

International Smelting and Refinery



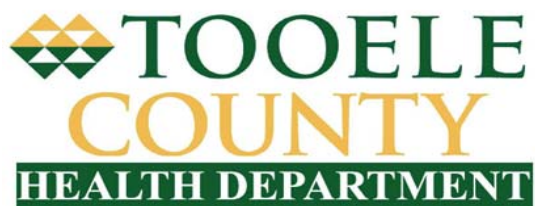
*International Smelter and Refining, Aerial Photograph (North), excluding the tailings Impound. 1927)
(Management housing (see page 8 in booklet) shown on the west edge going down the mountain.)*

Tooele County Health Department

151 North Main Street

Tooele, Utah 84074

(435) 277-2440



<http://www.tooelehealth.org>

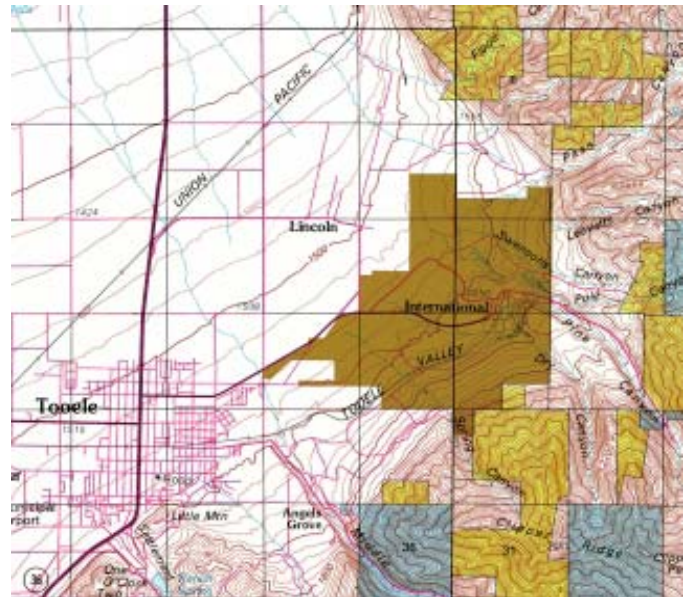
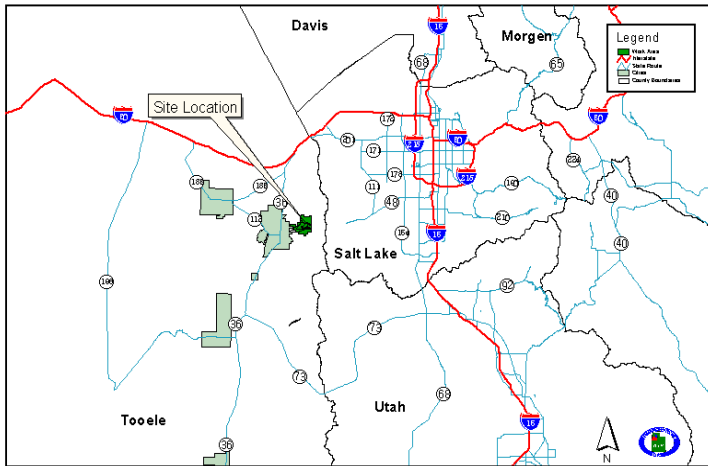
Email: hamitchell@utah.gov



