



The Asarco Tacoma Smelter Superfund Projects:

A Brief Overview



The U.S. Environmental Protection Agency (EPA), the Washington State Department of Ecology, and other State and local agencies are working to protect public health and improve the environment in contaminated areas of Ruston and Tacoma, Washington. This brochure provides information about three ongoing clean-up projects related to contamination caused by past operations of the Asarco Tacoma Smelter.

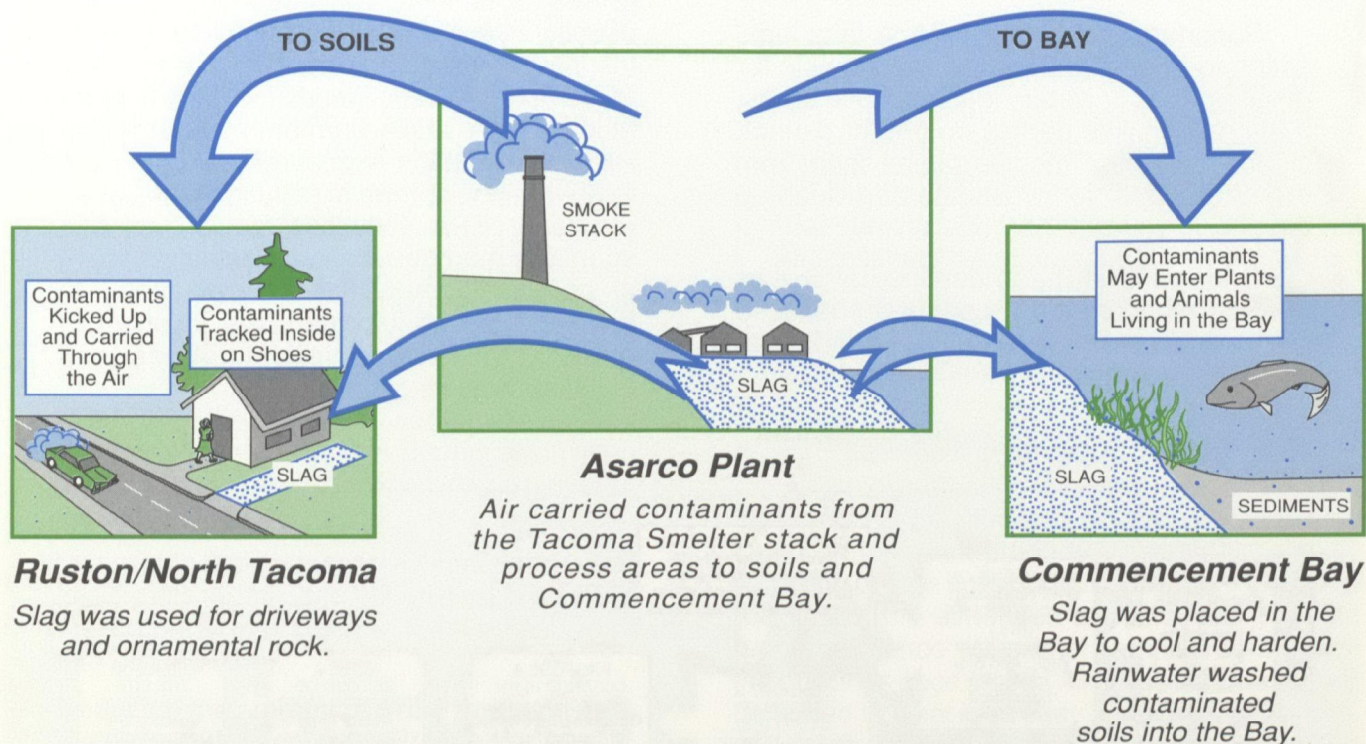
Historical Overview

The Asarco Tacoma Smelter is located on about 67 acres along the shore of Commencement Bay in Ruston and Tacoma, Washington. The facility is owned by the American Smelting and Refining Company (Asarco). The smelter operated from 1890 until 1986, first as a lead smelter, and later as a copper smelter that processed ores containing high levels of arsenic. In 1985, smelting operations were discontinued, and in 1986, the facility closed permanently. During the time it operated, the Asarco Smelter used high temperature furnaces to melt the metals away from raw materials. This smelting process resulted in two main types of pollution:

Sulfur Dioxide and Contaminated Dust — the smelter stack and other parts of the plant released sulfur dioxide (a gas) and dust particles (containing arsenic and other metals) into the air. Much of the dust settled onto the soils throughout Ruston and north Tacoma. Some dust also fell into the waters of Commencement Bay. Most of the dust that fell on the land remains in the soil today. However, a portion of the pollution has been, and continues to be, carried by wind and rainwater into Commencement Bay.

