the same effects. "Food safe" glazes containing lead, if fired to cone 06 (1,830 degrees Fahrenheit) or higher, will comply with the FDA safety requirements for lead release from finished articles. To assure that glazes initially labeled as food safe continue to be so, manufacturers test the lead release of articles finished with these glazes before every formula change, then periodically using the FDA testing method. Glazes that are labeled as food safe should not release lead over the limits established by the FDA standard for food safe.

However, lead-free glazes, including some food-safe glazes, have been developed for use in institutions and by consumers such as children who need a glaze that requires no precautions during its use. According to ACMI's toxicologist, lead-containing hobby glazes should be used only by individuals who are capable of following safe use instructions; if supervision is required (such as in elementary schools, hospitals, nursing homes, and mental institutions), non-toxic, lead-free hobby glazes should be used.

<http://www.lead-safe.org/Parents/Sources/lead&art.html>

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WHERE LEAD HIDES

- **Bathtubs:** Many fixtures, such as bathtubs, contain as much as 88% lead in the glaze. As late as 1995 some manufacturers were continuing to use lead in the glaze for their cast iron, porcelain, and steel enamel tubs.

Helpful hints: Children do often drink bath water - repair any chipping glaze in old tubs.

- **Ceramicware**

Since 1980, FDA has had limits on lead and cadmium in ceramic ware products. The limits were lowered in 1991 to reduce consumer exposure to lead in food from ceramic dishes that may have lead glazes. Most ceramic ware items sold in the United States meet current FDA limits because manufacturers tightly control the way they make dishes to minimize the potential for lead to leach into food.

Although most crafts people in the United States are very aware of lead issues and work hard to make their products lead safe, hand-crafted ceramics may pose a risk because of uneven quality control or the ceramics firing practices used. If you are concerned, talk to crafts people whenever possible about this issue.

Potential risk factors include:

1. **China handed down from a previous generation.** These heirlooms were made before lead was recognized as a hazard.
2. **Home-made or handcrafted china**, either from the U.S. or abroad, unless you are sure the maker used a lead-free glaze or high-temperature, commercial firing practices.
3. **Highly decorated, multi-colored inside surfaces** (the part that touches the food and drink).
4. **Decorations on top of the glaze instead of beneath it.** Can you feel the decoration when you rub your fingers over it? When you hold the piece at an angle to the light, can you see brush strokes above the transparent glaze surface? Has the decoration begun to wear away?
5. **Corroded glaze**, or a dusty or chalky grey residue on the glaze after the piece has been washed. **THIS TYPE OF CHINA COULD BE QUITE DANGEROUS. STOP USING IT AT ONCE.**

Any combination of factors 1 through 4 deserves particular attention. Factor 5, which could indicate extreme danger, is fortunately quite rare.

Helpful hints: To avoid possible exposure to lead from ceramics and other tableware, do not store food in any dishes that may contain lead or in antiques or collectibles. Be wary of using food or beverages stored in highly decorated or metallic-coated tableware, particularly items made in other countries or by amateurs and hobbyists. Pregnant women should limit their use of lead-glazed mugs or cups for hot beverages, since lead is harmful to fetuses. Don't heat or microwave suspicious china. Many manufacturers of tableware maintain toll-free telephone numbers for consumers to call if they have questions about their product. To obtain a manufacturer's phone number, contact the information operator for toll-free numbers at (800) 555-1212. <http://www.nsc.org/issues/lead/leadindishes.htm>

[Annieglass](http://www.annieglass.com) - (888) 761-0050

[Corning](http://www.corning.com) - (800) 999-3436

[Dansk](http://www.dansk.com) - (800) BY-DANSK

[Dudson Group \(USA\)](http://www.dudsongroup.com) - (919) 877-0200

[Homer Laughlin](http://www.homerlaughlin.com) - (800) 452-4462

[Lenox](http://www.lenox.com) - (800) 635-3669

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[Mikasa](#) - (866) MIKASA1

[Pfaltzgraff](#) - (800) 999-2811

[Pickard](#) - (847) 395-3800

[Portmeirion](#) - (203) 729-8255

[Royal Doulton](#) - (800) 682-4462

[Spode](#) - (800) 257-7189

[Vietri](#) - (800) 277-5933

[Villeroy & Boch](#) - (800) 223-1762

[Waterford / Wedgwood](#) - (800) 955-1550

Check your china's safety at

http://www.environmentaldefense.org/documents/994_LeadChina4.htm. This list, released jointly by the Attorney General of the State of California and Environmental Defense, gives the names of individual patterns of fine and everyday china that meet California's stringent standards on lead exposure. Listing is by manufacturer, brand, and pattern. Federal standards are not as strict as California standards, and there's no reason not to take advantage of the most protective standard.

Check out this EXCELLENT web site:

<http://www.environmentaldefense.org/article.cfm?contentid=952>

- **Imported Ceramics and Dinnerware:** Suspect ceramic ware products entering the United States from

other countries can be automatically held at Customs until the importer or distributor can prove that the products meet FDA requirements. Sometimes, however, individuals bring ceramic ware items into the United States in personal baggage. These items may not be closely examined when they enter the country and may have a lead glaze or decoration that can allow high levels of lead to get into food.

If you ever see a label on a bowl or plate that says "Not intended for food use" or the Proposition 65 Warning, heed the warning. Almost all American and Canadian ceramics makers meet lead safety standards for glazes. In some imported ceramics from Mexico, China, Italy, Spain, India, Korea, Macao, Pakistan, Thailand etc., however, heavy lead leaching has caused severe lead poisoning.

- **Glazed bean pots from Mexico**
- **Royal Norfolk plates**, made in China, with a Christmas design (holly berries and leaves) with gold trim on the edge have been found to contain lead. Some have removable labels. Some have no labels. FDA requires non-removable labels. These are sold in Dollar Tree stores.

Helpful hint: Before buying imported ceramics to be used for food and drink ask (1) the supplier, (2) the maker, or (3) Food & Drug Administration (FDA) about the product's lead safety 1-800-INFO-FDA. To have your ceramics tested for lead, call the Lead Poisoning Prevention Program, 251-6104. LeadCheck Swabs, sold at Lowes, 2 for \$4, can also be helpful.