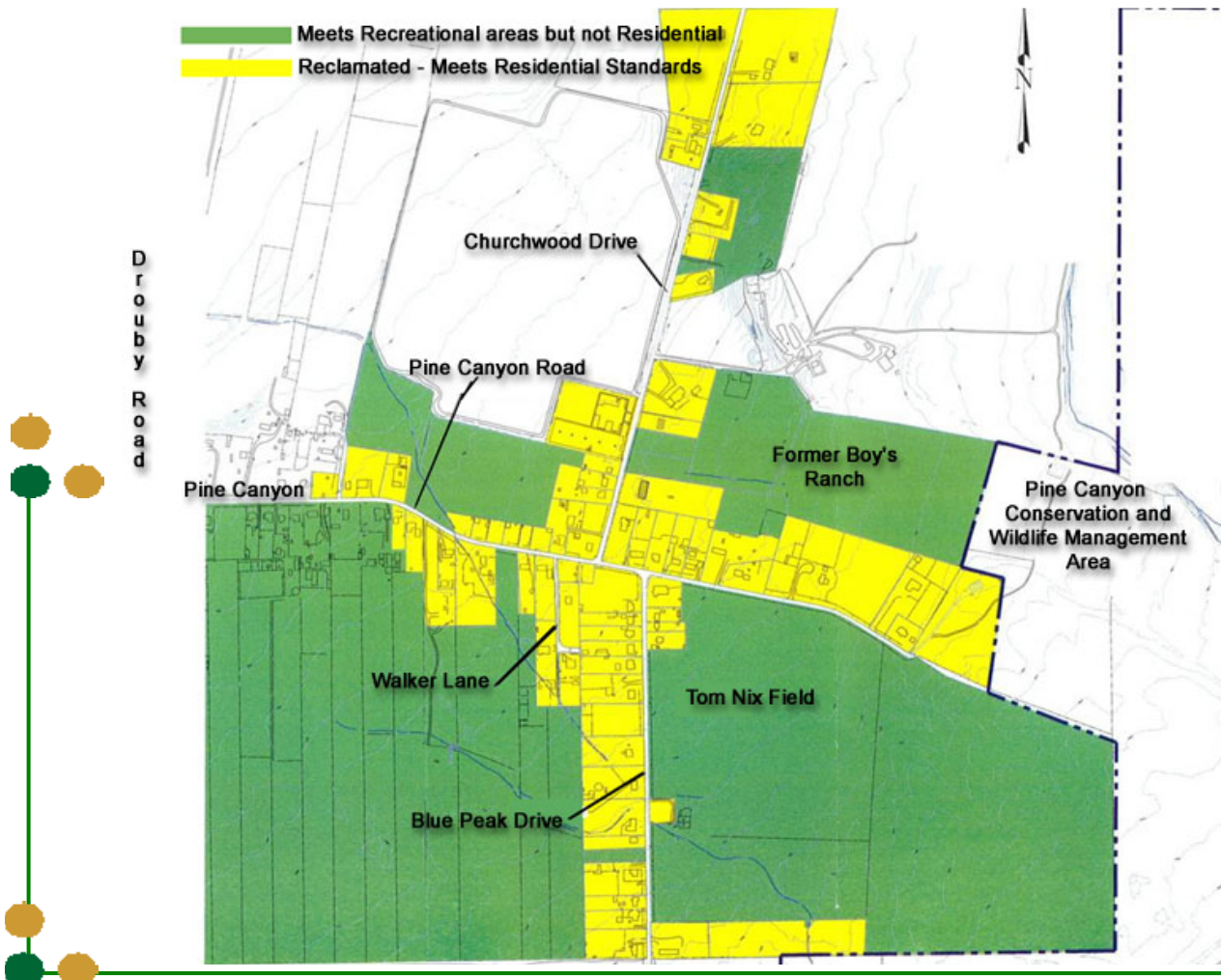
Table of Contents

Location Maps	3
Introduction	4
Historical Use of the site	5—6
IS&R Mine Operations Chronology	7
Housing:	8
Apartments	
Trailers	
Food Production	9
Lincoln	9
Tooele Valley Railroad	10
Reclamation	11—13
Approved Activities on the Site	14
Prohibited Activities on the Site	15
Health Concerns	16
Tooele Railroad spur (old railroad tracks & hardware)	
What parents / caregivers can do	
Gardening	
In your home	
Arsenic Information	17
Lead Information and Lead Testing at the Tooele County Health Department	18
Copper and Zinc Information	19
Contact Information	Back Cover

Map of Site Location



Pine Canyon Developer Guidelines Map



Introduction

The International Smelting and Refining Company site was placed on the National Priority List in July of 2000. Atlantic Richfield Company, the responsible party at the site, conducted studies to characterize waste on and around the site. Atlantic Richfield and the regulatory agencies evaluated a variety of clean up options.

With reclamation completed, the EPA announced proposed deletion of the IS&R site from the National Priorities List later this year (2010).

The area surrounding and including the IS&R site was designated the “Carr Fork Reclamation and Wildlife Management Area” in 1994.

Since concentrations of lead and arsenic in undeveloped (farm and open space) were below recreational cleanup levels at the time of the removal action plan in Pine Canyon, undeveloped areas did not require remediation. When land use for these areas changes to residential, Tooele County may ask property developers to undertake additional sampling. If sample results indicate it is necessary to protect future residents who live on the property, developers may be required to undertake additional clean up work.

