



SOURCES OF LEAD IN THE ENVIRONMENT

A guide to the regulation, identification, and remediation of lead in the home, at work and outdoors

NEW JERSEY
INTERAGENCY TASK FORCE
ON THE PREVENTION OF
LEAD POISONING

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PREFACE

As the most densely populated state of the Union and among those with the oldest and most extensive industrial heritage, New Jersey is particularly subject to the dangers of lead poisoning. A legacy of lead in our homes, soil, and water often creates unacceptable levels of exposure to children, adults, and animals. Since the mid-1980s, the Interagency Task Force on the Prevention of Lead Poisoning has endeavored to educate the public and policymakers about the dangers of lead. By providing information on ways to identify lead in the environment, agency responsibilities, and regulatory and legislative requirements, this document, we hope, will be useful in efforts to reduce exposure to lead.

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Editors Notes

This booklet was prepared by the
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Interagency Task Force for the Prevention of Lead Poisoning.
This booklet is now in its fourth edition. Please check the date of publi-
cation because state and federal laws and regulations change frequently.

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the State of New Jersey.

**This manual serves as an informational guide only. It is not
intended as a regulatory review or for legal purposes. Please
contact the appropriate individual or agency listed for addi-
tional, more specific information about any particular lead
source.**

 *recycled paper cover with soy ink*

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I.0 INDOOR SOURCES

I.1 Paint and Dust

Regulatory Summary:

FEDERAL: The Lead-based Paint Poisoning Prevention Act, passed by the U.S. Congress in 1971 (P.L. 91-695) and amended in 1973, mandates prevention of lead poisoning by removing indoor lead-based paint where exposure is likely in all Department of Housing and Urban Development (HUD) assisted housing and made HUD the responsible agency. The Consumer Product Safety Commission limits lead in all residential paint sold after 1978 to 0.06%. In 1987, the Housing and Community Development Act required HUD to prepare for abatement of lead-based paint hazards in housing. In the 1992 Housing and Community Development Act (P.L. 102-550), the U. S. Congress included the Residential Lead-Based Paint Hazard Reduction Act, commonly called Title X. In federally assisted or federally sold housing built prior to 1978, HUD has developed guidelines on risk assessments, inspections, interim controls and abatement of lead-based paint hazards. Since September 1996, buyers of pre-1978 housing with more than six dwelling units must be given a warning and up to 10 days to get a lead hazard inspection or assessment. The sales contract must disclose the presence of *known* lead-based paint. Since December 1996, all buyers have the same right. Also since September 1996, landlords must disclose the presence of known lead-based paint hazards to prospective lessors of pre-1978 housing. The 1992 Act mandates the accreditation of training providers and training and certification of lead abatement professionals. Research showed that ingestion or inhalation of lead poisoned children at levels lower than previously thought dangerous and resulted in new regulations, standards, and laws. The Centers for Disease Control (CDC) lowered their level of concern for childhood blood lead to 10 mcg/dl ($\mu\text{g/dL}$) in 1991.

STATE: State law passed in 1971 (NJSA 24:14A1 et seq) prohibits the use of lead-paint and requires local health departments to inspect dwellings where children with elevated blood lead levels (EBLs) reside. As a result of this law, the State adopted NJAC 8:51, Chapter XIII State Sanitary Code in July, 1972, which mandates the re-

mediation of lead paint where a lead poisoned child is identified. Legislation signed December 16, 1993 (P.L. 1993, Ch. 288) establishes a training and certification program for individuals and businesses performing lead hazard evaluation and abatement services. The law provides for the DHSS to certify training courses and to issue permits to individuals who have successfully completed a certified course and exam. The DCA certifies business firms meeting requirements for sufficient numbers and types of personnel properly trained and certified. Abatement permits will only be issued to a building owner using his own DHSS certified employees, a homeowner doing the abatement work himself, or a business firm certified by the DCA.

b. Identification and Assessment of Lead: Homes built prior to 1978 may contain lead paint. Generally, the older the home, the more likely its paint contains lead. HUD estimates that homes built prior to 1940 have over a 90 percent chance of containing lead-based paint. If you see peeling paint in your old home, or if you plan to remove old paint, you should have it tested for the presence of lead, and you should take care in removing it. Call DCA at (609) 530-8812 for a list of certified evaluation and abatement contractors. Names of labs certified to test paint films, dust and soils are available from the (800) 424-LEAD hotline. The list is updated quarterly. Some home test kits are available for this purpose but should only be used to screen for the presence of lead and are not accurate at low levels. A 1993 issue of Consumer Reports describes home test kits and how to order them. Infants and toddlers are at greatest risk of ingesting lead. If a dwelling frequented by your child has peeling paint, call your physician or local health department to test your child for lead.

c. Remediation of Lead: When there is a child with a blood lead level equal or greater than 20 µg/dL, lead hazards must be abated according to the specifications described in Chapter XIII of the Sanitary Code. This is available by contacting the NJDHSS, Child and Adolescent Health Program, P.O. Box 364, Trenton, NJ 08625-0364. HUD Guidelines at the federal level are available from HUD-USER at 1-800-245-2691. Property owners receiving HUD financing for lead removal should use the most stringent standards and meet all HUD guidelines.

d. Renovation and Remodeling: Disturbing lead-based painted surfaces during renovation and remodeling (R+R) activities may result in significant lead exposure. Extensive R+R is often performed in older homes or public buildings that have a high probability of containing lead-based paint. For homes built prior to 1978 it is important to have painted surfaces tested prior to R+R. The work area should be isolated from the building occupants, dust control methodologies should be used, and surfaces should be wet-wiped and HEPA-vacuumed at the end of the activity. It is recommended that a certified abatement contractor be used for cleaning and HEPA vacuuming when the presence of lead-based paint is known.