Ceramics from China should be certified by the China National Certification and Accreditation Administration which means the factory provided FDA with reasonable assurance that ceramicware produced in these facilities and exported to the United States will satisfy FDA action levels for leachable lead and cadmium.. Retail cartons should bare this sticker: Actual Size, Approximately 15mm, Blue on White "H" Sticker/Logo with Unique Factory Code. For a current (5/05) list of certified ceramicware factories in China: <http://vm.cfsan.fda.gov/~comm/ceramic.html>



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- **Ceramic Tile:** Some glazes on ceramic tile (floor, wall & ceiling tiles) were found to contain lead. Glazes

were generally made with white lead and mixed with finely ground metallic oxides that provided the color. Colors included yellow from lead and antimony! These tiles were produced from many different countries around the world. <http://www.leadpoisoningnews.com/whatis.html>

Organ Pipes

Curtain Weights

Cars

- **Car body Paint**

- Clothing of body-shop workers
- Cars with deteriorating paint
- Soil underneath these cars

- **Wheel Weights**

Lead wheel weights falling off cars and trucks is an unregulated source of lead pollution in the U.S. On average, cars and light trucks have up to 10 wheel weights that range from 1/2 inch to 6 inches in length and from 1/4 ounce to 4 ounces in weight. Recent studies have documented that on average 13% of wheel weights fall off vehicles during driving. One study estimates that 3.3 million pounds of lead per year are deposited on urban roads in the United States. Lead wheel weights are actually very soft and when they fall off a vehicle they are rapidly abraded by traffic into smaller pieces, scattered into the wind as dust, washed into storm sewers and waterways, and picked up by shoes, animal paws, and bicycle tires. Weights made of zinc or steel are being promoted as a safer alternative to lead.

There is movement to have all auto manufacturers and tire retailers committed to phasing out the use of lead wheel-balancing weights in the U.S. by July 2006. Use of lead weights in Europe are to be banned starting in July 2005.

<http://www.leadfreewheels.org/release20050517tsca.shtml>

- **Lead-acid Batteries**

In 1990, lead-acid storage batteries, used for motor vehicles, motive power and emergency back-up power, accounted for 80% of total lead consumption in the US.

- **Used motor oil**

Used motor oil can contain toxic substances such as benzene, lead, zinc, cadmium, magnesium, copper, zinc, and other heavy metals which are picked up from the engine.

Used motor oil can present a threat to health through skin contact, skin absorption, inhalation, or ingestion. Many of the problems associated with used motor oil are due to exposure to the heavy metals. These health problems are cumulative, so with each exposure to used motor oil the amount of heavy metals added to the body's system increases.

Helpful hints: Wear protective gloves; Store used motor oil away from children and sources of ignition. Place in a labeled container with a tight-fitting lid. Recycle used motor oil! Recycling

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removes metals. Do not put used motor oil in the trash, on the ground or down storm sewers, spray it on roads, or allow your car to leak oil. Do not burn used motor oil. When, burned, heavy metals quickly adsorb onto surrounding soil particles and contaminate the ground. Also, heavy metals and other contaminants can be released into the air, which may cause serious health and environmental problems.

<http://youcan.toxicfreehomes.com/house1/motoroil.htm>

- **Radiators**

Lead exposure is a significant problem of radiator repair work, a small industry that is abundant in Mexico and other developing countries.

- **Gasoline for Closed-wheel racing cars, Piston-engine aircraft, Recreational boats, Construction equipment, and Farm machinery**

Lead was banned for use in gasoline for transportation on January 1, 1996. Because the above vehicles are considered "off road vehicles", they do not have to abide by the same gasoline restrictions as cars or "on-road vehicles". Although some use diesel fuel, others still use leaded gas or lead additive. Lead can be combined with organic chemicals to form lead compounds that are very different from metallic lead. The most common organic leads are alkyl-leads. Of these, the Tetraalkyllead compounds (Tetraethyllead [TEL] and Tetramethyllead [TML]) are the most common and have been used and are still in use primarily as a fuel additive to reduce "knock" in combustion engines.

Alkyl leads can enter our bodies when we breath fumes or exhaust. Unlike metallic lead, alkyl leads can also be absorbed through the skin.

Lead particles can remain airborne for some time following the initial introduction into the atmosphere. Therefore, residents in the vicinity of race tracks and general aviation airports where leaded gasoline is still being used as fuel may have an increased risk of lead exposure. Similarly, spectators at racing events or air shows may also be exposed to alkyl-lead emissions resulting from fueling or to lead compounds emitted as exhaust. Information to quantify the risk of these exposure pathways is not currently available.

Aviation fuel attendants, mechanics, and racing crew staff are also potentially exposed due to inhalation of alkyl-lead compounds during fueling, evaporative emissions from spills, or evaporative emissions from unused gasoline remaining in the engine or fuel tanks. Further, these populations may be at risk because of possible dermal absorption of gasoline containing alkyl-lead compounds. Again information to quantify the risk of these exposure pathways is not currently available. <http://www.p2pays.org/ref/06/05724/>

Sound insulation

Lead is a terrific acoustical barrier because it is limp and does not vibrate (much) and hence effectively blocks the sound as long as it is sealed airtight. There are some now made without lead but be cautious when removing any sound-proofing materials. There are many places you may find sound insulation: boat engine room soundproofing, RV,campers, mechanical sound insulation, soundproof generator enclosure, recording studio room soundproofing, music studio room, theater,home applications between floor levels and rooms, acoustic insulation for machinery,trucks, vans, new construction, businesses, theater surround sound insulation, boat

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carpet underlayment, boat headliner, marine sound damping, pool pump room soundproofing and any place there's excessive sound levels.

Caulk, sealants

These are used to prevent water damage on long seams, such as around windows, doors, sinks, tubs and showers. They can also be used to hide gaps in woodwork and fill long, narrow cracks in ceilings and walls.

Lead Putty and Putty Powder



This lead putty is 90% lead, but is soft, like putty. The manufacturer says "Also useful as a fishing line weight or behind a golf club head. Marvelous stuff!" Yikes. Putty in general is a dough-like compound used to fill in holes (from nails for example) and for surface defects or open spaces. It is made of whiting (finely powdered calcium carbonate) and boiled linseed oil. Other substances may be combined with the oil to make putties suitable for some specific purpose. For example, red-lead putty is a compound made of red and white oxides of lead mixed with boiled linseed oil. This putty is used to seal pipe joints. White-lead putty is a combination of whiting, white lead or lead oxide, and boiled linseed oil. Putty hardens gradually when put in place, as along the edges of window panes to fasten them, in cracks in plaster walls, and in crevices in wood and other substances. The linseed oil absorbs oxygen from the air and, holding fast the calcium carbonate or metallic oxides, causes the mixture to harden. The putty can become very brittle over the long life and crumble and flake.

A powder composed of a mixture of lead and tin oxides, known as putty powder, is extensively used in polishing. Putty is generally being replaced in many applications by caulking materials of butyl and silicone rubbers. The higher cost of these materials is offset by their greater durability. <http://www.infoplease.com/ce6/sci/A0840595.html>

Helpful hints: Buy non-lead-based putty.

Candles with metal in wicks

Lead can be absorbed by inhalation during the burning of candles with lead core wicks.