Please review the Pine Canyon Developer Guidelines for more information. <http://www.tooelehealth.org>

This booklet provides a brief history of the site and discusses the hazardous wastes associated with the site. It describes what activities ARE and ARE NOT acceptable on the site.

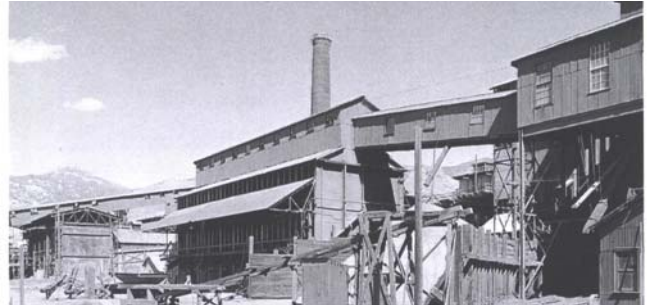
Community members are encouraged to be knowledgeable of their surroundings.



Aerial view of the IS&R Smelter and Smelter Operations running at full capacity looking southward from the air. 1960

Historical use of the Site

In the early 1900's, when International Smelting and Refining (IS&R) began looking for a place to build a smelter, the mouth of Pine Canyon in the Tooele Valley was considered ideal. It was believed that predominant westerly winds would carry stack emissions up the canyon and away from Tooele City. It was also thought to be an ideal site because it was near large ore (copper) supplies. In addition, it was near the main-line railroad.



In 1907, a subsidiary of the giant Anaconda Copper Company, International Smelting and Refining, purchased 2000 acres of land in the Oquirrh Mountains east of Tooele to build a modern nonferrous metals smelter. While the smelter was under construction in November 1908, Anaconda incorporated the Tooele Valley Railway to build a line from the smelter site at the mouth of Pine Canyon, through Middle Canyon, down to the main line of the San Pedro, Los Angeles & Salt Lake (Union Pacific), at Warner, a distance of seven miles. The only drawback was that the tracks would have to pass directly through downtown Tooele City.

Ore from the east side of the Oquirrh Mountains was brought to the site by aerial tramway and the 4.36 mile long Elton Tunnel. The original IS&R operations consisted of approximately 1200 acres of land located on a broad bench at the mouth of Pine Canyon.

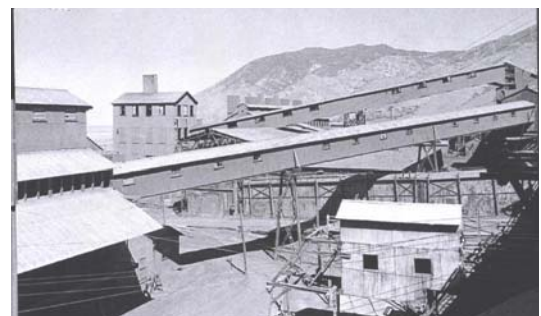


Ore and concentrate from local mines, as well as ore from such far-away places as Canada and Australia were picked up from the Union Pacific at Warner, and taken up to the smelter to be refined into gold, silver, lead, zinc and copper. Finished products from the smelter were moved out over the Tooele Valley in gondolas or boxcars.



Copper, lead, and zinc ore mining and processing occurred over a period of about 70 years. Historically, the site included:

- Mine workings (operations)
- Smelter Area
- Mill site
- Slag Pile
- Tailings impoundment
- Settling Pond
- Landfill area



Historical Use of the Site

Refining operations began in 1910. From 1910 through 1972, IS&R operated a copper and lead smelter. In the early years, tailings, slag, and flue dust were produced at an annual rate of 650,000 tons per year.

Working in the smelter was a hot and dangerous job. Furnaces reached temperatures from 650°C (1250° F) to 1500°C (2730°F). It wasn't uncommon for a worker to be in the mine 14—16 hours per day, home for food and a short rest, then back on the job for another long day.



IS&R Workers, 1936



IS&R Smelter running at peak capacity, 1925

During this time, 326 acres of tailings were covered or disposed of on site. The copper smelter was closed in 1946. The lead smelter was closed in 1972, and was demolished during the years 1972 – 1974.



