

1. PUBLIC HEALTH STATEMENT

This public health statement tells you about wood creosote, coal tar creosote, coal tar, coal tar pitch, and coal tar pitch volatiles and the effects of exposure.

The Environmental Protection Agency (EPA) identifies the most serious hazardous waste sites in the nation. These sites make up the National Priorities List (NPL) and are the sites targeted for long-term federal cleanup activities. Coal tar creosote, coal tar, and coal tar pitch have been found in at least 46 of the 1,613 current or former NPL sites. However, the total number of NPL sites evaluated for these substances is not known. As more sites are evaluated, the sites at which coal tar creosote, coal tar, and coal tar pitch are found may increase. This information is important because exposure to coal tar creosote, coal tar, coal tar pitch, or coal tar pitch volatiles may harm you and because these sites may be sources of exposure.

When a substance is released from a large area, such as an industrial plant, or from a container, such as a drum or bottle, it enters the environment. This release does not always lead to exposure. You are exposed to a substance only when you come in contact with it. You may be exposed by breathing, eating, or drinking the substance, or by skin contact.

If you are exposed to wood creosote, coal tar creosote, coal tar, coal tar pitch, or coal tar pitch volatiles, many factors determine whether you'll be harmed. These factors include the dose (how much), the duration (how long), and how you come in contact with them. You must also consider the other chemicals you're exposed to and your age, sex, diet, family traits, lifestyle, and state of health.

1.1 WHAT IS CREOSOTE?

Creosote is the name used for a variety of products that are mixtures of many chemicals. Wood creosotes are derived from the resin from leaves of the creosote bush (*Larrea*, referred to herein as creosote bush resin) and beechwood (*Fagus*, referred to herein as beechwood creosote). Coal tars are by-products of the carbonization of coal to produce coke or natural gas. Coal tar

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creosotes are distillation products of coal tar, and coal tar pitch is a residue produced during the distillation of coal tar. Coal tar pitch volatiles are compounds given off from coal tar pitch when it is heated. Coal tar creosote, coal tar, coal tar pitch, and coal tar pitch volatiles are rarely formed in nature. Coal tar creosote, coal tar, and coal tar pitch are mixtures of similar compounds. For this reason, many times throughout the profile, we will refer to coal tar creosote, coal tar, and coal tar pitch simply as creosote. Creosotes are created by high-temperature treatment of beech and other woods (beechwood creosote) or coal (coal tar creosote), or from the resin of the creosote bush (creosote bush resin). Wood creosote is a colorless to yellowish greasy liquid with a characteristic smoky odor and sharp burned taste. It is relatively soluble in water. Creosote prepared from coal tar is the most common form of creosote in the workplace and at hazardous waste sites in the United States. Coal tar creosote is a thick, oily liquid that is typically amber to black in color. It is easily set on fire and does not dissolve easily in water. Coal tar and coal tar pitch are the by-products of the high-temperature treatment of coal to make coke or natural gas. They are usually thick, black or dark brown liquids or semisolids with a smoky or aromatic odor. Coal tar residues can also be found in the chimneys of homes heated with coal, especially if insufficient oxygen is present. Chemicals in the coal tar pitch can be given off into the air as coal tar pitch volatiles when coal tar pitch is heated.

Beechwood creosote has been used as a disinfectant, a laxative, and a cough treatment. In the past, treatments for leprosy, pneumonia, and tuberculosis also involved eating or drinking beechwood creosote. It is rarely used today in the United States by doctors since it has been replaced by better medicines, and it is no longer produced by businesses in the United States. It is still available as an herbal remedy, and is used as an expectorant and a laxative in Japan. The major chemicals in beechwood creosote are phenol, cresols, and guaiacol.