Not all candles are made with wicks that have metallic cores. The practice is primarily used with candles that are needed to burn longer such as scented or ceremonial candles. A metal core is used to provide rigidity to the wick which provides an even and slower burn rate, and to reduce the mushrooming at the tip. Since lead and its alloys melt at relatively low temperature, a large fraction of the wick core material is volatilized as the candle is burned.

Most candles containing lead core wicks came from the People's Republic of China. Candles made in Canada, United States, Mexico & Taiwan were also found to have lead core wicks but less often. Metal cores in Chinese candles were made of either pure lead or lead alloy. Metal cores made in the United States or Mexico consisted of zinc or lead-containing alloys. Lead was detected in small quantities in emissions from zinc-based wicks, suggesting that the lead may be a common contaminant in the zinc, wick or wax. The levels of lead were small, but still may represent a health risk over a long period of time.

Helpful hints: Discard candles with lead cores. Before buying candles and to allow you to make an informed purchasing decision, you should ask the retailer if they contain a lead core

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wick. For candles already in your possession, you can tell if they have a lead core wick by following three easy steps:

- Remove any wax from the tip of the wick.
- Separate the fibre strands from the wick to see if the candle has a metallic core.
- If the candle has a metallic core, rub the core on a piece of white paper. If the mark left on the white paper is grey in colour, then the metallic core is probably lead.
- If you discover that your candle has a lead core wick, you should discard the candle using normal household garbage disposal procedures.

Powder

In March 2000, testing revealed 10 powders to contain trace amounts of lead (up to three parts per million). The tests did not actually reveal the powders to be harmful to children, and several of these same companies also manufacture lead-free, unmedicated powders. The common denominator in all of the ones with detectable levels of lead is the active ingredient zinc oxide, added to treat rashes and minor skin irritation.

Because zinc oxide itself is frequently contaminated with lead, applying the medicated powders directly to the chafed, sensitive area of diaper rash may be of particular concern. Although lead is not significantly absorbed through the skin, it is a problem when ingested or inhaled.

<http://www.emagazine.com/view/?484>

The goal is for these companies to take the lead out. In the meantime, read labels and avoid powders that contain zinc oxide. The Center for Environmental Health reported the following baby powders that do and do not contain lead:

Powders with NO lead:

- Diaparene Cornstarch Baby Powder
- Johnson's Baby Powder
- Johnson's Baby Powder with Aloe and Vitamin E
- Longs Hypoallergenic Baby Powder
- Walgreens Baby Powder

Powders WITH LEAD:

Ammens Medicated Powder	2.50 ppm
Caldesene Protecting Powder	2.40 ppm
Desitin Baby Powder	0.96 ppm
Dr. Scholl's Medicated Powder with Zinc Oxide	2.40 ppm
Gold Bond Medicated Baby Powder	3.00 ppm
Gold Bond Medicated Body Powder	0.63 ppm
Johnson's Baby Medicated Powder	0.54 ppm
Longs Medicated Body Powder	0.87 ppm
Mexsana Medicated Body Powder	2.80 ppm
Walgreens Medicated Body Powder	0.75 ppm

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Imported Crayons

This is a good place to "buy American." So many Chinese crayons and chalks are contaminated with lead that it is impossible to buy them with any peace-of-mind. Be sure to check the small boxes of crayons given out by fast food restaurants and others; most of them come from China. In 1999, the Consumer Product Safety Commission tested Crayola brand crayons, made in America, and found them to meet federal lead safety standards.
<http://nolead.home.mindspring.com/crayons.htm>

Chalk used for pool (billiard) cues

The colored chalk was found to contain between 5000 and 7000 parts per million lead, similar to the level in paint considered dangerous. Twenty different brands of pool cue chalk were evaluated and three brands were found to have elevated levels - Master Green, Pioneer Green and Pioneer tangerine. Children may be harmed by eating the chalk or cue-chalk dust deposited on surfaces within the house.
<http://www.svpl.org/Docs/CueChalkHazard.html>

Dentist

Patients are at risk for exposure to a substantial amount of lead during a dental radiograph procedure if the office stores dental intraoral radiograph film in boxes with lead oxide (a white powder). These protective boxes were used to stop the release of radiation. Advances in dental radiograph technology have made lead-lined radiograph storage boxes unnecessary. Because lead oxide cannot be removed adequately, the film packets stored in lead-lined boxes and the film packets stored in them should be discarded. Lead foil, dental bite wings, and discarded lead shields contain lead. Dental trap filter wastes contain lead, silver, mercury. Fluoride treatment chemicals may be contaminated with lead, arsenic and other toxic industrial by-products.

Fluorescent Light Bulbs

Fluorescent bulbs contain toxic metals such as mercury, cadmium and lead. Unbroken lamps pose no threat to human health and the environment and may be managed as a universal waste. However, when fluorescent bulbs are broken, people may be exposed to toxic levels of mercury vapor and other metals which can be easily inhaled.
<http://www.dnr.state.mo.us/oac/pub1167.pdf#search='lead%20in%20photo%20processing%20chemicals'>

Incandescent light bulbs may contain lead in soldered bases (that silver dot at the bottom of the bulb) and glass at levels that exceed the hazardous waste limit. Other tests occasionally indicated incandescent bulbs also had cadmium levels at hazardous waste levels.

<http://www.deq.state.mi.us/documents/deq-ead-tas-eleclamp.pdf#search='light%20bulbs%20contain%20lead'>

Helpful hint: Safely store bulbs and dispose of during hazardous waste recycling days.

Medical Equipment

- **Radiation shields to protect against X-Rays**
- **Electronic ceramic parts of ultrasound machines**
- **Intravenous pumps**

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- **Fetal monitors**
- **Surgical equipment**

<http://www.haz-map.com/leadfact.htm>

Scientific Equipment and Personal Electronic Items

- **Electronic circuitry, Circuit boards for computers**

Lead is found in the surface finish/plating of electronic components and circuit boards, in plastic components, and in solder. In April 1993, the Lead Exposure Reduction Act and others were introduced in the U.S. banning lead for use in plumbing and housing but lead in electronic products was exempted! Today, lead-free electronic assemblies are only found in personal-use products, such as TVs, radios, cell phones, cameras, tape players, and computers but only in 5-10% of them! The technology is available but there are also economic and manufacturing issues to address. Some say lead-free items are more expensive and less reliable and that making lead-free high-end electronics, like ATM switches, servers, routers, automotive modules, and military weapons, is more questionable. Another option being considered is to continue to use lead but implement electronics recycling.

On February 13, 2003, lead-free became a law in the European Union (EU), with an implementation date of July 1, 2006. From that date on, no electronic products (except those with exemptions) can be made in or shipped to the EU if they contain lead. Plastic ball grid array (PBGA), chip scale packages (CSP), flip chip, and wafer-level chip scale packages (WLCSP) are popular in consumer, computer and communication products. Most of these packages use solder as an interconnect material and will be affected by the lead-free regulations.

