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 plans to ban lead soldered cans by 1995. 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.

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### 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,
- some Chinese imported crayons (crayons sold by Concord Enterprises, Toys R Us, and Glory Stationary 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, and antiques (pewter, lead-painted furniture, toys, etc.).

"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 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-painted wood* in home stoves and fireplaces may contribute to lead fumes,
  - *refinishing furniture*, or
  - *smoking*;

- **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), or "Moonshine," or

- *imported vinyl mini-blinds*; or
- *playground equipment*.

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**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. It is more important to have the bare soil surrounding your house tested than to have the paint tested, although testing both 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 hotline.

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 analytical 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 in 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 peelings from exterior 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, contact an environmental testing laboratory in your area to find out if they test paint or 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. 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 Fg/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 1,110,000 tons of the 1,250,000 tons of lead consumed in the U.S. in 1991. 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 on page 18). 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: Lead 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. Last known use was of lead-arsenate 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 Fg/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 NJDHS 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. NJDHS 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 employees 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,