Slag — hot, liquid slag (a black, glass-like material containing arsenic and other metals) was a waste product of the smelting process. Asarco poured the slag into Commencement Bay to cool and harden. The hardened slag created an extended shoreline, and most of the existing plant is built on this extended shoreline. Some slag was also cooled on land. Residents of the community used slag for ornamental rock, driveways, sandblast grit, fill, and a variety of other purposes.

How Contaminants From the Asarco Plant Spread to the Surrounding Community



The Asarco Tacoma Smelter Superfund Projects

In 1983, the area now known as the Commencement Bay Nearshore/Tideflats Site was added to EPA's list of Superfund sites. Three projects associated with the Asarco Smelter operations are being addressed as part of the overall Commencement Bay Nearshore/Tideflats Superfund Site.

- 1 The Asarco Smelter Site**
- 2 The Asarco Marine Sediments**
- 3 The Ruston/North Tacoma Residential Soils**

What is Superfund?

In 1980, Congress passed the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), which was amended in 1986 by the Superfund Amendments and Reauthorization Act (SARA). These two laws, commonly known as Superfund, provide EPA with the authority and resources to investigate and clean up releases, or threatened releases, of hazardous substances.

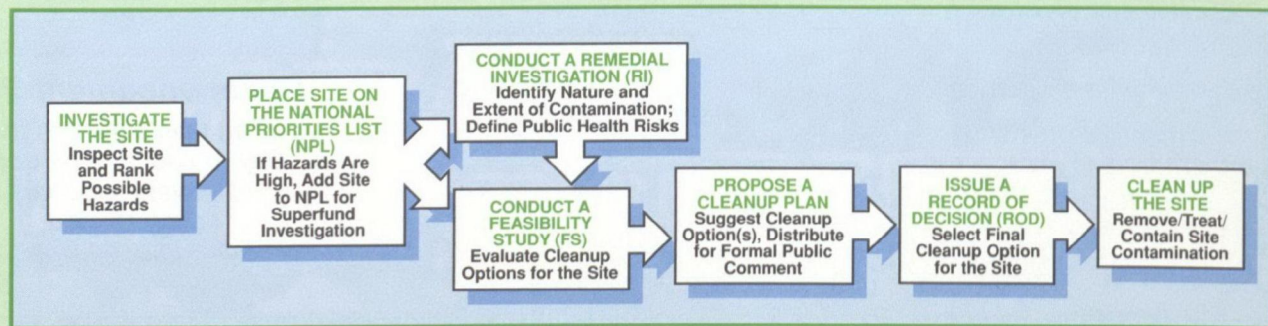
Superfund authorizes EPA to take legal action to ensure that parties responsible for polluting soils or water clean up those areas. If the responsible parties do not, or cannot, clean up the sites, monies can be spent from the "Superfund" to investigate and clean up the site.

Once a site has been identified by EPA as needing attention under Superfund, it is placed on the National Priorities List (NPL). The site

is then investigated and, if necessary, a cleanup program is implemented. If a site poses an immediate threat to public health or the environment, EPA has the authority under Superfund to address the situation quickly through a removal action that can occur before the overall site investigation is complete.

Every site addressed under the Superfund program is unique, and cleanups are tailored to the specific conditions at each site. Cleanup usually involves treating, removing, or containing the hazardous wastes. Through the Superfund process (indicated in the chart below), EPA seeks permanent solutions to reduce the public's exposure to pollution and to prevent the spread of pollution in the environment. EPA publishes fact sheets and sponsors many educational activities, such as community meetings and workshops, to keep the public informed and involved in ongoing Superfund investigations and cleanup projects.

The Federal Superfund Process



1 The Asarco Smelter Site

One of the Asarco Tacoma Smelter Superfund projects involves cleaning up contamination found on the Asarco property. As a result of past operations at the Asarco Smelter, the Asarco property contains slag, soil, groundwater, and buildings that are contaminated with metals (such as antimony, arsenic, cadmium, chromium, copper, lead, nickel, and zinc) and organic compounds (such as dimethylaniline).