In the EU, there are two lead-free directives or laws on “waste electrical and electronic equipment” (WEEE), and “restriction of the use of certain hazardous substances in electrical and electronic equipment” (RoHS). In brief, WEEE seeks to increase recycling and recovery of waste equipment. RoHS bans lead (Pb), mercury (Hg), cadmium (Cd), hexavalent chromium (HC), polybrominated biphenyls (PBBs) and polybrominated diphenyls ethers (PBDEs).

In some products, lead is exempted by RoHS. For example, lead in solder for servers, storage and storage array systems; lead in solder for network infrastructure equipment for switching, signaling, transmission as well as network management for telecommunications; lead in electronic ceramic parts such as piezoelectronic devices; lead in high-melting-temperature-type solders such as tin-lead solder alloys containing more than 85 wt percent Pb. Also monitoring and control and medical equipment are not subject to the ban.

Although Japan has no lead-free laws, since 1998, Japanese manufacturers have been using lead-free soldering and technology in many popular lead-free consumer products such as MiniDisc players, refrigerators, cleaners, personal computers, notebooks, mobile phones, TVs, VCRs, PCBs and motherboards.

http://cgw.pennnet.com/Articles/Article_Display.cfm?Section=Archives&Subsection=Display&ARTICLE_ID=195252

Helpful hint: To recycle your cell phone, PDA's beepers, chargers, etc., call RiverLink, 828-252-8474, X110

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- **Cathode Ray Tubes (CRTs) in TVs and Computer Monitors**

A CRT is used in most televisions and computer monitors (Liquid Crystal Displays (LCDs) and plasma displays do not use CRT technology). Lead is used in CRTs to protect users from potentially harmful exposure to x-rays. The lead in CRTs is bound in a glass matrix as lead oxide, and is stable and immobile. According to the data collected, the average CRT for the time period 1995 to 2000, including televisions and monitors, is an 18.63-inch CRT with a lead content that varies from 2.14 lbs to 2.63 lbs.

http://www.eiae.org/whatsnew/attachments/Lead_in_CRTs.pdf#search='lead%20in%20cathode%20ray%20tubes'

Military Equipment

- **Jet turbine engine blades**
- **Military tracking systems**

Occupations that involve work with lead or lead paint

Jobs that expose an adult to lead can also expose vehicles, homes, and others to lead through lead-dust-contaminated clothes, hair or skin.

- **Automotive body or radiator repairers**

Many painting jobs involve the application of a primer, base coat, and a clear coat. Typically, the base coat contains colored pigments and carrier solvents. The material safety data sheets listed these hazardous substances as components of pigments: chromium, nickel, antimony, and lead.

Workers involved in autobody repair can potentially be exposed to a multitude of air contaminants. During structural repair, activities such as sanding, grinding, and welding generate aerosols that are released into the worker's breathing zone. If the surface of the car being repaired contains toxic metals such as lead, cadmium, or chromium, exposure to these metals is possible. Workers who paint cars can be exposed to organic solvents, hardeners that may contain isocyanate resins, and pigments that may contain toxic components. During spray painting in autobody repair shops, workers are exposed to all of the paint components including metals such as lead and chromium.

The International Agency for Research on Cancer (IARC) has reviewed the health effects associated with painting operations. In the IARC publication, the term "painters" included workers who apply paint to surfaces during construction, furniture manufacturing, automobile manufacturing, metal products

manufacturing, and autobody refinishing. After reviewing a wide range of publications, they concluded: "There is sufficient evidence for the carcinogenicity of occupational exposure as a painter." In addition, they noted that painters suffer from allergic and non-allergic contact dermatitis, chronic bronchitis, asthma, and adverse central nervous system effects.

<http://www.osha.gov/SLTC/autobody/docs/ectb179-14a/ectb179-14a.html>

<http://www.osha.gov/SLTC/autobody/docs/nioshctm/nioshctm.html>

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Helpful hints: Wear a good, tight-fitting respirator to keep from inhaling lead dust. Use a P-100 or R-100 PARTICULATE filter, formerly known as HEPA (not the charcoal type, they are for organic vapors). Shave off the beard to get a good fit and get a fit-tested in your respirator. When you are shopping for a respirator, "N" means not oil proof, "R" means oil resistant, "P" means oil proof. N 95 is not sufficient for the fine dust. P100, or R100 is a better choice. P100 removes 99.97% of dusts, mists & fumes down to .3 microns in size. OSHA allows a half-face mask with P100's to be used for up to 10X the permissible exposure limit for an 8 hour day. An N95 filter is about as much protection as one of those filter masks sold for nuisance dusts. Even at that, a half-face respirator even with a P100 isn't sufficient protection at extremely high lead concentrations or if you burn or weld on metal that is covered with lead-based paint. Burning and welding breaks the lead into atom-sized particles at very high concentrations. Those operations may require a Powered Air-Purifying Respirator (PAPR) or in some cases even supplied air or SCBA. None of this is worth a darn without a good facepiece seal.
<http://www.ytmag.com/cgi-bin/viewit.cgi?bd=pbwork&th=7975>

- **Battery breaking, recycling or manufacturing**
- **Brass or copper foundry work**
- **Bridge, tunnel, tower and ship work (where lead paint was used)**

Ironworkers, painters, laborers, and other construction workers may be exposed to lead during repair of bridges and steel structures. Workers need protection whenever they disturb or remove lead paint - when torch cutting, grinding, scaling, needle gunning, rivet busting, and cleaning-up. Workers are exposed by breathing in tiny airborne particles or by hand to mouth activities, like smoking or eating.

OSHA has estimated that over 5000 bridge repainting and rehabilitation projects involving lead exposure will occur each year (Federal Register, 1993). In addition, exposures greater than 400 times the current OSHA Permissible Exposure Limit (PEL) for construction have been documented during torch burning and abrasive blasting - activities common to bridge rehabilitation and demolition work.

Owners and contractors must ensure the health and well-being of workers, their families, the community and the environment. Reliance on regulatory enforcement *alone* is wholly inadequate since: 1) enforcement is scarce relative to the large volume of work underway, and; 2) compliance approaches often identify problems *after* harmful exposures have already occurred. Therefore, contracts should include specifications on the use of protective work practices and controls and the selection of a qualified contractor. Costs and enforcement are the responsibility of the owner. <http://www.cdc.gov/elcosh/docs/d0500/d000562/d000562.html>

- **Building construction and demolition work**
- **Cable repair**
- **Ceramics and jewelry making**
- **Chemical industry**
- **Closed-wheel auto racing**
- **Electrician**

Case Study: An electrician habitually chewed on the plastic insulation that he stripped off the ends of electrical wires. Samples of the copper wire with white, blue, and yellow plastic insulation were obtained and analyzed for lead content. The clear plastic outer coating (present on all colors of wire) and the copper wire contained no lead; however, **the colored coatings**

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contained 10,000-39,000 ug of lead per gram of coating. On receipt of these results, he was instructed immediately to discontinue chewing the wire coating.