e. Contact for more information: The DCA, Lead-Based Paint Abatement Program provides information on abatement, HUD requirements, financing, and housing programs (609) 633-6179. The National Lead Information Center (800) LEAD-FYI provides literature on lead poisoning and abatement. Technical experts answer questions by phone about lead at (800) 424-LEAD. Abatement and program information is available from USHUD at (202) 755-1805. For information on certification and training programs call the NJDHSS Consumer and Environmental Health Services at (609) 984-2193. For business abatement certification information call (609) 530-8812. Information on blood lead testing and education materials are available from the NJDHSS at (609) 292-5666. For immediate advice if you suspect lead poisoning, call the NJ Poison Control Center at (800) POISON-1. For educational materials on childhood lead poisoning, contact the NJ Dept. of Human Services, Office for the Prevention of Mental Retardation and Developmental Disabilities at (609) 984-3351, or NDHSS, Child and Adolescent Health Program at (609) 292-5666.

1.2 Drinking Water

a. Regulatory Summary:

FEDERAL: The use of lead in pipes or solder in potable water supply plumbing was banned in 1986. Effective December, 1992, new regulations set a treatment technique action level for lead at 15 ppb in a one liter (1,000 mL) water sample: 90% of all samples taken by a water purveyor under a rigid monitoring network, must be equal

to or below 15 ppb. EPA expects this change in the lead standard to result in a net average of less than 5 ppb lead showing up in drinking water. For school drinking water, EPA recommends an action level of 20 ppb in a 250 mL water sample. EPA's Office of Solid Waste and Emergency Response recommends a groundwater clean up standard of 15 ppb near Superfund sites if the water is used as a drinking water source. EPA is considering banning brass fixtures that contain lead.

STATE: New Jersey adopted the federal regulations.

b. Identification and Assessment of Lead: If you have lead solder, lead-containing fixtures (chrome and brass faucet fixtures may contain lead), brass pump for your well, or lead pipes in your plumbing, you may have elevated levels of lead in your drinking water. Older homes (constructed before 1930) having lead pipes or lead service mains, and newer homes (constructed after 1980, but before the 1986 ban on lead solder for potable water) having lead-soldered joints are most vulnerable to lead in drinking water. Minerals can coat the inside of old pipes and protect the water from leaching lead from the pipes, unless the water is corrosive (i.e., low mineral content and/or acidic). Contact a State-certified laboratory to have them analyze your drinking water for lead; look in your phone book under "Labs, Environmental" or "Water Testing". Your local Health Dept. may also provide water testing services. Take two water samples from your kitchen tap: one sample first thing in the morning and another sample after running the water for five minutes.

c. Remediation of Lead: First check with your water company to determine if the tested lead level for the water supplies falls within the guidelines. If not, have your water tested for lead (taking a first draw and a flushed sample as described above). If your lead level is below 15 ppb, it is considered to be safe to drink. If your first draw lead level is above 15 ppb, you should flush the water before using it (let it run until the water changes temperature). Always take cooking water from the cold water tap.

Sometimes, it is necessary for homeowners who have their own wells to install treatment systems to reduce the corrosivity of water in order to alleviate a lead problem. If your flushed water sample is above 15 ppb, call the Bureau of Safe Drinking Water (609) 292-

5550) or your local health department for advice. In some instances, treatment may already be underway by the water purveyor.

When purchasing new faucets and other fixtures, purchase lead-free fixtures, which are now commercially available.

d. Contact for more information: You may contact your water company for information regarding lead in the system. If your home is considered vulnerable to contamination, your water company may sample your water for free - contact them for more information. If you have a private well and your flushed lead level is above 15 ppb, call the Bureau of Safe Drinking Water or your local health department for advice. For general information about lead in water or about the new regulations about lead in drinking water, you may call the EPA Drinking Water Hotline at (800) 426-4791.

I. 3. Ceramic Pottery & Dishes Including Crystal

a. Regulatory Summary:

FEDERAL: The US Food and Drug Administration (FDA) recommends the following threshold limits for lead:

- ▶ plates, saucers, flatware 3.0 ppm
- ▶ cups and mugs 0.5 ppm
- ▶ small bowls 2.0 ppm
- ▶ pitchers 0.5 ppm
- ▶ bowls larger than 1 liter 1.0 ppm
- ▶ silver-plated hollowware to hold liquid
(e.g. tea sets, creamers) (adults) 7.0 ppm
(children) 0.5 ppm

STATE: Same as Federal.

b. Identification and Assessment of Lead: Lead is used in ceramics for color and for glazing. Lead cannot be detected in a piece by its color, texture or country of origin. Most ceramics currently made in the US meet federal requirements. The highest levels of lead leached were from low-fired terra cotta from Latin America in tests carried out by the California Department of Health. The only way to know with certainty if a piece of ceramics has lead in it is to have it tested. The procedure for testing ceramics and pottery consists of putting acetic acid (a dilute form of acetic acid is vinegar) in the piece, allowing it to sit for a period of time, and analyzing the acid to

see how much lead dissolved into the acid from the piece. Many laboratories can perform this test. At least one major ceramic company will test a piece of its china for free, at a customer's request. Leaded crystal can have very high amounts of lead, as can antique pewter.