Asarco began an investigation of contamination on the smelter property in 1986. At that time, Asarco also began evaluating options for cleaning up the site. EPA oversees Asarco's efforts in the investigation and cleanup process.

The Asarco on-site cleanup is taking place in several phases, including demolition of structures on the property, and overall cleanup of the site.

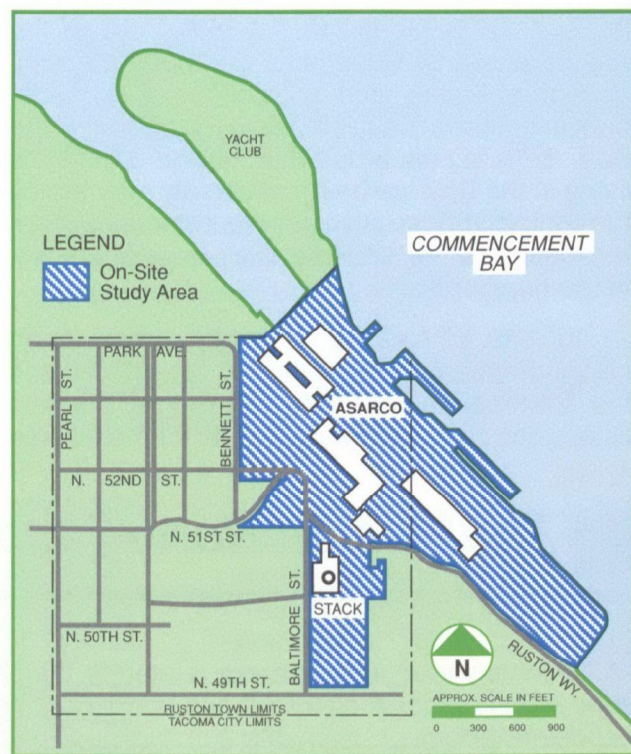
Demolition of Smelter Site Structures

In 1987 and 1988, Asarco removed many of the most highly contaminated buildings from the plant property. Later, in 1990, EPA issued a formal decision requiring demolition of the majority of the site's remaining structures, including the smelter stack. These structures need to be removed because they are contaminated, unstable, and pose a risk to human health and the environment. Removal of the structures will also aid in determining the level of contamination located beneath the buildings.

When the demolition of the structures occurs, steps will be taken to minimize the amount of contamination entering the environment. These steps include:

- Minimizing the amount of contaminated dust that could enter the air during demolition activities by wetting the area using a powerful sprinkler-type system.
- Minimizing the amount of rainwater and water generated during demolition that runs from the property into Commencement Bay and into groundwater.
- Reducing the amount of water that runs from the surrounding community onto the Asarco property. This also lessens the chances of the water carrying contamination from the property into Commencement Bay.

Map of the Smelter Site Study Area



- Properly disposing of all demolition wastes at the appropriate hazardous, dangerous, or solid waste facility or at an appropriate temporary storage area at the smelter site.
- Vacuuming and washing any structures not demolished to decontaminate them.
- Protecting the surrounding community and environment through planned health and safety activities, including air monitoring.

Overall Smelter Site Investigation

Asarco is gathering information for choosing a final method for cleaning up the contamination found on the plant property. Asarco is currently sampling on-site soils and groundwater. Once the majority of the structures are removed from the property, Asarco will collect samples from where the buildings once stood. All of this information will be added to what is already known about the site, and options for cleaning up the contamination will be described formally in a cleanup plan. After the public has had an opportunity to comment on the proposed cleanup plan, EPA will issue a final decision and the overall site cleanup will begin.

2 *The Asarco Marine Sediments*

Contaminated soils, groundwater, and slag from the Asarco operations have contaminated the sediments along the shoreline next to the Asarco property. Sediments are materials such as sand, soil, slag, mud, and decomposing plants and animals that have settled to the bottom of the Bay. EPA is concerned that marine organisms living in the Bay are being adversely affected by the contamination. Also, people consuming contaminated fish or shellfish may experience adverse health effects.