- **Firing-range instructors and Police Officers**
- **Gas-station attendants**
- **Gasoline additives production**
- **Lead mining, smelting and processing**
- **Paint, pigment or shellac manufacture**
- **Plastics industry**
- **Plumbing/pipe fitting**

Putty is cementing material made of whiting (finely powdered calcium carbonate) and boiled linseed oil.

Red lead putty is a compound used for caulking pipe joints, made of red lead, white lead, and boiled linseed oil. Red-lead putty is used as luting on pipe fittings.

- **Pottery workers**
- **Printing**

Many components contain hazardous materials:

Etch baths for making printing plates may contain hydrochloric acid, nitric acid, and heavy metals;

Solutions used in platemaking film processing may contain silver, lead, chromium, cadmium, toluene,

chloroform, and methylene chloride;

Printing inks may contain a variety of toxic metals, such as chromium, lead, and cadmium, along with

hydrocarbon solvents, plasticizers, barium-based pigments, and acrylic copolymers;

Cleanup washes may contain ethyl alcohol, benzene, toluene, xylene, methyl ethyl ketone, perchloroethylene,

carbon tetrachloride, and kerosene.

<http://www.greenbiz.com/toolbox/printer.cfm?LinkAdvID=4204>

- **Rubber industry**
- **Scrap metal industry**
- **Shipfitters**

A 2001 study found that shipfitters working aboard ship are overexposed to lead.

Recommendations include substituting lead based paint with less toxic materials if feasible, avoiding the use of lead-based putty.

- **Soldering of lead products**
- **Solid waste production**
- **Stained-glass makers**
- **Welding/metal working**

All welding processes produce fumes and gases to a greater or lesser extent. For example, galvanized steels will produce added fumes from the vaporized zinc coating. Fumes from welding galvanized steel can contain zinc, iron and lead. Fume composition typically depends on the composition of materials used, as well as the heat applied by the particular welding process. In any event, good ventilation minimizes the amount of exposure to fumes. Prior to welding on any metal, consult ANSI/ASC Z-49.1, *Safety In Welding, Cutting and Allied Processes*, which contains information on personal protection, the general welding area, ventilation, and fire prevention.

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WHERE LEAD HIDES

Hobbies that involve work with lead or lead paint

Hobbies that expose an adult to lead can also expose vehicles, homes, and others to lead through lead-dust-contaminated clothes, hair or skin.

- **Antique furniture restoration**
- **Boat building**
- **Casting lead fishing sinkers, shot or pewter**
- **Fishing**

Never put a lead sinker in your mouth or bite down on slip shot - use a pair of pliers instead! Always wash your hands thoroughly after handling lead sinkers or cleaning out your tackle box. Consider using a non-lead alternative. Sinkers, including split shots, are now available in less toxic compounds such as tin, bismuth, and tungsten. Ask your local tackle shop or retailer to carry non-lead alternatives.

Several species of water birds are vulnerable to lead poisoning from the accidental ingestion of lead fishing sinkers. Species of special concern include those that feed in shallow waters, such as bay diving ducks, surface feeding ducks, sea ducks, wading birds (cranes, herons, bitterns, and egrets) and shoreline feeders (geese and brants).



If you manufacture lead fishing sinkers, jigs, or spinnerbaits at home, you may be exposing yourself and your family to lead. Lead, when melted, can produce airborne particles that can move around your house and can cover everything—soil, dust, walls, floors, furniture, clothing, toys, stuffed animals, etc. While the best solution is to not manufacture at home—at a minimum, keep children's toys out of work areas, set up your shop in a building that is detached from your house,

shower and change clothing, especially shoes which can carry lead dust, before entering a home where children live, work in a well-ventilated area, use a fume hood with a micron filter while working with lead to capture small lead particles, wear a respirator mask with a filter, keep your work area clean, clean the floors and walls with a household soap or detergent and water to reduce the amount of lead dust.

- **Indoor shooting**

Since ammunition is often made of lead, those who frequent shooting ranges may be exposed to lead dust.

- **Lead soldering of electronics**

Lead-based solder exposes users to lead through inhalation. For this reason, the solder industry, as a whole, is moving towards reducing and eliminating lead and replacing it with other metals.

- **Lead lighting**
- **Model Derby cars**
- **Home remodeling/renovations**
- **Radiator repair and maintenance**
- **Stained glass**
- **Welding**

Helpful hints: Always remove contaminated clothing and shower before entering living or eating areas or places where children may be present. Always keep children out of work areas.

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WHERE LEAD HIDES

Products from Asia

- **Chinese Herb Products**

Lead is a contaminant in soil. Chinese herb products have some level of contamination reflecting the lead taken up by plants and animals, but certain products appear to become significantly contaminated mainly during manufacture in China, particularly in Hong Kong. The excessive lead in those products may come from intentional addition of substances that have elevated lead levels, concentration of lead in the original materials by making dried extracts, and contribution of lead from contaminated water and contaminated facilities. Efforts are being made in China to reduce lead contamination, including cleaning up drinking water and eliminating lead in gasoline, as well as improving manufacturing procedures at the herb factories. One can expect the lead contamination of herbal materials to decline in the future. A timetable for reduction of lead levels in Chinese herb products has been proposed that is consistent with available data about current lead levels and reasonable expectations for reductions in the lead content of soil, water, plants and animals.

<http://www.itmonline.org/arts/lead.htm>

- **Surma**, also known as kohl, is a powder and is used cosmetically and medicinally. Surma use has persisted especially in the Northern Indian subcontinent, for both medical and mascara-type cosmetic traditions, and is likely to induce lead poisoning in some children. Surma is available as fine powder or heavy crystals of mineral lead sulfide containing 34-90% lead w/w. The color varies from shining deep black to dull gray brown. In some market samples, adding talc and other ingredients may reduce the lead content to 1%. Eye rubbing and finger licking could be the crucial factors in inducing lead poisoning in surma-using children. Beware of imported mascaras.
- **Sindoor**, a medicine from India.
- Asian remedy for menstrual cramps, "**Koo Sar**" pills. Because lead is not listed as an ingredient of Koo Sar pills, it is thought to be a constituent or contaminant of the red dye used to color the pills. The varying lead concentrations measured in different samples of the pills probably result from varying amounts of lead present during manufacture of the red dye.
- Hindu folk medicine - ground seeds and roots as treatment for diabetes (8 mg lead/g)

Products from Dominican Republic

Litargirio (pronounced "lee-tar-heario") is a yellow/peach-colored powder that may contain up to **80% lead**. It is packaged and sold as a home remedy and is most frequently used as an antiperspirant/deodorant. It is also used for treating fungus on the feet, for burns, and for wound healing.