c. Remediation of Lead: Avoid storing or serving food in foreign made ceramics or antique plates, unless they have been tested for lead. Low fired terra cotta from Latin America has been shown to leach the highest amount of lead during tests. If you have pieces that exceed the government standards, or have untested pieces which you can assume have lead in them, don't let food come in direct contact with these containers and do not use them in the microwave. If you do use such containers, do not store any type of food (especially acidic food) in them. Acidic food, such as tomatoes, orange juice, soda, and salsa will dissolve more lead than non-acidic foods. Leaded crystal can be used safely by adults sparingly. Food and alcohol should not be stored in them. Liquids served in crystal glasses should be drunk in a short period of time. Children and infants should not be allowed to consume foods or beverages from leaded crystal.

d. Contact for more information: Contact the manufacturer or the store where you purchased the dishes. If this is not possible, you can use a home test kit, which can detect lead levels down to around 2.5 ppm. However, a negative result does not mean the piece is safe, only that it does not have lead levels above 2.5 ppm. For a description of some kits and how to order, see Consumer Reports June, 1990 issue. Check their 1993 issue as well. California has more stringent requirements than the federal government and has issued a report listing types of china, which meets their standard. For a copy, contact the Office of the Attorney General, Press Office, 1515 K Street, Sacramento, CA, 95814 and include a self-addressed, stamped envelope with \$0.52 postage. For additional information about food safety, contact the FDA, Center for Food Safety at (202) 205-4317 or their consumer affairs office (301) 443-3170.

I.4. Food.

a. Regulatory Summary:

FEDERAL: Bottled water may contain no more than 15 ppb lead according to current FDA regulations.

STATE: Bottled water products in NJ may contain no more than 15 ppb (0.05 ppm) (NJAC 8:21-5. 143). The Packaging Reduction Act (P.L. 1991) C 39(c. 13: 1E-1 et seq.) limits heavy metals in packaging. There are no other standards for lead in food in the State.

b. Identification and Assessment of Lead: Lead can contaminate food at any point in a path from the farm to the table. Food crops can become contaminated from the deposition of airborne lead or from contact with contaminated soil. Urban gardens, especially near roadways, can have high concentrations of lead in soil. Certain crops, such as leafy green vegetables, can take up lead from the soil. Fruit will take up the least amount of lead from contaminated soils. Livestock may be contaminated through the ingestion of contaminated feed or through inhalation. Waterfowl may contain lead shot or have ingested lead shot from lake or river bottoms. Among fish and other aquatic organisms, bottom dwellers can have high concentrations of lead if they live in contaminated water. Acidic foods can dissolve lead from containers, improperly glazed ceramic ware and pottery, or from lead soldered cans. Although the use of lead in solder in canning was banned in the US during 1993, many cans manufactured outside the US continue to contain lead solder. Mexico also banned lead soldered cans. Wine bottled in the US no longer has bottlenecks covered with lead wrappers. Food can also become contaminated if it is prepared with contaminated water or if it comes in contact with any lead contaminated surface or dust. Paint on plastic food bags no longer contains lead (1994).

c. Remediation of Lead: Most domestically produced canned food should be lead-free; however, certain imported foods may be packaged in cans soldered with lead. Keep in mind the following:

- ▶ Wash fresh produce well.
- ▶ Locate vegetable gardens away from the street or house (to avoid road dust or lead-based paint chips from falling into the soil)

- ▶ Don't store food or drinks in cans or crystal (see section I.3).
- ▶ Don't use water from the hot water faucet to prepare foods, particularly infant formula.
- ▶ Eat meals regularly. Children, especially, need regular meals. One may more readily absorb lead if fasting or with an empty stomach.
- ▶ Wash children's hands regularly, especially before meals.
- ↳ Do not store food in reused painted plastic bags (lead was banned for pigments used for food storage plastic bags).
- ↳ Eat foods high in calcium and iron.

d. **Contact for more information:** For additional information about food safety, contact the FDA, (202) 205-4317 or their consumers affairs office at (301)443-3170 or contact the NJDHSS, CEHS, at (609) 984-2193.

I. 5. Toys & Hobbies

a. Regulatory Summary:

FEDERAL: Arts and crafts materials in general come under regulatory restrictions for lead content in paint, toys and furniture under the 1977 federal regulations developed by the Consumer Product Safety Commission (CPSC). However, exemptions were granted for paints used in some graphic arts and many outdoor non-household applications (e.g. paints used on highway lines, bridges, car, and boat paints, etc.). Labeling for arts and crafts materials that contain hazardous ingredients (i.e. lead) is covered under the Hazardous Art Materials Act (CPSC draft guidelines in the Federal Register April 17, 1991, vol. 56 #324 p. 15672-15710). The EPA proposes addressing other sources of population exposure to lead such as inks used in newspaper.

STATE: Toys and furniture are regulated by N.J.S.A. 24:14A-1 &

2.

b. **Identification and Assessment of Lead:** Hobbies that may be linked to sources of lead include:

- ▶ glazed pottery making,
- ▶ target shooting at firing ranges,
- ▶ lead soldering (e.g., electronics, car- and boat- repair and hobbies),
- ▶ casting lead shot, fishing sinkers or toy soldiers,
- ▶ stained-glass making,

- ▶ refinishing furniture, and
- ▶ home remodeling (i.e. lead paint).