Ore cooling from 2730°F



Carr Fork Operations, 1976

In 1974, Anaconda constructed and operated a copper mine and mill known as the “Carr Fork Operations”. It was located just east of the IS&R Smelter Site in Pine Canyon. It was in operation from 1974 – 1981. (Atlantic Richfield purchased Anaconda in 1977.) As part of the Carr Fork Operation, a new tailings dam along the western edge of the original tailing site was constructed.

The mine stopped production in November 1981, while Anaconda waited for copper prices to rise. When this did not happen, the processing facilities were torn down, sold, and removed from the property in late 1984.



The Carr Fork Operation property was sold to Kennecott Copper in October 1985. This included the mine and mill along with several acres of land east of the smelter site. It excluded the settling and tailing ponds, currently owned by Atlantic Richfield.

IS&R Mine Operations Chronology

10/15/1909	Tooele Valley Railway commenced operation approved and paid for by the International Smelter and Refinery (IS&R)
7/14/1910	First ore received at (IS&R) by way of the aerial tramway from Highland Boy
1910 through 1972	At various times the company operated copper and lead smelters and lead-zinc flotation mill
3/1/1911	Construction began on a new lead smelter using much of the existing machinery from the copper smelter
2/29/1912	First furnace went into operation at the new smelter
Mid 1920's	(IS&R) has become a booming custom smelter— Ore was delivered from all over the western states, even Canada. 80—90 railroad cars were unloading daily at the smelter— Smelter could easily produce 4,000 tons of ore per day
8/21/1941	The Elton Tunnel is formally opened
9/1/1941	Operation began on the Slag Treatment Plant to extract the zinc content from the slag dumps which had accumulated during the previous 30 years
1946	Copper Smelter Closed
1958	(IS&R) begins to receive lead smelting business from U. S. Smelting
1958	Anaconda Carr Fork mine ships ore from it's underground mine in Bingham Canyon to the (IS&R) Smelter in Tooele by way of the Elton Tunnel
12/16/1959	(IS&R) receives attention for being a custom lead-zinc concentrator and a custom lead-zinc smelter
1968	Lead / zinc flotation mill closes
1/1/1972	(IS&R) smelter is closed but continues to run three more weeks
1972	Lead smelter closes
Mid 1970's	With the exception of a few incidental buildings, the smelter was demolished - debris was hauled out in carts
1974	A mine and mill known as the "Carr Fork Operations" was constructed just east of the original smelter mine in Pine Canyon
1977	Atlantic Richfield purchases Anaconda in 1977
1981	Carr Fork operations stopped production in November 1981 while owners waited for copper prices to rise
1984	Copper prices did not rise and facilities were torn down, sold, and removed from the property in late 1984
11/1/1985	Carr Fork Operations were sold to Kennecott Copper in October 1985 which included the mine, mill, and several acres of land east of the smelter site

IS&R provided housing for foremen, supervisors, and other management workers who were brought in from across the country to work in the mine. Homes were also built on Vine Street and in Lincoln.

Housing



Trailers



Shared laundry facilities

Growing their own food

Food for the IS&R workers were produced by farmers, ranchers, and some of the workers themselves. Many crops grew on site. Crops and fresh produce was also grown in Lincoln.



IS&R Produce Supervisor, inspecting beets, 1920



Cattle (raised for food) graze in a meadow showing the IS&R refinery in the back, 1922



IS&R Produce Supervisor, inspecting grain, 1920

Lincoln

Lincoln was settled in the late 1800's as a farming and ranching area. Much of the fresh produce used in the smelter was grown in Lincoln. When the smelter was constructed in 1908, some of the original farm land was purchased by the International Smelting Company for operation of the smelter. During the operational period of the smelter, Lincoln continued to be used for farming and also became the residence for some smelter employees. Since the smelter discontinued operations in 1972, the area has experienced a slow, steady growth to its current population of about 470 people.

Tooele Valley Railroad

The value of the railroad to the success of the International Smelter and Refinery cannot be underestimated. Operation of the railroad was mandatory if the mine was going to succeed. The railroad operated a little over 6 miles of line between Tooele Junction and International, along with 2 miles of yard tracks and sidings. maximum grade was 2.4 percent, and maximum curvature was 14 degrees. The railroad was incorporated on November 18, 1908; construction began on November 18, 1908 and the railroad was opened for operation on October 15, 1909. The construction was fully financed by International Smelting and Refining, which also furnished substantially all of the railroad's freight consignments. It was all connected using the 4.36 mile long Elton Tunnel.