The product is made in the Dominican Republic and is believed to be bought and sold primarily within the Dominican community. It is sold in small clear packets (e.g. 2-inch by 3-inch packages are most common). Some botanicals may sell packages that do NOT contain a label. Powder that accumulates on hands or on surfaces can be accidentally swallowed or can be inhaled.

Helpful hints: Stop use. Thoroughly wash hands and any other exposed body parts that come into contact with the powder. Wash affected household surfaces with soap and water. Put any

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unused product in a sealed container or plastic bag. Contact your local sanitation department for instructions on safe disposal.

Children or pregnant/nursing women should be tested by a health care provider for lead poisoning if they have used this product. <http://www.ci.nyc.ny.us/html/doh/pdf/lead/litargirio-fs1.pdf#search='litargirio'>

<http://my.webmd.com/content/article/74/89422?src=Inktomi&condition=Drug%20Alert>

Food

- Food stored, cooked, reheated or served in:
 - Lead-glazed ceramics or porcelain
 - Leaded crystal or glass
 - Imported cans with lead soldering, (particularly acidic foods such as pineapples, pickles and tomatoes)
 - Lead-soldered samovar (urn) from Iran
 - Painted glass
 - Pots 'tinned' with a lead-tin mixture
 - Brass with leachable lead levels
 - Indian pressure cookers, especially from the rubber gasket and safety

Food from other countries

- Food prepared with the use of leaded gasoline - emissions can deposit lead onto the food
- Spices and food coloring may be contaminated with lead from petrol emissions, lead pigments or painted storage containers. Be especially aware at festivals.
- Food exposed to lead-arsenate pesticides or lead-containing fertilizers
- Root vegetables grown in contaminated soil
- Vegetable coated with contaminated dirt and not washed
- Leafy vegetables exposed to lead dust
- Lead may be in ink used to print candy wrappers or food labels. Lead may leach into food or be consumed during the eating of the product.
- Lead uptake from beer in India, lead contamination in various food colors, lead content of food samples and cereal products have all been investigated and reported.
- Lozeena, an orange powder used to color rice and meat, contains 7.8-8.9% lead.
- Imported "Hungarian paprika"
- Hot beverage machines????
- Some Mexican chili powder and Mexican candies made with chili powder. Some Mexican candies with leaded ink used on the wrapper. Latin American candy brands, widely sold in ethnic food stores, such as Pulparindo, Piño Loca, Vero Elotes, Duvalin, Pelon Pelo Rico and Pelata Ricorindo.
- Four seasonings imported from Mexico, Lucas Limon, Lucas Acidito, Super Lucas and Super Jovy Chili Powder, have been found to have levels of lead that pose a potential danger to children. The company debates the results and says that salt interferes with the lab methods used.
- Candy brands from numerous countries are suspected of being contaminated with lead. Tests by the state's Department of Health Services dating back to 1993 found lead contaminants in 112 candies that exceeded state and federal guidelines. Although 85 are made in Mexico, American brands, including Hershey's chocolate, also tested positive for lead contamination.

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WHERE LEAD HIDES

http://www.detoxamin.com/health-news/imperil_health.html

- **Chocolate**

The lead present in chocolate products is likely to be the result of sloppy manufacturing practices and poor raw materials purchasing practices by cocoa-producing companies. A great deal of scientific research points to the use of leaded gasoline, as well as lead and cadmium in pesticides and fertilizers, as likely sources for lead and cadmium in chocolate. The chocolate companies fail to take available steps to remove from their products both the natural and man-made sources of lead, such as those created by the use of alkalizing agents in making chocolate, or from the use of leaded gasoline, lead in pesticides and fertilizers in growing cocoa beans, or from lead in common dust that occurs in manufacturing plants and from transit vehicles

Helpful hints: Lead intake by 2-year infants from food (versus other sources like dust, water, soil, and air) decreased from 47% to 16% over a 4-year period in which there were marked reductions in the use of lead-soldered cans and lead-containing gas additives in the USA (Bolger et al., 1991). Similar decreases in other countries could occur if similar actions were taken.

Calcium Supplements and Bone meal calcium products:

General concerns have been raised that calcium from natural sources could potentially contain lead in excessive amounts, in contrast to synthetic forms (e.g., calcium citrate) or refined calcium carbonate. Calcium supplements containing the highest levels of lead are often those being marketed as “all-natural”. Calcium supplements found to contain high levels of lead include calcium phosphate or bonemeal (made from bones, which are storehouses of lead) and “natural source” calcium carbonate, mined from limestone rock composed of fossilized oyster shells (which also store lead). http://www.detoxamin.com/health-news/gummy_vitamin.html

Helpful hint: Government statistics show that eight percent of all children age two to six years take an over-the-counter calcium supplement. So does one out of every four women. Each six micrograms of lead in a calcium supplement will translate into approximately one additional microgram of lead in a child’s blood-lead level. Families should carefully read labels and select a lead-free calcium supplement. Some sources of lead-free calcium include:

- antacids such as Tums® or Rolaids®;
- supplements manufactured to USP (United States Pharmacopeia) standards; and
- supplements manufactured to NNFA (National Nutritional Food Association) standards.

http://www.seriaz.org/downloads/Lead_info.pdf#search='lead%20poisoning%20pipe%20organ'

Gummy Bear Multi Vitamins

Although the producers debate the results, a lab reported that L'il Critters Gummy Vites was found to contain 2.5 mcg of lead per two gummy bear serving, an excessive amount for a children's vitamin. The opposing arguments can be found on www.consumerlab.com and www.gummybearvitamins.com. Until the dust clears, you'll have to make your own judgment.

Wine bottles

Lead seals were used on older wine bottles.

Helpful hints: Wash off the neck before popping cork, wipe out the inside of the neck, and discard the top ounce.

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Moonshine

Automobile radiators, containing lead-soldered parts, are sometimes used to distill alcohol. Problem can result from the leaching of lead from solder used in radiators or the adjoining copper pipe during distillation.

Espresso Machines

Two machines, the Saeco Arome Noir (Aroma Nero) model, and the Brasilia Club model, leached lead above the level deemed acceptable under California's Safe Drinking Water and Toxic Enforcement Act of 1986, best known as Proposition 65. Exposures levels for chemicals listed under this law have a thousand-fold safety factor built in. Brass components often contain a high amount of lead in the alloy. As the hot water and espresso come in contact with the brass, lead is leached out into the beverage.