Other common household items that can be a source of exposure are:

- ▶ ingestion of colored pigments from newspapers, magazine and children's books (most inks no longer contain lead, but caution is warranted),
- ▶ *some* Chinese imported crayons (crayons sold by Concord Enterprises, Toys R Us, and Glory Stationery Manufacturing Co. Ltd were found to contain the most lead and were pulled from store shelves in 1994),
- ▶ lead paint on imported or old toys and children's furniture,
- ▶ antiques (pewter, lead-painted furniture, toys, etc.), and
- ▶ Some vinyl mini-blinds (recalled in 1997, methods of removal can be obtained from the HUD Lead Hazard Control, or from CPSC). "Lead" pencils do not contain lead. Graphite, a non-toxic material, is used in pencils. However, the coating of pencils may contain lead paint.

c. **Remediation of Lead:** Toys and/or furniture purchased in the last ten years which were manufactured in the US should be lead-free (i.e. less than 0.06% lead in paint). Items, which are imported, are regulated by CPSC but violations do occur and environmental regulations vary from country to country. The CPSC is currently finalizing evaluation of lead home testing kits and expects to have consumer information available within a year. Currently, home test kits can detect lead levels to 2.5 ppm (see section I.3).

d. **Contact for more information:** For a list of non-toxic arts and crafts supplies, write to: The Art and Craft Material Institute, Inc., 100 Boylston Street, Suite 1050, Boston, MA 02116 (the cost is \$2.00). For more information about CPSC guidelines, contact the Office of Information and Public Affairs, Washington, DC 20207 or call them at (301) 504-0580.

I. 6. Other

Some items to consider are:

Contaminating indoor air by

- ▶ heating with contaminated heating oil (used oil is reprocessed

- into home heating fuels which may contain up to 100 ppm of lead because it is exempt from regulation as a hazardous waste),
- ▶ **burning old newspapers**, magazines, and foil wrapping paper printed with lead containing color inks in fireplaces,
 - ▶ **taking home toxins** (occupational contaminants brought home on the clothes of workers, transferring contamination to family in the home),
 - ▶ **burning lead-based painted wood** in home stoves and fireplaces may contribute to lead fumes,
 - ▶ **refinishing furniture**, or
 - ▶ **smoking**; or

Exposing family members by using or consuming

- ▶ **ethnic home medicines** (folk remedies which contain lead include Greta and Azarcon used to treat diarrhea or gastrointestinal upset; alkohl, bali goli, coral, ghasard, liga, pay-loo-ah, and rueda are folk remedies known to contain substantial quantities of lead),
- ▶ **cosmetics and dyes** (surma and kohl used around the eye for decorative or medicinal purposes contain lead as well as other metals),
- ▶ **nutritional aids** (calcium supplements derived from shells, bone or dolomite contain more lead than calcium chelates or calcium carbonates refined in the laboratory),
- ▶ **"Moonshine,"**
- ▶ imported vinyl mini-blinds; or
- ▶ lead-based painted playground equipment.

a. Regulatory Summary:

There are no specific federal or state regulations regarding these individual sources of lead. However, other nonspecific guidelines may be applicable especially for foodstuffs.

b. Identification and Assessment of Lead: If you or someone you know is using a lead-containing cosmetic or medicine, stop taking it. When offered a home remedy ask what the remedy contains.

c. Remediation of Lead: For these types of lead exposures, the best remediation is prevention. Avoid the use of these lead-containing products.

d. Contact for more information: The Centers for Disease Control has published a booklet that discusses these as well as other sources of lead. It is "Preventing Lead Poisoning in Young Children" and is listed in the Publications section of this document. In New Jersey, contact the Department of Health and Senior Services, Occupational Disease and Injury Services for information about occupational exposure at (609) 984-1863 or the Consumer and Environmental Health Service at (609) 984-2193. The Center for Food Safety within the Food and Drug Administration (USFDA) can be reached at (202) 205-4317 (food only), or their Center for Consumer Affairs at (301) 443-3170.

Section II. OUTDOOR SOURCES

II.1. Paint

a. Regulatory Summary:

FEDERAL: Same as for indoor paint, when a hazard from exterior paint is identified. See HUD Guidelines: Federal Register April 18, 1990 (see Appendix, Title X).

STATE: P.L. 1993, Ch. 288 defines who can remove leaded paint (see indoor paint).

b. Identification and Assessment of Lead: Exterior lead paint contributes to elevated soil lead levels and lead in the atmosphere if paint is removed by sandblasting. Over the years, an estimated 5 million metric tons of lead were added to household paint in the US. As a result of the weathering of exterior lead-based paint, soil levels surrounding the foundation of a home can be very high. Test the bare soil surrounding your house, *although testing both soil and paint is advised* (there may be additional sources of lead in soil besides paint). Local Health Departments may test exterior paint and/or soils within their districts for free. Contact yours to find out if they provide this service. If not, a list of certified evaluation contractors is available from your local health department or from DCA. Call (609) 530-8812 to get the list from DCA. The National Lead Laboratory Accreditation Program is in place and listings of certified labs for paint films are available from the (800) 424-LEAD hot line.

c. Remediation of Lead: Houses should never be dry-sandblasted if the paint may contain lead. If high-pressure water is used to clean the exterior of a house painted with lead-based paint, a water collection system is needed to prevent contamination of the soil surrounding the foundation. US HUD guidelines are available from HUD USER at (800) 245-2681.

d. Contact for more information: For interpretation of your ana-

lytical results or for advice on testing, contact your local Dept. of Health or call the NJDHSS Consumer and Environmental Health Service at (609) 984-2193. Call the NJDCA, Lead-Based Paint Abatement Program at (609) 633-6179 for information on cost-effective and tested techniques for removal of lead-based paint, municipal programs, abatement financing information, and codes and standards.