Coal tar creosote is the most widely used wood preservative in the United States. It is also a restricted-use pesticide, so it can be used only by people who have been trained to use it safely. Coal tar products are ingredients in medicines used to treat skin diseases such as psoriasis. These products are also used as animal and bird repellents, insecticides, animal dips, and fungicides. Coal tar, coal tar pitch, and coal tar pitch volatiles are used or produced in several

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industries, including road paving, roofing, aluminum smelting, rubber producing, and coking. The major chemicals in coal tar creosote, coal tar, and coal tar pitch that can cause harmful health effects are polycyclic aromatic hydrocarbons (PAHs), phenol, and cresols. Coal tar pitch volatiles vary depending on the makeup of the coal tar product that is being heated. About 300 chemicals have been identified in coal tar creosote, but as many as 10,000 other chemicals may be in this mixture. Because coal tar creosote is the major type found in the environment and at hazardous waste sites in the United States, we will emphasize its effects on human health in this profile. The health effects of coal tar and coal tar pitch will also be described.

This profile is specifically about the toxicity of wood creosote, coal tar creosote, coal tar, coal tar pitch, and coal tar pitch volatiles, so we will not discuss in detail the health effects of individual chemicals in them, such as PAHs or phenol. In the chapters describing what happens to creosote in the environment and exposure to creosote, we will discuss some of the individual chemicals or groups of chemicals (such as PAHs) because many of the tests done in the scientific laboratories can tell us which of these chemicals are present in the soil, water, and air.

The Agency for Toxic Substances and Disease Registry (ATSDR) *Toxicological Profile for Polycyclic Aromatic Hydrocarbons* (1995), the ATSDR *Toxicological Profile for Cresols* (1992), and the ATSDR *Toxicological Profile for Phenol* (1998) provide more information on these chemicals. For more information on the chemical and physical properties of creosotes, coal tar, coal tar pitch, and coal tar pitch volatiles, see Chapter 4. For more information on these substances in the environment, see Chapters 5 and 6.

1.2 WHAT HAPPENS TO CREOSOTE WHEN IT ENTERS THE ENVIRONMENT?

No information is available on what happens to wood creosote when it enters the environment. Coal tar creosote, coal tar, coal tar pitch, and coal tar pitch volatiles do not occur in the environment naturally, but are by-products produced in coke or gas manufacturing plants using high-temperature processes. Coal tar creosote is released to water and soil mainly as a result of its use in the wood preservation industry. In the past, waste water from wood-treatment facilities was often discharged to unlined lagoons where it formed a sludge. Also, companies that

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preserve wood with coal tar creosote may treat their water wastes in treatment plants or release the waste water to the municipal water treatment system. This is still the largest source of coal tar creosote in the environment. However, new restrictions from EPA have caused changes in the treatment methods that have decreased the amount of creosote available to move into soil from waste water effluents. Coal tar creosote contains some components that dissolve in water and some that do not. Coal tar creosote components that dissolve in water may move through the soil to eventually reach and enter the groundwater, where they may persist. Once in the groundwater, breakdown may take years. Most of the components that are not water soluble will remain in place in a tar-like mass. Migration from the site of contamination is not extensive. Breakdown in soil can take months for some components of coal tar creosote, and much longer for others. Sometimes, the small amounts of chemical remaining in the soil or water that take a long time to break down are still toxic to some animals and possibly to humans. Coal tar creosote components may also be found in the soil as a result of leaking or seeping from treated timber. More complete information on how creosote enters the environment and what happens to creosote in the environment can be found in Chapters 5 and 6 of this profile.

Volatile chemicals in coal tar creosote may evaporate and enter the air. About 1–2% of the coal tar creosote applied to treated wood is released to the air. This is a small amount compared with the amount of coal tar creosote found in waste water or soil. Volatile chemicals in coal tar and coal tar pitch are released into the environment in a similar way. They are most often found in and around coke- or natural gas-producing factories, in industrial plants where coal tar and coal tar sludges are used, or at abandoned coke or gas factory sites. Water or soil surrounding these areas may contain detectable levels of coal tar or coal tar pitch.