<http://www.cehca.org/consumer.htm#espresso>

Traditional or Folk Remedies or Cosmetics from other countries

Name	Region of origin	Lead level	Medicinal use
Albayaide or albayaidle	Mexico and Central America	93%	Empacho (vomiting, colic), apathy and lethargy
Alarcon, azarcon	Mexico	95%	Empacho (see above)
Coral, luiga, maria luisa, rueda (red orange powder)			
Alkohol	Middle East	85%	Topical medical preparation; applied to umbilical stump
Al Murrah	Saudi Arabia	?	Colic, stomach aches, diarrhea
Anzroot	Middle East	?	Gastroenteritis
Ba Bow Sen	China	1000 mg/g	Hyperactivity and nightmares in children
Bali goli	Asia/India	?	Stomach ache
Bint al dahab, bint or bent dahab	Oman, Saudi Arabia, India	98%	Diarrhea, colic, constipation, and general neonatal use
Bokhoor (and noqd)	Saudi Arabia	?	Wood and lead sulfide burned on charcoal to product pleasant fumes and calm infants
Cebagin	Middle East	51%	Teething powder
Chuifong tokuwan	Asia	?	?
Cordyceps	China	414-20,000 ug/g	Herbal medicine treatment for hypertension, diabetes, bleeding
Deshi Dewa	Asia, India	12%	Fertility pill
Farouk	Saudi Arabia	?	Teething powder
Ghasard (brown powder)	India	2%	Given as a tonic
Greta (yellow powder)	Mexico	97%	Empacho
Hai Ge Fen			
Henna	Middle East	?	Hair and skin dye
Herbal medicines (eg Poying Tan)	China	7.5 mg per dose	General

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Kandu (red powder)	Asia/India	?	Stomach ache
Kohl, Surma or Saoot	Africa, Asia, India, Pakistan, Middle East	Up to 86%	Cosmetic; astringent for eye injuries and umbilical stump, teething powder
Kushta	India/Pakistan	73%	Diseases of the heart, brain, liver, and stomach. Aphrodisiac, Tonic
Pay-loo-ah	Laos (Hmong)	90%	High fever, rash
"Santrinj"	Saudi Arabia	?	Teething powder
Unknown (Ayurvedic)	India, Pakistan, Sri Lanka, Burma, Bhutan, Mongolia, Tibet	1.35-72,990 ug/g per capsule, 3%	Metal-mineral tonic, Slows development

(Compiled by the NSW Lead Reference Centre, 1997 from "Lead is a Silent Hazard", 1994, pp 154-156 and assorted articles in the medical literature)

Coffee Maker

About 100,000 Kenmore Coffee Makers were recalled June 2005 because they may leach lead. The coffee makers are manufactured by Chiaphua Industries Ltd. and distributed by Salton Inc. The Kenmore 12-Cup Percolators were sold exclusively at Sears department stores nationwide from July 2001 to April 2004. For more information, call the company at 800-233-9054. http://wcbs880.com/trouble/recalls_story_164152905.html.

Drinking Water

Buildings up through the early 1900's commonly used lead interior pipes. Plumbing before 1930 is most likely to contain lead. Between 1920 and 1950, galvanized pipes were used for plumbing. After 1930, copper generally replaced lead. Up until the late 1980s, lead solders were typically used to join copper pipes. The lead-free requirements of the 1986 Safe Drinking Water Act mean lead solder with more than 0.2% lead and plumbing with more than 8% lead were banned in 1987. Buildings did not have to be built with certified "lead-free" fixtures until 1997. New buildings are unlikely to have lead pipes, but they are likely to have copper pipes with solder joints. Buildings built prior to 1986 are likely to have joints made of lead solder. Some brass fittings although they contain less than 8% lead in alloy may still contribute a significant amount of lead to drinking water.

Corrosion is a result of the chemical reaction between water and pipes. Known as galvanic reaction this can be vigorous in new piping until a protective layer is built up in the piping. After about 5 years, the reaction usually slows down and lead gets into the water as a result of water being corrosive. If water supplied to a facility is corrosive, lead can remain a problem regardless of the age of the plumbing.

- **Bulk water storage tanks with lead soldered seams or brass fittings**
- **Lead pipes**

Lead pipes are dull gray in color and may be easily scratched by an object such as a key or knife. Lead pipes are a major source of lead contamination in drinking water.

- **Brass pipes, faucets, valves and fittings**

Brass pipes, faucets, valves and fittings are a golden yellow color, similar to copper in appearance, or are plated with chrome. Brass is composed of two metals, commonly copper and zinc. Brass fittings commonly used in drinking water outlets, such as faucets and water coolers, in general contain up to 8 percent lead. This is considered "lead-free" under the Safe Drinking Water Act. Contamination may still take place. The amount of lead that will leach from

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brass products with less than 8% lead is dependent upon the corrosiveness of the water and the processes employed in manufacturing the products. Some older brass fixtures may contain higher percentages of lead solder in their interior construction. It is important to verify that these fittings are lead-free.

- **Lead solder (Often used for copper pipe joints, copper and brass faucets joints, old copper kettles, electric kettles (?).)**

Copper pipes are red-brown; corroded portions may show green deposits. Copper pipe joints have been typically soldered together with lead. Experts regard the corrosion of lead solder as the major cause of lead contamination of drinking water today. Lead solder was banned in 1986.

- **Galvanized pipes**

Galvanized metal pipes are gray or silver-gray and are usually fitted together with threaded joints. In some instances, compounds containing lead have been used to seal the threads joining the pipes. Debris from this material which has fallen inside the pipes may be a source of contamination.

Galvanization is a process that applies a zinc coating to steel or iron. There are trace amounts of lead in all zinc because zinc and lead are often together when mined. Higher grade zinc will have less lead contamination but lower grades may have up to 1.4% lead. There is no completely lead-free zinc. Pipes used for water must be NSF rated which means they will have a lower lead content.

I received conflicting answers about whether older galvanized products had more lead than newer. A gentleman who worked in the steel industry told me that galvanizers used to add lead as a flowing agent to the zinc vats because lead had a low melting point and allowed the zinc to flow better which helped with the coating process but that lead is no longer added. He used trashcans as an example – they used to have a large flower pattern in the metal called “spangle” and, since the 1990’s, they now have a small flower pattern which is a result of having less lead. Matt Gill, American Galvanizing Association, 1-800-468-7732, told me that the grades of galvanized products have not changed much over time. He said that lead was never added, it was just naturally occurring and served as a flow agent. In the two higher grades, the zinc is refined more to remove lead. Bismuth is used as a flowing agent instead of lead. One can’t distinguish the various grades by appearance.