In 1989, EPA requested public comments on cleanup options for the cleanup of sediments in the Commencement Bay Nearshore/Tideflats Superfund Site, including options for the Asarco

Marine Sediments Cleanup. The preferred cleanup option originally involved digging up and disposing of the sediments along the shoreline. However, during the public comment period, EPA received more information from Asarco indicating that the area of sediment contamination may not be as large as originally determined. As a result, EPA is considering the new data and re-evaluating the cleanup options for the sediments.

Once the evaluation is complete, EPA and the Washington State Department of Ecology will propose a new cleanup plan. After considering public comments on the new plan, the agencies will select a final cleanup plan for the sediments and cleanup will begin.

3 *The Ruston/North Tacoma Residential Soils*

Arsenic and other pollutants related to the past operations of the Asarco Smelter are present in the soils and slag found in Ruston and north Tacoma. EPA is concerned about potential health effects from exposure to this contaminated soil and slag. It is unlikely that natural processes such as weathering or rain will reduce the amount of contamination in the soils. Therefore, EPA has conducted soil sampling and is developing cleanup options.

Soil Testing

In 1988, the Washington State Department of Ecology (Ecology) collected 288 soil samples from an area of approximately 950 acres surrounding the smelter (see map). This area includes about 1,800 housing units and 4,300 people. Based on the results of soil sampling and discussions with EPA and Ecology, Asarco agreed to remove contaminated topsoil from 11 publicly accessible properties including playgrounds, fields, and vacant lots where children were likely to play. Clean soil was placed over the excavated areas.

In 1989, EPA began an investigation to collect additional information about the soil contamination in the area. As part of this investigation, a plan for the soil sampling was developed with input from the community. In the summer of 1990, EPA collected 222 additional soil samples.

The test results confirmed that the highest levels of arsenic and other contaminants are generally found on properties located closest to the smelter. The test results also indicated the amount of contamination in soil tends to decrease as you move farther away from the smelter. While these general patterns exist, differences in contaminant levels between neighboring properties have also been observed. This variability in contaminant concentration from yard to yard is likely due to activities of individual homeowners, such as building and landscaping. As a result of these activities, contaminated surface soil may have been "mixed" with less or noncontaminated subsurface soil, or clean soil may have been imported from a noncontaminated area. These activities probably caused a decrease in the overall contaminant concentration in some yards.

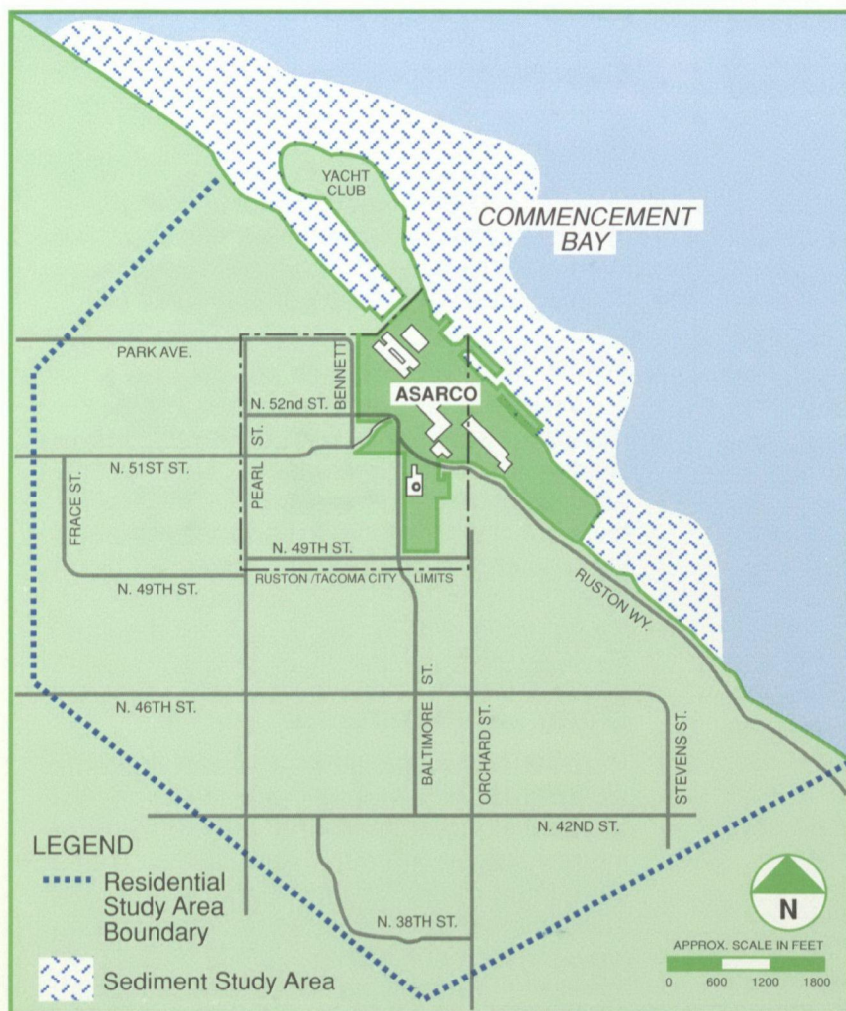
Soils in urban areas not impacted by an arsenic-emitting source are expected to contain less than 20 parts per million (ppm) of arsenic. A concentration of one part per million corresponds to one part of arsenic per one million parts of soil. Test results show that the amount of arsenic in surface soils in the Ruston and north Tacoma residential study area ranges from 2 to 3,000 ppm.