Once coal tar creosote is in the environment, both plants and animals can absorb parts of the creosote mixture. Some components of coal tar creosote have been found in plants exposed to creosote-treated wood in nearby soil. The plants absorb very little (less than 0.5% of the amount available to the plant). Animals such as voles, crickets, snails, pill bugs, and worms take up coal tar creosote components from the environment that are passed into the body through skin, lungs, or stomachs. Animals that live in the water, such as crustacea, shellfish, and worms, also take up coal tar creosote compounds. For instance, mussels attached to creosote-treated pilings and

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snails and oysters living in water near a wood-treatment plant had creosote in their tissues. Coal tar creosote components are also broken down by microorganisms living in the soil and natural water. The components of coal tar and coal tar pitch move in the environment in a similar way.

1.3 HOW MIGHT I BE EXPOSED TO CREOSOTE?

Most people are exposed to very low levels of creosote. People who are exposed to higher concentrations than the general population are those exposed to creosote in their jobs and those who use products that contain creosote to improve a health problem such as eczema or psoriasis.

Some people are exposed to creosote by using shampoos for psoriasis that contain creosote. Herbal remedies containing the leaves from the creosote bush (chaparral) are available as a dietary supplement and are a source of exposure to wood creosote. People who drink chaparral tea could be exposed to wood creosote. Hazardous waste sites are a major source of contamination with creosote, coal tar, and coal tar pitch. Individuals working in the wood-preserving industry make up the largest part of the population that might be exposed to coal tar creosote. Individuals who live in areas that used to be sites of wood-preserving facilities may be exposed if the soil was never cleaned up. The most common way that creosote will enter the body when it is present in soils is through the skin. In addition, children may also ingest creosote if they put their unwashed hands in their mouths after touching soil or wood contaminated with creosote. The most common way that it will enter the body for individuals in the wood-preserving industry is through the lungs.

Asphalt workers; rubber, aluminum, iron, steel, and tire factory workers; and people working in the coke-producing industries are also at risk for potential exposure to coal tar pitch and coal tar pitch volatiles. They may breathe in vapors from or have direct skin contact with wood-preservation solutions, freshly treated wood, asphalt mixtures, or other products of coke-producing industries. Workers who use creosote-treated wood in building fences, bridges, or railroad tracks or installing telephone poles may be exposed; those who inspect or maintain these materials, or apply asphalt or other coal tar pitch-containing materials, may also be exposed. Homeowners, farmers, or landscapers who apply coal tar creosote to wood in noncommercial

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settings using a brush or dip procedure (which is no longer allowed by law unless you have been trained to safely use creosote as a wood preservative), or who use railroad ties or telephone poles in landscaping, or who reclaim scrap lumber from a treated structure may also be exposed. In addition, people who work or live in treated-wood houses (log cabins) may be exposed through the air or by direct contact with the wood. Exposure to coal tar products may also occur in the natural gas and aluminum smelting industries. You can be exposed by any contact with water, soil, air, or plant and animal tissues that contain creosotes, coal tar, coal tar pitch, or its volatile components. Intentional or accidental eating of coal tar creosote has resulted in poisoning. If your activities bring you into contact with these mixtures, such as at hazardous waste sites, in contaminated groundwater, in wood products treated with creosote, or in contaminated shellfish, you will be exposed to coal tar creosote, coal tar, coal tar pitch, or coal tar pitch volatiles. You can also be exposed by drinking water contaminated by a hazardous waste site. For more information on human exposure to these substances, see Chapter 6.

1.4 HOW CAN CREOSOTE ENTER AND LEAVE MY BODY?

Creosotes and coal tar products can enter your body through the lungs, stomach, intestines, and skin. No information that describes how fast or how much creosote or its components might enter the body after one or many exposures is available. The amount that enters the body depends on how you come in contact with it (via air, food, water, skin), how much of the mixture is present, and how long you are exposed to it. Many of the parts of the coal tar creosote mixture (for example, PAHs) are rapidly absorbed through the lungs, stomach, and intestines. Prolonged exposure through the skin, without washing, may increase the amount of the creosotes or coal tar products that pass into the bloodstream. Individual components of coal tar creosote, coal tar, coal tar pitch, and coal tar pitch volatiles may be stored in body fat. In the body, some coal tar components may be metabolized. For example, pyrene can be metabolized to 1-hydroxypyrene. Some studies indicate that creosotes may cross the placenta into the tissue of the developing fetus. Because coal tar products may be stored in body fat, they may be found in breast milk. Creosotes leave the body primarily in the stool; a smaller amount leaves the body in the urine. See Chapter 3 for more information on how creosotes and coal tar products enter and leave the body.