II.2. Soil

a. Regulatory Summary:

FEDERAL: EPA's Office of Emergency and Remedial Response is working on cleaning up industrial contaminated sites. A clean-up level is based on the particular area's natural background level of lead in soil. Guidelines (9/94) specify that under 400ppm, no action need be taken with residential soil; above 5000 ppm, the soil should be removed. Between 400 and 5000 ppm, interim measures should be put into place.

STATE: New Jersey recently revised soil clean up standards for metals. They have adopted EPA guidelines. NJDCA (Department of Community Affairs) also adopted EPA lead in soil guidelines for abatement sites.

b. Identification and Assessment of Lead: The most common source of lead in the soil surrounding private homes is peeling from exterior paint. Contact an environmental testing laboratory in your area to find out if they test soil. Not all laboratories provide this service, so keep calling until you find one that does. Look in the phone book under "Laboratories, testing" or "Environmental testing" for listings. Call (800) 424-LEAD, a hotline, for names of certified labs. Your county agricultural extension program may also test for lead in soil. Lead in soil can be tracked into residences, so it is important to know the level of lead in the soil surrounding your home.

Surface soils in urban areas may contain elevated lead due to deposition from air from historical use of leaded gasoline. Since leaded gasoline is no longer used in New Jersey, except in some limited cases, this source should not continue to be a new source of lead to soils. Levels of 200 to 400 ppm are common in urban soils; in remote areas 150 ppm or less is more common.

c. **Remediation of Lead:** Some homeowners have removed soil containing elevated levels of lead from the site. The USEPA found that removal did not significantly reduce lead levels in homes in their study of removal of contaminated soils on sites in three cities. Less drastic measures include planting grass or shrubbery near the home to prevent children from playing in soil that may contain lead. Wood chips or layers (several inches) of clean compost can cover contaminated soils. Avoid placing vegetable gardens next to roadways, the house foundation, or where exterior paint chips accumulate.

d. **Contact for more information:** For more information about lead in soils, contact your agricultural extension service or local health department.

II.3. Airborne Particles & Dust

a. Regulatory Summary:

FEDERAL: The National Ambient Air Quality Standard for lead set in 1978 is 1.5 $\mu\text{g}/\text{m}^3$ quarterly average. New Source Performance Standards have reduced lead from smelters and State Implementation Plans reduced industrial sources of lead in air.

STATE: NJ sets permit levels for lead based on an ultimate goal of zero discharge on a site-specific basis. The federal guidelines are used.

b. **Identification and Assessment of Lead:** Most air lead was present due to lead in gasoline. Since the phaseout of lead in gasoline, other sources have become increasingly important: industrial sources, smelters and incinerators. Each of these sources are required to reduce lead discharges in compliance with site-specific permits.

c. **Remediation of Lead:** By reducing the amount of lead in the waste stream (through recycling efforts) and reducing the use of lead in industry, less lead will be released into the air.

d. **Contact for more information:** For general information about

the Air Toxics Program in NJ, you can contact them at (609)292-6722 in NJDEP.

II.4. Waste Stream.

a. Regulatory Summary:

FEDERAL: 1984 Hazardous and Solid Waste Amendments to RCRA prompted EPA's Office of Solid Waste to promulgate "Third third" Rule in June, 1990. It is a land ban for hazardous wastes exhibiting the toxicological characteristic for lead; that is, no such material may be placed on the land. The Toxic Substances Control Act Lead Pollution Prevention Plan prevents new uses of lead and limits current uses of lead.

STATE: Public Law 1991, Chapter 94 requires that all lead-acid batteries be source separated from all other solid waste for recycling. The Dry Cell Battery Management Act passed in 1992 went into effect in 1993. It requires recycling of dry cell sealed lead batteries, nickel-cadmium, and mercuric oxide batteries. Manufacturers are required to recycle batteries and retailers who sell batteries are required to accept spent batteries (NJDEP, Hazardous Waste Classification Program).

b. **Identification and Assessment of Lead:** Batteries use 1,250,000 tons of the nearly 1,350,000 tons of lead consumed in the U.S. in 1995. Batteries containing lead include car, household and rechargeable batteries. Spent batteries comprise 65% of the lead found in landfills. Approximately 93% (37,000 tons) of lead-acid batteries are being recycled annually in NJ as estimated by the battery industry. Less than 1% of NJ's waste stream is batteries, representing about 2.3 million batteries each year.

c. **Remediation of Lead:** Recycle your batteries. All battery retailers, including auto service stations, auto supply stores and all mass marketing stores that sell lead-acid batteries must accept used lead-acid batteries when a new battery is purchased. Some municipal recycling centers include lead-acid batteries for acceptance. A car battery can contain 18 pounds of lead.

d. **Contact for more information:** Contact your local recycling center. Or, contact your county to find out when in your area household hazardous waste collection is scheduled to receive lead-acid and other rechargeable batteries (phone numbers are in the appendix). Call your municipality about if or when they accept batteries in their recycling program.

II.5. Gasoline

a. Regulatory Summary:

FEDERAL: In 1978, the changeover to unleaded gasoline began under orders by the USEPA. Despite this change, an estimated 4-5 million metric tons of lead used in gasoline prior to 1978 remain in dust and soil. Most vehicles today run on unleaded gasoline; however, leaded gasoline continues to account for about 9% of total US gasoline consumption. The 1990 amendments to the Clean Air Act completely phased out the use of lead as a gasoline additive by the end of 1995.

The current EPA limit for the amount of lead in leaded gasoline is 0.1 grams per gallon (g/gal) and, for unleaded gasoline, 0.05 g/gal. The difference between unleaded and leaded gasoline is that tetraethyl lead is intentionally added to leaded gasoline. Lead occurs in unleaded gasoline as a result of contamination from pipelines and storage tanks.