Most urban soils are expected to contain less than 250 ppm of lead. Test results of surface soils in the residential area indicate that the amount of lead — a contaminant associated with smelting operations and other sources — ranges from 7 to 2,700 ppm.

Cleanup Options

The results of the most recent soil sampling suggest that additional soil cleanup in the residential area may be needed. EPA is considering a number of ways to reduce people's exposure to contaminated soil including:

- Administrative measures, such as permitting, public education, and soil disposal programs, that would help protect the public.
- Placing asphalt over dirt alleyways and parking lots, and placing sod over exposed contaminated soils.
- Removing some or all of the contaminated soil, and replacing it with clean soil and grass. The contaminated soil could be disposed of either at a facility that would be constructed on the Asarco property or at a regulated disposal facility away from the Asarco property. As an alternative to disposal, EPA is also considering a process for treating and washing the soil to remove contaminants. The cleaned soil could be replaced on properties in the Ruston and north Tacoma areas.
- EPA is also evaluating the consequences of taking no action as a basis for evaluating the other cleanup options.



How Are People Exposed to the Contaminants?

EPA is concerned that residents in the Ruston and north Tacoma area are or could be exposed to elevated levels of arsenic and lead. Various common behaviors can result in exposure to arsenic, lead, and other contaminants. These behaviors generally involve unintentionally ingesting, touching, or breathing contaminated soils and dust. For example, a person may ingest contaminated soil if dirty hands are placed near or in the mouth. Similarly, soil may be ingested if dirty hands are used to touch food, gum, or cigarettes that are then placed the mouth.

Contaminated soil and dust may also be tracked into the home where it can settle on surfaces or objects that are contacted by people. For example, if an object such as a cup or a child's toy is placed in the mouth, contaminated

dust on the object may be swallowed. A person may also be exposed by directly breathing contaminated soils or dust during outdoor activities such as gardening or playing in a dry dusty area, or in the home.

Exposure of children is of particular concern because of their more frequent hand-to-mouth behavior (such as thumb sucking or "mouthing" of objects). Also, a child is likely to exhibit behavior that will lead to more frequent contact with the contaminants, such as playing in contaminated soil or crawling on contaminated floor surfaces.

Less significant exposure may result from eating fruits or vegetables grown in contaminated soil, particularly if soil is not washed from the fruits and vegetables prior to eating them.

Arsenic and lead are the two smelter-related contaminants of primary concern for human health in the residential area. EPA is evaluating the potential health risks associated with exposure to these contaminants in the Ruston and north Tacoma communities. The following is a discussion of the general types of health effects that have been associated with these contaminants.

Arsenic

Exposure to arsenic has been shown to increase a person's risk of developing cancer. Inhaling arsenic increases the risk of developing lung cancer. Ingesting or swallowing arsenic increases the risk of developing skin cancer as well as cancer in other parts of the body.

Arsenic can also cause other types of skin problems when ingested. The most characteristic problems include dark and light spots on the skin, and small "corns" on the palms, soles, and trunk of the body. In addition to skin problems, ingestion of arsenic has caused other effects, such as blood and nerve disorders.