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1.5 HOW CAN CREOSOTE AFFECT MY HEALTH?

To protect the public from the harmful effects of toxic chemicals and to find ways to treat people who have been harmed, scientists use many tests.

Exposure to creosotes, coal tar, coal tar pitch, or coal tar pitch volatiles may be harmful to your health. Eating food or drinking water contaminated with a high level of these compounds may cause a burning in the mouth and throat as well as stomach pain. Taking herbal remedies containing creosote bush leaves may result in damage to the liver or kidney. Reports describing poisoning in workers exposed to coal tar creosote, or in people who accidentally or intentionally ate coal tar creosote prove that these chemicals can be harmful. These reports indicate that brief exposure to large amounts of coal tar creosote may result in a rash or severe irritation of the skin, chemical burns of the surfaces of the eye, convulsions and mental confusion, kidney or liver problems, unconsciousness, or even death. Longer exposure to lower levels of coal tar creosote, coal tar, coal tar pitch or coal tar pitch volatiles by direct contact with the skin or by exposure to the vapors from these mixtures can also result in increased sensitivity to sunlight, damage to the cornea, and skin damage such as reddening, blistering, or peeling. Longer exposures to the vapors of the creosotes, coal tar, coal tar pitch, or coal tar pitch volatiles can also cause irritation of the respiratory tract. Skin cancer and cancer of the scrotum have also resulted from long exposure to low levels of these chemical mixtures, especially through direct contact with the skin during wood treatment or manufacture of coal tar creosote-treated products, or in coke or natural gas factories. Prolonged skin exposure to soot and coal tar creosote has been associated with cancer of the scrotum in chimney sweeps. These levels are much higher than the levels that you are likely to be exposed to in groundwater, food, air, or soil.

One way to see if a chemical will hurt people is to learn how the chemical is absorbed, used, and released by the body; for some chemicals, animal testing may be necessary. Animal testing may also be used to identify health effects such as cancer or birth defects. Without laboratory animals, scientists would lose a basic method to get information needed to make wise decisions to protect public health. Scientists have the responsibility to treat research animals with care and

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compassion. Laws today protect the welfare of research animals, and scientists must comply with strict animal care guidelines.

Rats and mice fed a large amount of wood creosote at one time had convulsions and died. Rats fed a smaller amount of wood creosote for a long period developed kidney and liver problems, and died. Exposure to coal tar products through the skin has resulted in skin cancer in animals. Laboratory animals that ate food containing coal tar developed cancer of the lungs, liver, and stomach, and animals exposed to coal tar in the air developed lung and skin cancer.

The International Agency for Research on Cancer (IARC) has determined that coal tar is carcinogenic to humans and that creosote is probably carcinogenic to humans. EPA has also determined that coal tar creosote is a probable human carcinogen.

1.6 HOW CAN CREOSOTE AFFECT CHILDREN?

This section discusses potential health effects from exposures during the period from conception to maturity at 18 years of age in humans.

Children are generally exposed to very low levels of creosote, but intentional or accidental eating of coal tar creosote has resulted in poisoning. Children who live in hazardous waste areas contaminated with creosote may be exposed by drinking contaminated water or from contact with soil. The most common way that creosote will enter the body when it is present in soils is through the skin. However, children may also swallow creosote if they eat dirt or put their unwashed hands in their mouths after touching soil or wood contaminated with creosote. In addition, children may be exposed to creosote compounds if they eat fish and shellfish from contaminated areas. Children may also be exposed to creosote if they use products that contain creosote to improve a health problem such as dandruff, eczema, or psoriasis, or if they are given an herbal remedy containing the leaves from the creosote bush (chaparral).