Ore coming to the IS&R smelter from Bingham Canyon, 1927



IS&R Mine Workers, 1924. Waiting for the train.

Railroad Reclamation



Tooele Valley Railroad Grade Extension



Grade Extension Schools

Reclamation

The Utah Mined Land Reclamation Act of May 1975 required reclamation (clean-up) of the Carr Fork Operations. The IS&R smelter was considered “pre-law” which means it did not legally have to be cleaned up. However, during 1986 – 1987 Atlantic Richfield (who purchased Anaconda in 1977) voluntarily included both areas (IS&R and the Carr Fork Operations) in its reclamation work to control any potential risks to humans and the environment.

As part of a Reclamation/Stabilization Plan, Atlantic Richfield:

- demolished all the buildings on-site,
- consolidated and isolated waste,
- Filled all basements and holes with clean fill dirt,
- graded the site with uniform slopes to minimize erosion,
- Placed an 18 inch deep cap cover of fresh soil over 520 acres,
- planted a vegetated cover, and
- Seeded disturbed areas with native vegetation

After the reclamation effort, Atlantic Richfield entered into a conservation easement agreement with the Utah Division of Wildlife Resources to manage the site for wildlife habitat and conservation values.

The Division of Natural Resources continues to actively manage the property to enhance the habitat and wildlife population density.



Lincoln restored home after reclamation



Facing east from Smelter Road, Tooele County Health Department photo, summer 2010

Reclamation Photos



Tailings Pond after reclamation

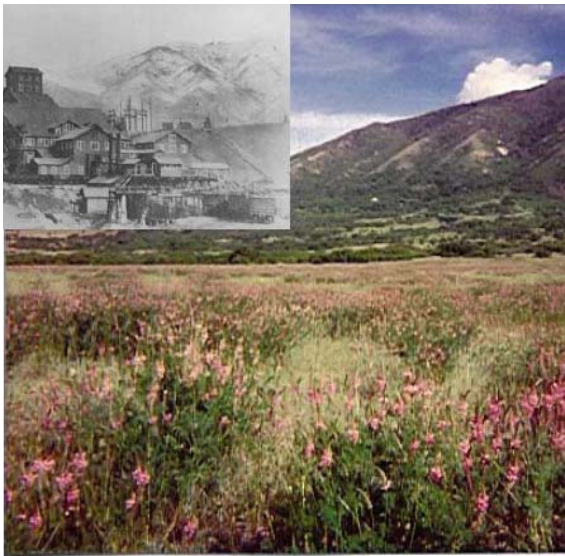


Photo taken facing east at the end of the tailings dam, Tooele County Health Department, 2010

Reclamation Photos



Photo taken just west of the Atlantic Richfield Gate, Tooele County Health Department, 2010

Shooting Ranges



Not included in the conservation portion are two shooting ranges:

- ⦿ A small pistol range leased from Atlantic Richfield to the City of Tooele
- ⦿ A shotgun range is leased from Atlantic Richfield to the Tooele Gun Club

Motorized vehicles are allowed ONLY on the shooting ranges

Approved Activities on the Site

- Walking and jogging on the site and along the Carr Fork access road
- Wildlife observation
- Hunting with dogs during respective hunting seasons
- Pets will be allowed along the Carr Fork access road as long as they are on a leash and owners pick up their pets fecal material and dispose of it appropriately off site



Gold Medal Mile



- There is a Gold Medal Mile route along the access road put in place by the Tooele County Health Department and participating agencies



For more information about allowed recreation use, please contact the Utah Division of Wildlife Resources, Central Region Habitat Manager at 1115 North Main Street, Springville, Utah 84663. Phone 801-491-5678.

Prohibited Activities

Reclamation efforts are monitored closely by both Atlantic Richfield and the Utah Division of Wildlife Resources. It is an ongoing process to ensure the land maintains its useful purposes.

It is imperative to preserve and protect the wildlife, nature, scenic open space, and educational values of the property. Topsoil and replanted areas take several years to establish permanently. If left undisturbed overtime, grasses and other cover will flourish and help protect the environment and the animals living in the conservation area. The 12 to 18 inches of topsoil, supplemental seeding and natural growth of the area must be protected.