STATE: Leaded gasoline is not sold in New Jersey. However, tetraethyl lead additive is sold. Farmers may add it to fuel for use in farm vehicles.

b. **Identification and Assessment of Lead:** Vehicle exhaust is considered the biggest source of lead in air which over the years has meant widespread contamination of dust and soil. Although most cars now run on unleaded gasoline, leaded gasoline may still be used in farm vehicles, thus the contamination of agricultural soil may continue.

Airborne lead from gasoline is generally considered a minor source of lead exposure today, except if it is from a point source. For example, exposure can occur from pumping leaded gasoline or from breathing in leaded gasoline fumes.

c. **Remediation of Lead:** Do not purchase leaded gasoline or tetraethyl lead additive. Have children avoid playing in areas with heavy traffic. If you live near a heavy traffic area, remove shoes before entering the house. Mop floor and wash window frames periodically to remove lead dust.

II.6. Other

a. Regulatory Summary:

FEDERAL: Lead-based pesticides are no longer used in the U.S. The last known use of lead-arsenate was for pest control on grapefruit, and this was voluntarily canceled in 1989.

The Clean Water Act describes regulations for lead levels in sludge used in land application practices.

Section III. OCCUPATIONAL SOURCES

a. Regulatory Summary:

FEDERAL: Occupational exposure to lead in General Industry has been regulated by the Occupational Safety and Health Administration (OSHA) since 1979. Occupational exposure to lead in the construction industry has been regulated by OSHA since 1993. The OSHA Lead Standards (29CFR 1910.1025; 29 CFR 1926.62) require employers to follow specific requirements to prevent adverse health effects to their employees who work with lead. OSHA requirements include:

- ▶ keeping lead air levels below 50 $\mu\text{g}/\text{m}^3$,
- ▶ providing adequate respirators,
- ▶ ensuring hygiene facilities (e.g., for showering after work to remove lead dust),
- ▶ providing for medical and biological monitoring,
- ▶ removing workers who have elevated lead levels from exposure to lead, with no loss of pay,
- ▶ notifying employees, within 5 days, who have blood lead levels 40 micrograms per deciliter or above,
- ▶ training employees on sources of lead exposure, hazards associated with lead, methods of reducing lead exposure, and employee rights under the standard, and
- ▶ making copies of the standard available to employees.

STATE: The NJDHSS requires laboratory reporting of all blood levels in adults (NJAC 8:44-2.11). Public employees are covered under the NJ PEOSH Lead Standard, identical to the federal OSHA Lead Standard. Physician reporting of lead poisoning in adults is required as of May, 1990, in accordance with NJAC 8:57-3.2. NJDHSS follow-up activities to reports of elevated lead levels from laboratories and physicians include: medical consultations to affected workers and their physicians; industrial hygiene evaluations at the workplace; and educational efforts for affected workers, their employers and physicians.

b. Identification and Assessment of Lead: Employers having em-

ployees who work with lead must follow the provisions of the OSHA Lead Standard. Information about lead hazards must be available from your employer as mandated by several state and federal regulations. Examples of work associated with lead exposure includes:

- ▶ lead production or smelting,
- ▶ battery manufacturing,
- ▶ brass, copper or lead foundries,
- ▶ radiator repair,
- ▶ scrap handling,
- ▶ demolition of old structures and renovations which disturb old paint,
- ▶ welding of old, painted metal,
- ▶ thermal paint stripping of old buildings,
- ▶ sanding of old paint,
- ▶ lead soldering,
- ▶ ceramic glaze mixing,
- ▶ use of firing ranges, and
- ▶ machining or grinding lead alloys.

c. Remediation of Lead: Air monitoring for lead should be conducted by your employer to determine if a lead exposure problem exists at the worksite. Employee complaints concerning potential lead exposure problems can be made to the OSHA Area Office located in your area. Free consultative service is available from the NJ Department of Labor's OSHA Consultative Service. NJDHSS Occupational Disease and Injury Service conducts lead exposure surveillance projects and can provide information and technical assistance in the area of occupational lead toxicity.

d. Contact for more information: OSHA Regional Office in New York City can be reached by calling 800-827-1004 (covers four NJ area offices). NJDHSS Occupational Health Service, Surveillance and PEOSH programs can be reached at (609) 984-1863, and the NJ Department of Labor OSHA Consultative Service can be reached at (609) 292-3922.

PUBLICATIONS AVAILABLE

Comprehensive and Workable Plan for the Abatement of Lead-Based Paint in Privately Owned Housing, HUD, December, 1990. (call US HUD) (202) 755-1805.

"Historic Buildings and the Lead Paint Hazard": write to Massachusetts Historical Commission, 80 Boylston Street, Boston, MA 02116 or call (617) 727-8470.

Screening Young Children for Lead Poisoning, CDC, November 1997: Write to CDC, Lead Poisoning Prevention Branch, F28, 1600 Clifton Road, Atlantic, GA 30333 or call (770) 488-7330.

Legacy of Lead: America's Continuing Epidemic of Childhood Lead Poisoning, Environmental Defense Fund, March 1990. Call EDF, Washington at (202) 387-3500.

Lead Poisoning: What It Is and What You Can Do About It, Legal Services of NJ, 1998: Legal Services of New Jersey call (732) 572-9100. (Periodically it will be out of print.)