Children may also be exposed to creosote if they breathe in vapors from or have direct skin contact with freshly treated wood found in fences, bridges, railroad ties, or telephone poles. In

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addition, children who live in treated-wood houses (log cabins) may be exposed through the air or by direct contact with the wood. The use of creosote to protect wooden playground equipment or wooden decks for the yard is not recommended, but children may be exposed to creosote if it has been applied to wood in or around the home in the past. Children could also be exposed to creosote on their parent's clothing or shoes if these have been contaminated with creosote at the workplace. Children are not more likely to be exposed to creosote than adults, and there is no unique exposure of children to creosote.

Children who played on soil contaminated with creosote had more skin rashes than children who played in uncontaminated areas. Apart from this, the health effects of creosote have not been studied in children, but they would likely experience the same health effects seen in adults exposed to creosote. We do not know whether children differ from adults in their susceptibility to health effects from creosote. Children could be more susceptible to cancer because they might have a longer time in which to develop it, but this association has not been studied.

No effects have been reported for children exposed to creosote before birth. Experiments in laboratory animals have shown birth defects, such as cleft palates, in the young of mothers exposed to high levels of creosote during pregnancy, but whether creosote could induce such defects in humans is not known. Some animal studies indicate that creosotes may cross the placenta into the tissue of the developing fetus. Because chemical components of coal tar may be stored in body fat, they may be found in breast milk and therefore could be transferred to newborns and infants. For more information on the effects of creosote on children, see Section 3.7.

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1.7 HOW CAN FAMILIES REDUCE THE RISK OF EXPOSURE TO CREOSOTE?

If your doctor finds that you have been exposed to significant amounts of creosote, coal tar, coal tar pitch, or coal tar pitch volatiles, ask whether your children might also be exposed. Your doctor might need to ask your state health department to investigate.

Families may reduce the risk of exposure to coal tar creosote, coal tar, coal tar pitch, and coal tar pitch volatiles in several ways if they find that they are at risk of such exposures. If you live in a residential area that used to have a wood preservation facility or gas manufacturing plant located nearby, you should use precautions to decrease or limit your exposure to creosote that may be present in the soil or water. This may include wearing long-sleeved shirts and long pants when working or playing outside and avoiding using water contaminated with creosote. If the soil in your yard was contaminated by creosote in the past, you should probably not grow food in it. You will need to wash your hands and any other exposed skin carefully after you are in contact with the contaminated soil or water outside. This is especially true for children since they have a tendency to put their hands in their mouths. Some children eat a lot of dirt. It is not fully understood how much of the creosote bound to dirt may come off the dirt when it is inside your body. You should discourage children from eating dirt. Make sure they wash their hands frequently and before eating. Discourage your children from putting their hands in their mouths or from engaging in other hand-to-mouth activity.

Children may be exposed to creosote during their outdoor play activities. You should encourage your children not to play in contaminated areas, particularly in those that may be abandoned waste sites or waste sites undergoing cleanup. Some children will ignore signs posted at the sites that alert the public to possible dangers and declare the areas off limits. Encourage your children to follow the instructions on the signs and to play elsewhere. Children may come into contact with creosote-treated wood when playing on or near railroad tracks, in ditches close to utility poles, in old barns or other farm structures, or on bridges or piers. Children may also be exposed to creosote through ingestion if they chew or place their mouths on creosote-treated objects such as fence posts or pier railings. You should discourage your children from such behavior and from putting foreign objects in their mouths.

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Drinking chaparral tea may result in exposure to wood creosote by swallowing. If you drink chaparral tea you may expose your children. Creosote is also found in coal tar shampoos used for anti-dandruff therapy, in coal tar ointments used for treatment of eczematous dermatitis and in mineral coal tar for the treatment of psoriasis. You may expose your children to creosote if you use any of these products. Ask your doctor to suggest alternative treatments that do not involve the use of these products.