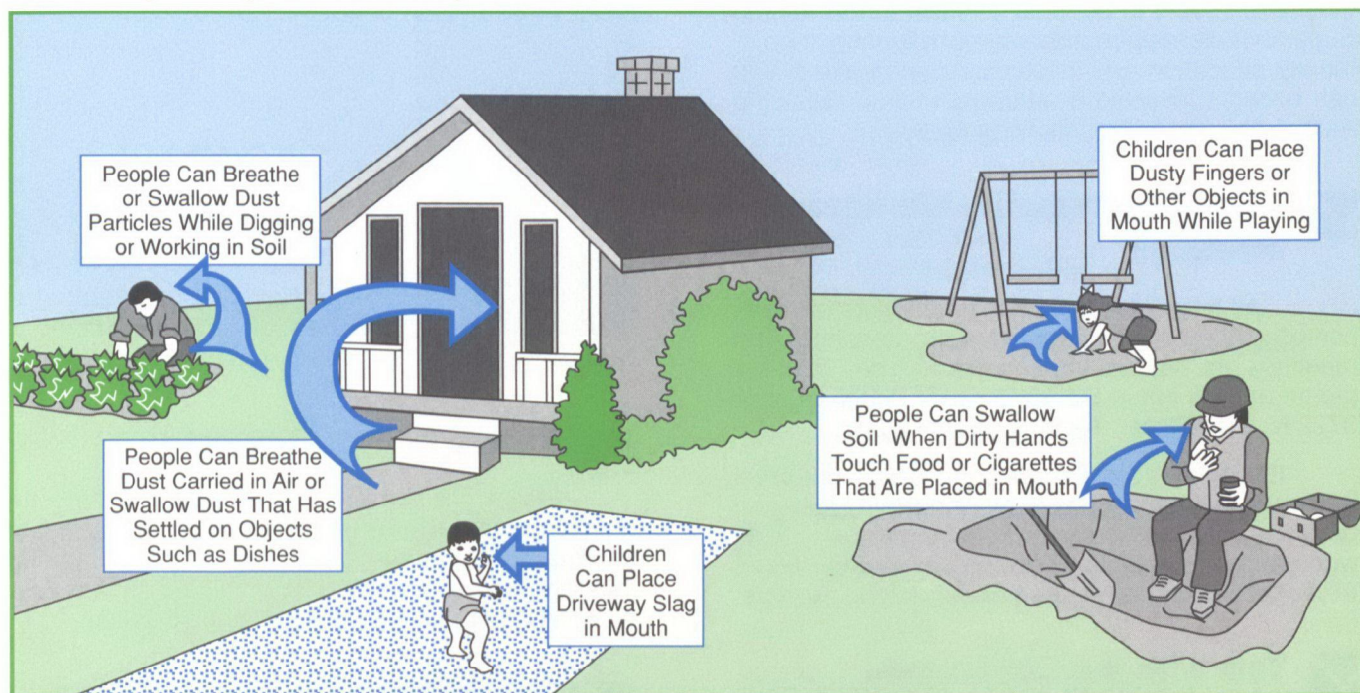
Lead

When the amount of lead in soil or dust is more than 500 to 1,000 ppm, the level of lead in children's blood may increase above commonly occurring levels. Increased blood lead levels have been associated with behavior and learning problems in children, and increased blood pressure in adults. Lead exposure can also cause nerve, kidney, and blood cell damage, and may increase the risk of cancer.

Other Contaminants

EPA has found other soil contaminants associated with smelter operations in the residential area, including antimony, cadmium, copper, mercury, and silver. These contaminants are present in smaller amounts but still exist at concentrations greater than typical urban soil values. While these contaminants probably do not pose a significant health risk individually, the health effects of combined exposure are unknown.

Some Ways People Can Be Exposed to Contamination



How Can You Reduce Your Exposure to Contaminated Soil?

You can reduce your exposure to soil contaminants by paying close attention to personal hygiene and avoiding contact with contaminated soil. Here are some suggestions:

- Maintain sod or grass in your yard.
- Wet soil before digging to minimize the dust that could be generated.
- Wear clean, full-body protective clothing such as coveralls or a long-sleeved shirt, pants, shoes, and gloves when you are disturbing the soil. Wash these clothes separately from other clothing.
- Wash your hands and face when you are finished with activities that disturb the soil, such as digging or gardening.
- Pay close attention to where children play. Exposure to arsenic is reduced by playing on grass rather than on bare dirt.
- Wash children's hands and faces to remove dirt after playing.
- Remove soil from homegrown fruits and vegetables before you eat them by washing and peeling them.
- Do not consume food or beverages while you are conducting activities that disturb the soil.
- Do not smoke or chew gum or tobacco in the area where the soil is being disturbed.
- Use a wet mop or dampcloth to clean dust and dirt tracked into the home. Wipe your feet on a doormat or carpet and leave your shoes at the entrance of your house to minimize tracking dust and dirt into the house. Be aware that pets also track in dust and dirt.