Get the Lead Out: A Community Discussion Package, Call the Lead Poisoning Prevention Education and Training Program, UMDNJ-SOM, (609) 566-6225. (with a video tape, articles, and leaders' guide).

Available through EPA Safe Drinking Water Hotline, (800) 426-4791:
"Environmental Hazards in Your School: A Resource Handbook", 1990; "Lead and Your Drinking Water", 1993; "Lead in School Drinking Water (a manual for school officials)", 1989.

"Lead in Our Environment" INFOsheet: Resource Center of EOHSI, UMDNJ call (732) 463-4500.

"Drinking Water and Health: Facts on Lead in Drinking Water", 1992: NJDHSS, call (609) 984-2193.

Sources of Lead in the Environment, and Educational Resources are available from the NJ Interagency Task Force on Prevention of Lead Poisoning, call (609) 566-6034 or -6225.

Available from NJDEP, Division of Solid Waste Management (609) 530-8207:
"New Jersey Directory of Recycling Markets," "The Emergency Solid Waste Assessment Task Force: Preliminary and Final Reports," P.L. 1991, Chapter 94: The Lead-Acid Battery Recycling Act, Office of Legislative Services (800) 792-8630 or (609) 292-6395. Flyers, posters and videotapes encouraging recycling batteries are available at (609) 566-6225.

Available from the NJDHSS, P.O. Box 360, Trenton, NJ 08625-0364:
"Contacts and Information for Lead Issues", Lead-Based Paint Hazards in Playgrounds, Vinyl Miniblind Lead Hazard Alert, Consumer and Environmental Health Services, call (609) 984-2193.
Occupational Health Service, (609) 984-1863 has: "Occupational Exposure to Lead," Lead Paint Hazards for Contractors and Workers," "Your Lead Level," and "What Physicians Must Know About Occupational Lead Exposure." "Questions Parents Ask" and "Important information for Homeowners and Renters About Lead Paint Hazards," "Guidelines for Screening and Follow-up in New Jersey," and "Chapter XIII, NJ State Sanitary Code, Childhood Lead Poisoning," are available from Child and Adolescent Health Program at (609) 292-5666.

Flyers, booklets, video tapes, and posters on lead issues for parents, tenants, and property owners are available from UMDNJ-SOM at 609-566-6034 or 6225. Materials for children are also available.

The Alliance to End Childhood Lead Poisoning Publications, Call (202) 543-1147 :
Blueprint for Prevention; Developing Prevention Programs and Mobilizing Resources; Resources for Prevention Programs; Resources for Financing Abatement; and Framework for Action Title X

"Information on Lead In Soil and Some Solutions," and display panels "Let's Get the Lead Out" (2x3')
Information on Lead In Soil and Some Solutions," and display panels "Let's Get the Lead Out" (2'x3') panels on lead are available from the **New Jersey Environmental Federation** (732) 280-8988.

Lead in Construction is available by calling US Dept. of Labor-OSHA (202) 219-4667.

Call the OSHA Regional Office in NYC at (800) 827-1004 to obtain the following:

"Code of Federal Regulations: Occupational Safety and Health Standards. Subpart Z: Toxic and Hazardous Substances - Lead". Office of the Federal Register, National Archives and Records Administration 1985 (29CFR 1910.1025). "Working with Lead in the Construction Industry". US Department of Labor Occupational Safety and Health Administration.

INFORMATION FOR GOVERNMENT AGENCIES FOR GOVERNMENT AGENCIES

National Lead Education Hot Line 1-800-LEAD-FYI (information packet and poster)
NJ Lead Paint Abatement Program, Department of Community Affairs (609) 633-6179

NJDEP, Division of Solid Waste Management, Recycling of Hazardous waste: (609) 530-8395

Analytical Services

- NJDEP, Bureau of Environmental Laboratories: Will test household materials at the request of any health department but does not take requests directly from general public. (609)292-3131.

- NJDHSS, Environmental and Chemical Laboratory Services - same as above. (609) 292-8373.

- State-certified laboratories: a list of labs certified to test various media for lead is available from NJDEP, Division of Environmental Quality.

- OSHA approved laboratories for blood lead analysis: a list is available from NJDHSS, Occupational Disease and Injury Service, P.O. Box 360, Trenton, NJ 08625 or call (609) 984-1863.

Organizations and Groups:

Lead Poisoning Prevention Education and Training Program, Department of Psychiatry, UMDNJ-SOM in Stratford, (609) 566-6034, or 6225. Newark, and Trenton OPMRDD, DHS, (609) 984-3351

The New Jersey Anti-Lead Poisoning Coalition-(973) 345-8616

The South Jersey Lead Consortium (609) 566-6034, -6225 or (609) 451-6600 extension 2433.

COUNTY RECYCLING COORDINATORS:

ATLANTIC (609) 646-5500	GLOUCESTER (609) 863-6661	OCEAN COUNTY: (732) 506-5047	WARREN: (908) 453-2174
BERGEN CO (201) 641-2552	HUDSON COUNTY: (201) 795-4555	PASSAIC: (973) 305-5738	
BURLINGTON (609) 499-1001	HUNTERDON (908) 806-4236	SALEM : (609) 935-7900	
CAMDEN: (609) 338-0882	MERCER CO.: (609) 695-1200	SOMERSET (908) 231-7031	
CAPE MAY Co: (609) 465-9026	MIDDLESEX (732) 745-4170	SUSSEX COUNTY: (973) 579-6998	
CUMBERLAND (609) 825-3700	MONMOUTH (732) 431-7460	UNION COUNTY: (908) 351-8770	
ESSEX COUNTY: (973) 857-2350	MORRIS Co.: (973) 285-6037		

How lead can affect people

Lead can cause serious permanent damage at levels much lower than was thought just a few years ago. The potential effects are listed below. Effects can vary, depending on how much lead was absorbed, how long a person was exposed, when treatment started, and the course of treatment.