It is sometimes possible to carry creosote into the home on work clothing or shoes that may have been exposed to coal tar creosote, coal tar, or coal tar pitch at the workplace. This may be of more importance for people who work in the wood-preserving industry or in jobs such as roofing, paving, and chimney cleaning than for people who work in the coking industry, or in other plants that use coal tar-derived products and for which the main route of exposure is through breathing in contaminated dust. You can contaminate your car, home, or other locations outside work where children might be exposed to creosote. You should know about this possibility if you work with creosote. Long-term exposure to low levels of creosote through direct contact with skin has resulted in skin cancer. For workers in wood preservation facilities, the American Wood Preservers Institute (AWPI) recommends washing work clothes separately from other household clothing if oily creosote residues or sawdust from creosote-treated wood are present on the clothes. Adults with contaminated work clothes should wash them before reusing them. If you work in an industry in which creosote is used, your occupational health and safety officer at work should tell you whether this or other chemicals you work with are dangerous and likely to be carried home on your clothes, body, or tools and whether you should be showering and changing clothes before you leave work, storing your street clothes in a separate area of the workplace, or laundering your work clothes at home separately from other clothes. Your employer should have Material Safety Data Sheets (MSDSs) for many of the chemicals used at your place of work, as required by the Occupational Safety and Health Administration (OSHA). Information on these sheets should include chemical names and hazardous ingredients, important properties (such as fire and explosion data), potential health effects, how you get the chemical(s) in your body, how to properly handle the materials, and what to do in an emergency. Your employer is legally responsible for providing a safe workplace and should freely answer your questions about hazardous chemicals. Your OSHA-

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approved state occupational safety and health program or OSHA can answer any further questions and help your employer identify and correct problems with hazardous substances. Your OSHA-approved state occupational safety and health program or OSHA will listen to your formal complaints about workplace health hazards and inspect your workplace when necessary. Employees have a right to optimal safety and health on the job without fear of punishment.

Your children may be exposed to creosote compounds by eating certain types of fish and shellfish caught from certain locations. Certain states, American Indian tribes, and U.S. territories have issued freshwater fish advisories to warn people about creosote-contaminated fish. Each state, American Indian tribe, or U.S. territory sets its own criteria for issuing fish advisories. A fish advisory will specify which bodies of water have restrictions. The advisory will tell you what types and sizes of fish are of concern. The advisory may completely ban eating fish or tell you to limit your meals of a certain fish type. For example, an advisory may tell you to eat a certain type of fish no more than once a month. The advisory may tell you to eat only certain parts of the fish and how to prepare or cook the fish to decrease your exposure to creosote. The fish advisory may be stricter to protect pregnant women, nursing mothers, and young children. Chemicals in creosote have been found in breast milk and may cross the placenta. To reduce your child's exposure to creosote, obey fish advisories. Information on fish and wildlife advisories in your home state is available from your state health or natural resources department. Signs might also be posted in certain fishing areas.

Creosote is a restricted-use pesticide, meaning that it is only supposed to be applied by people who are trained to use it safely and who have been tested and approved to use it. It is not available over-the-counter for use in the home or garden. The AWPI does not recommend the use of creosote to protect wooden playground equipment or wooden decks for the yard. Other pesticides are generally used for preserving playground equipment and decks. Your children may be exposed to creosote if an unqualified person applies it to wood in or around your home, such as to sundecks or to wooden equipment your children play on. In some cases, the improper use of pesticides banned for use in homes has turned homes into hazardous waste sites. Make sure that any person you hire is licensed and, if appropriate (as is the case for creosote), certified to apply pesticides. Your state licenses each person who is qualified to apply pesticides

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according to EPA standards and further certifies each person who is qualified to apply restricted-use pesticides. Ask to see the license and certification. Also ask for the brand name of the pesticide, an MSDS, the name of the product's active ingredient (the chemical that makes the pesticide work), and the EPA registration number. Ask whether EPA has designated the pesticide "for restricted use" and what the approved uses are. This information is important if you or your family react to the product.

If you feel sick after a pesticide has been used in your home, consult your doctor or local poison control center.