How You Can Get Involved

EPA encourages Ruston and north Tacoma community members to become involved in the Asarco Superfund cleanup process by participating in community education and involvement programs. You can become involved in and learn more about the Asarco projects in the following ways:

✓ Attend Community Workgroup Meetings

All interested community members are welcome to attend community workgroup meetings. The meetings are held on the second Tuesday of every month at 5:45 pm in the McCormick Public Library, 3722 N. 26th Street, Tacoma, Washington.

Established by EPA, the community workgroup is a forum for learning and expressing your ideas and opinions about the Asarco cleanup program. The workgroup is made up of community members and EPA staff working on the Asarco Superfund projects.

✓ Talk with the Community Liaison

The Community Liaison, Clayton Johnson, is a long-time resident of the area and can help answer your questions about the Asarco projects. He can also take your concerns to EPA managers. Feel free to call his office or stop by to talk with him about the Asarco projects. Clayton's office address and phone number are found on the inside back cover of this brochure.



Clayton Johnson, Community Liaison



Community Workgroup Meeting

✓ Read EPA Fact Sheets

EPA writes and distributes fact sheets for community members. The fact sheets offer up-to-date information about the Asarco cleanup activities and investigations. Contact EPA if you would like your name added to EPA's Fact Sheet mailing list.

✓ Visit Information Repositories

You can find written information about the Asarco cleanup projects at any of the eight EPA information repositories. The locations of the information repositories are listed on the inside back cover of this brochure.

✓ Become Active in Other EPA Programs

You are welcome and encouraged to attend public information meetings, open houses, and workshops about the Asarco cleanup projects. You can find announcements of upcoming activities in local newspapers, fact sheets, and meeting notices mailed to community members. You can also find out about upcoming community involvement activities by contacting the EPA's Community Relations Coordinator in Seattle or EPA's Community Liaison in Ruston.

For More Information

You can learn more about the Asarco Superfund projects by contacting EPA staff or stopping by one of the information repositories listed on this page.

EPA Contacts

Use the phone numbers and address listed below to contact EPA staff, or call toll free on weekdays from 8 a.m. to 4:30 p.m. at:

1(800)-424-4EPA

Environmental Protection Agency
1200 Sixth Avenue, Seattle, WA 98101

EPA Project Managers in Seattle

Asarco On-Site Cleanup

Piper Peterson: (206) 553-4951

Kevin Rochlin: (206) 553-2106

Asarco Sediments Cleanup

Lori Cohen: (206) 553-6523

Ruston/North Tacoma Residential Cleanup

Mary Kay Voytilla: (206) 553-2712

EPA Community Relations Coordinator in Seattle

Michelle Pirzadeh: (206) 553-1272

EPA Community Liaison in Ruston/Tacoma

Clayton Johnson
5013 N. Pearl St., Ruston, WA 98407
(206) 759-1321

Information Repositories

Tacoma Public Library, Main Branch

Northwest Room
1102 Tacoma Avenue South
Tacoma, Washington 98402
(206) 591-5622

McCormick Regional Branch Library

3722 North 26th Street
Tacoma, Washington 98407
(206) 591-5640

City of Tacoma Environmental Commission

747 Market Street
Suite 900
Tacoma, Washington 98402
(206) 591-5310

Tacoma Pierce County Health Department

Water Resources
3629 South D Street
Tacoma, Washington 98408
(206) 591-6553

Pacific Lutheran University Library

121st South and Park Avenue
Tacoma, Washington 98447
(206) 535-7500

Ruston Town Hall

5117 North Winnifred Street
Ruston, Washington 98407
(206) 759-3544

Washington Department of Ecology

Toxics Cleanup Program
4415 Woodview Drive, S.E.
Lacey, Washington 98503
(206) 438-3017

Environmental Protection Agency

Superfund Records Center
1200 Sixth Avenue
Seattle, WA 98101
(206) 553-6512

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