1. Prime western grade = less than or equal to 1.4% lead
2. High grade = less than or equal to 0.03% lead
3. Special High grade = less than or equal to 0.003% lead

The zinc used must not be less than 98% zinc, 2% impurities. The concentration of lead in the bath will be higher than what ends up on the product. Approximately 25-75% of the lead will get transferred. All grades are okay for potable water if they meet NSF 61 Certification.

- **Lead connectors**

Lead piping was often used for service connectors that join buildings to public water supplies.

- **Polyvinyl Chloride (PVC) piping**

Metals are used to stabilize vinyl products like PVC. Lead is one metal that may be used. Around 1995, USA industry stopped using lead in PVC pipes but pipes older than 1995 and those manufactured abroad may contain lead. Be sure PVC pipes meet National Sanitation Foundation (NSF) standards and are free of plasticizers which contain lead. (For copy of the standard contact NSF, 3475 Plymouth Road, P.O. Box 1468, Ann Arbor, MI 48106.)

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Sunlight causes the breakdown of PVC and release of lead. Because most water pipes are not exposed to sunlight, they are not likely to decompose very rapidly and studies at UNCA showed very low levels of contamination. PVC doesn't really pose an occupational hazard, as far as we know.

<http://pasture.ecn.purdue.edu/~schildre/health/survey.txt>

- **Other fittings containing lead**

Lead solders or lead in the brass fittings used in some faucets, water fountains, and refrigerated water coolers may be a source of lead. It is important to identify the locations of all such drinking water outlets.

- **Water from lead-soldered water tanks or run-off systems from roofing with lead-based paint** also may

pose a risk, especially in areas near mining and smelting sites where dust and emissions could add to the problem.

Helpful hints: Have your water tested for lead. Kits available at www.leadtesting.org. Analysis costs \$17.

Consider using PEX piping that meets ANSI/NSF Standard 61. The basic building blocks of PEX are cross-linked polyethylene molecular chains that are called polymers. According to UNCA's Environmental Quality Institute's Rick Maas, PEX is the most inert piping discovered yet, meaning it releases virtually no chemicals. The fittings may be leaded brass, copper, or bronze and may have up to 5% lead but most don't come in contact with the drinking water or have minimal contact. Leaded brass valves, however, may contribute lead to drinking water.

Water Filtration Systems

Studies in 1998 discovered that leaded brass was used in some water filtration systems. Consumers bought these systems to remove lead from their drinking water, but the study found that many systems were actually adding lead into drinking water. Litigation led to rapid conversion of the filtration industry to lead-free materials. Today, much of the industry has switched to zero-lead materials downstream of the filter. If you have a filtration system from 1998 or older, have your water tested for lead. <http://www.cehca.org/filterlead.htm>

Of the 16 filters tested by the CEH, the Omni and Franke filters products listed below were identified as adding the highest levels of lead; the other four raised lead levels slightly.

Omni OT-2. Omni acknowledges it has used lead-containing faucets in other models as well and is in the process of changing to plastic components in all models. For a free replacement faucet for any Omni filter, call 800-937-6664.

Franke UF. Franke has taken this model off the market. For a full refund, call 800-626-5771. A company spokesperson says other Franke models do not have the same problem.

Ametek CCF. The No.1 seller of home water-filter systems. Ametek has agreed to change its entire line of products to stainless-steel or plastic faucets by November 1, 1998. If you already own an Ametek filter, the company will send you a replacement part free of charge; call 800-222-7558.

Amway WTS. Amway says the CEH study is "scientifically flawed" and notes that its filter meets all EPA and NSF standards. While a letter from the company conceded this product may leach small quantities of lead, the amounts remain below EPA action levels. The company is not taking corrective action.

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Aqua-Pure CRF. The company is in the process of changing to stainless-steel components in all models. For a free replacement faucet for any Aqua-Pure model, call 800-835-1919.

Water Boss MPD. The line has been discontinued, although some models may still be available in stores. Water Boss admits the product may leach lead, but argues that the filters are still in compliance with EPA standards. If you own this filter and want to order a non-leaded faucet, call the manufacturer, Touch-Flow Corp., at 818-843-8117; the part will cost \$24.99 -K.M.
<http://www.cehca.org/goodhskpart.htm>

Industrial emissions

Power plants

Additional Lead sources read about but not yet researched/included

Burning of paper logs	Pesticides	Storage and car batteries
Cocktail glasses	Putty	Some sidewalk chalk
Eating utensils	Rainwater	Mirror backing
Explosives	Snow	Art supplies from China
Fertilizers	Water-city	Aprons for X-ray protection
Insecticides	Water-well	T-shirt transfers
Liver	Bone china	Diving weights
Mascara	Fruits	High-temperature
Milk	Air	lubricants
Milk-evaporated, organ meats	Earthenware	Car Exhaust
	Gasoline additives	

Printed materials - Newspapers, magazines, & plastic bread bags often contain lead-based inks which can be harmful to children, if chewed. Avoid using these materials to wrap food.
<http://www.leadpoisoningnews.com/facts.htm>, <http://www.leadpoisoningnews.com/whatis.html>

Where lead is not (according to current knowledge):

Pencils

Believe it or not, there's no lead in pencil lead! The center of the pencil -- known as the writing core -- is made of a nontoxic mineral called graphite. Today's writing cores are a mixture of graphite and clay. By varying the ratio of graphite to clay, pencil makers can adjust the "hardness" of the writing core. <http://www.pencils.com/unlead.html>

Lipstick

According to the FDA, some ingredients used to make some cosmetics do contain trace amounts of the metal. However, the manufacturing process (at least in the United States) is stringently monitored and each batch is tested to make sure it does not contain dangerous levels of lead and other elements. All dyes used in foodstuffs or cosmetics have to be vetted by the FDA for safety, and although some of the colorants the FDA gives approval to do contain lead, it is present in such miniscule amounts that they claim it has no adverse effects on consumers. Manufacturers who wish to do business in the USA are restricted to the use of FDA-certifiable colors only; otherwise their products will not be allowed in the country. Each approved dye has its own rigid set of specifications which must be adhered to - every time a manufacturer prepares a batch of dye for use in its products, it has to submit a sample from that batch to the FDA for certification. Only the FDA can certify colors as safe — no one else has that authority.

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The FDA issues other restrictions dependent on the end use of the product. Lips are considered mucous membranes and products intended for such use can contain only certain FDA-approved dyes which is a smaller subset of approved dyes.

<http://www.snopes.com/toxins/lipstick.asp>, <http://www.breakthechain.org/exclusives/lipstick.html>

Toothpaste

Prior to WWII, toothpaste was packaged in small lead/tin alloy tubes that were coated on the inside with wax but they discovered that lead from the tubes leached into the product. It was the shortage of lead and tin during WWII that led to the use of laminated (aluminum, paper, and plastic combination) tubes. At the end of the twentieth century pure plastic tubes were used.

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