Damage from lead increases as lead levels in the body rise. The numbers stand for the micrograms of lead in each deciliter of blood, a way of measuring very small amounts of lead. A deciliter equals about a cup and a half. In children, learning problems may start with 10 micrograms of lead in a deciliter of blood (10 µg/dL). That's equivalent to a marble-sized piece of lead in an Olympic-sized swimming pool.

ADULTS EXPOSED TO LEAD	
Health Effects	Micrograms of lead per deciliter of blood
Brain Disorders	100
Anemia	90
Brain problems	60
Nerve problems	60
Kidney problems	60
Decreased red blood cells	50
Slower reflexes	40
Reproductive problems	40
Blood pressure problems	30

Acronyms

DCA, Department of Community Affairs
 DHSS, Department of Health and Senior Services
 DHS, Department of Human Services
 OPMRDD, Office for Prevention of Mental Retardation and Developmental Disabilities
 USEPA, United States Environmental Protection Agency
 USHUD, United States Department of Housing and Urban Development

CHILDREN EXPOSED TO LEAD

Health Effects	Micrograms of lead per deciliter
Brain Disorders	100
Kidney & stomach problems	100
Nerve problems, anemia, colic	70
Decreased red blood cells	40
Slower reflexes	30
Hearing Loss	10 and under

Title Ten (X) Key Provisions

In 1992, the U.S. Congress passed the Housing and Community Development Act, which includes the Residential Lead-Based Paint Hazard Reduction Act, commonly called Title X. Highlights are listed below.

1. Buyers of and tenants in federally assisted target housing and potential customers of anyone offering to conduct abatements for compensation must receive a lead based paint hazards information booklet.
2. Periodic risk assessments and interim control measures must begin to be implemented in federally assisted target housing.
3. Inspections for the presence of LBP must occur before starting federally funded renovation or rehabilitation, which may disturb painted surfaces.
4. Reduction of LBP hazards must occur in the course of rehabilitation projects receiving less than \$25,000 per unit in Federal funds; abatement of LBP hazards must occur in the course of rehabilitation projects receiving more than \$25,000 per unit in Federal funds.
5. Occupants of federally assisted target housing where risk assessment, inspection, or reduction activities have occurred, must receive information describing the nature and scope of such activities, and any reports.
6. All federally-owned target housing built before 1960 must be inspected and LBP hazards abated before disposition of such housing.
7. Inspection for LBP and LBP hazards in all federally owned target housing built between 1960 and 1978 must occur before disposition of the housing. The results shared with prospective buyers, identifying the presence of LBP and LBP hazards on a surface-by-surface basis.
8. Requires accreditation of abatement professionals and training providers.
9. Standards will be set for lead based paint hazards, contaminated dust and soils.

Blood levels in children

*Centers for Disease Control and Prevention
recommendations to public health agencies and physicians*

Blood lead ACTION level

- <10 µg/dL Regular screening at 12 and 24 months and annually in higher risk areas
- 10-14 µg/dL Rescreen child and monitor level. Community intervention when many children are at this level.
- 15-19 µg/dL Rescreen child and monitor level. Educate parents. Test for iron deficiency. Investigate environment for source.
- 20-44 µg/dL Complete medical evaluation. Identify and remove environmental lead sources.
- 45-69 µg/dL Medical treatment and environmental assessment and remediation to create a lead safe environment.
- >=70 µg/dL Medical treatment and environmental assessment and remediation immediately.

STANDARDS FOR LEAD IN THE ENVIRONMENT

Paint standards

By atomic absorption laboratory analysis

600 ppm (0.06%) Consumer Product Safety Commission maximum limit for lead in residential paint manufactured after 1978

0.5 % by weight or 1 mg/cm² the EPA and HUD definition of lead-based paint.

HUD and EPA Clearance Levels

100 mg/ft² floors

500 mg/ft² window sills

800 mg/ft² window troughs

Soil Guidelines

<400 ppm USEPA proposed guidelines: no action needed

>5000 ppm USEPA proposed guidelines: soil removal is recommended

Between 400 and 5000 ppm, USEPA recommends interim measures such as using wood chips, grass, or shrubs for ground cover over contaminated soil

1000 ppm Classified as hazardous waste in Superfund sites

Water Guidelines

15 ppb US Environmental Protection Agency action level for drinking water.

Corrosion control measures should be put in place by the water company.

Households should let water run until temperature changes if household plumbing is the culprit.

15 ppb Food and Drug Administration limits on lead in bottled water

Air Guidelines

1.5 µg/m³ EPA ambient air level limit with a 3 month average.

Ceramic guidelines (USFDA and CA)

3.0 ppm flatware (e.g., plates)

2.0 ppm hollowware, small (<1.1 liters)

1.0 ppm hollowware, large (>1.1 liters)

.5 ppm Mugs and pitchers

NOTES

Errata

HUD and EPA Clearance Levels

100 mcg/ft² floors

500 mcg/ft² window sills

800 mcg/ft² window troughs

PERSONAL PHONE LIST

AGENCY	ADDRESS	PHONE	CONTACT PERSON
Physician			
Housing Agency			
Health Dept.			
Environmental Laboratory			
Blood Lead Laboratory			
Testing Services			
Contractor(s)			
State Agencies			
NJDCA			
NJDHSS			
Other:			