1.8 IS THERE A MEDICAL TEST TO DETERMINE WHETHER I HAVE BEEN EXPOSED TO CREOSOTE?

No medical test will determine if you have been exposed to wood creosote, coal tar creosote, coal tar, coal tar pitch mixtures, or coal tar pitch volatiles. However, chemicals contained in creosote (such as PAHs or phenol) may be detected and measured in body tissues (organs, muscle, or fat), urine, or blood after exposure to creosote. Typically, this may be done for employees in industry who work with coal tar creosote, coal tar, and coal tar pitch to monitor their exposure. For example, the metabolite 1-hydroxypyrene, which can be detected in urine after exposure to pyrene, has been used to test for exposure to creosote because pyrene is a component of creosote. This test would determine only whether you have recently been exposed to pyrene, but cannot positively identify the source of the pyrene as creosote or accurately predict whether you will experience any adverse health effects. Moreover, analyses of urine samples for 1-hydroxypyrene are not normally done in a doctor's office because they require special equipment.

For more information on tests to measure coal tar creosote, coal tar, coal tar pitch, or coal tar pitch volatiles in the body, see Chapters 3 and 7.

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1.9 WHAT RECOMMENDATIONS HAS THE FEDERAL GOVERNMENT MADE TO PROTECT HUMAN HEALTH?

The federal government develops regulations and recommendations to protect public health. Regulations can be enforced by law. Federal agencies that develop regulations for toxic substances include the EPA, the OSHA, and the Food and Drug Administration (FDA). Recommendations provide valuable guidelines to protect public health but cannot be enforced by law. Federal organizations that develop recommendations for toxic substances include the ATSDR and the National Institute for Occupational Safety and Health (NIOSH).

Regulations and recommendations can be expressed in not-to-be-exceeded levels in air, water, soil, or food that are usually based on levels that affect animals; then they are adjusted to help protect people. Sometimes these not-to-be-exceeded levels differ among federal organizations because of different exposure times (an 8-hour workday or a 24-hour day), the use of different animal studies, or other factors.

Recommendations and regulations are also periodically updated as more information becomes available. For the most current information, check with the federal agency or organization that provides it. Some regulations and recommendations for creosote include the following:

On December 10, 1992, FDA issued a nationwide warning to consumers (FDA Press Release, P92-38) about chaparral, an herbal product derived from the leaves of the creosote bush, because of reports of acute toxic hepatitis after its use. The press release can be found at the FDA Web site, <http://www.fda.gov>.

Regulatory standards and guidelines for air and water exist for the most important individual PAHs and phenols contained in wood creosote, coal tar creosote, coal tar, and coal tar pitch. EPA has designated coal tar creosote a restricted-use pesticide. This means it can only be bought and used by certified applicators and only for those uses covered by the applicator's certification. In addition, coal tar creosote has been identified by EPA as a hazardous waste.

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The federal government has developed regulatory standards and guidelines to protect workers from the potential health effects of other coal tar products in air. OSHA has set a Permissible Exposure Limit (PEL) of 0.2 milligrams of coal tar pitch volatiles per cubic meter of air (0.2 mg/m³) in workroom air to protect workers during an 8-hour shift.

For more information on regulations and advisories for coal tar creosote, coal tar, and coal tar pitch exposure, see Chapter 8.

1.10 WHERE CAN I GET MORE INFORMATION?

If you have any more questions or concerns, please contact your community or state health or environmental quality department or

Agency for Toxic Substances and Disease Registry
Division of Toxicology
1600 Clifton Road NE, Mailstop E-29
Atlanta, GA 30333
Web site: <http://www.atsdr.cdc.gov>

* Information line and technical assistance

Phone: 1-888-42-ATSDR (1-888-422-8737)
Fax: 1-404-498-0057

ATSDR can also tell you the location of occupational and environmental health clinics. These clinics specialize in recognizing, evaluating, and treating illnesses resulting from exposure to hazardous substances.

* To order toxicological profiles, contact

National Technical Information Service
5285 Port Royal Road
Springfield, VA 22161
Phone: (800) 553-6847 or (703) 605-6000