Behaviors which will significantly impair or interfere with the wildlife habitat or other conservation values must not be tolerated. To preserve the area, the following activities are prohibited:

- Motorized vehicles—No trucks, cars, campers, etc
- Motorcycles
- ATV's and other recreational equipment—the land, topsoil, and vegetation are monitored closely
- Bicycles
- Livestock grazing
- Swimming or wading
- Fires
- Dumping or leaving garbage



Prohibited in the conservation area

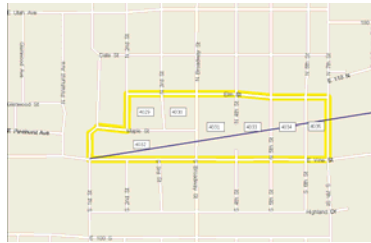


Disturbed and damaged soil, Tooele County Health Department, summer 2010

Health Concerns

The Tooele County Health Department voiced concerns over the Tooele Railroad Spur (TRS) January 2009 when health department officials discovered elevated levels of metals in residential soil. (A spur is an old set of railroad tracks along with any remaining nails and hardware.) The TRS runs from the IS&R Site parallel to the Oquirrh Mountains then enters Tooele from the east on Vine Street. (See diagram.) For an enlarged diagram, visit <http://www.tooelehealth.org>.

Further investigations found elevated levels of arsenic, aluminum, antimony, copper, lead, vanadium, and zinc along the length of the TRS. The health department requested help to identify any public health hazards posed by the TRS.



Lead is the only chemical of concern for adults.

For children, arsenic and lead levels are of health concern. Levels of arsenic, copper, lead, and zinc are chemicals of concern for pica children who frequently crave and consume nonfood items such as dirt, sand, paint chips, etc.

What parents and caregivers can do

- ◆ Get children ages 6 years and younger tested for lead annually
- ◆ Eat healthy foods high in iron and calcium
- ◆ Encourage children who play in this area to wash their hands and face often
- ◆ Wash and peel any locally grown fruits and vegetables

Gardening

- ◆ Yes! Buy some - grow some - eating home-grown and commercial products reduces your exposure
- ◆ Dampen soil before working with it to reduce dust
- ◆ Increase organic matter as you work - compost or manure from an outside source
- ◆ Rinse and scrub your produce until the water rinses clean - use a brush
- ◆ Peel root crops

In your home

- ◆ Consider upgrading your vacuum cleaner bags which use a HEPA filter to reduce dust levels
- ◆ Peel root crops
- ◆ Keep pets out of areas you suspect may be contaminated - bathe your pets frequently
- ◆ Maintain a good lawn or groundkeeper
- ◆ keep your yard in good condition and free of litter
- ◆ Change air conditioner and furnace filters regularly - at least with every time change (forward spring and back fall)
- ◆ Dust regularly
- ◆ mop floors regularly
- ◆ damp dust counters, tables, chairs, and window ledges

Health Concerns

Lead

What it is:

- A natural occurring metal found in the earth's crust and all parts of the environment. Lead is found in some fossil fuels. It's also found in mining, manufacturing, and paint

How humans get exposed:

- Eating contaminated foods
- Spending time in areas where lead-based paints have been used and are deteriorating
- Working in a job where lead is used
- Using health care products or folk remedies, which contain lead

Potential Health Effects:

- In children the central nervous system is most sensitive
- Damages kidneys and reproductive system
- At high levels, decreases reaction time
- Possibly affects memory
- Connection between health effects and exposure to low levels of lead is uncertain



*Lead along an old
mining trail
(unknown photographer)*

Lead Testing at the Health Department

Find out if your children have been exposed

The Tooele County Health Department is offering free blood lead testing for children. Call (435) 277-2310 to make an appointment.



*Tooele County Health Department Nurse
testing a child, 2007*

Arsenic

What it is:

- ◆ An element which occurs naturally in nature and is distributed in the earth's crust

How humans get exposed:

- ◆ Eating food, drinking water, or breathing air which contains arsenic
- ◆ Breathing sawdust or burning smoke from wood treated with arsenic
- ◆ Living near uncontrolled hazardous waste sites containing arsenic
- ◆ Living in areas with unusually high natural levels of arsenic in the rock

Potential Health Effects:

- ◆ Sore throat or irritated lungs
- ◆ Excessively high amounts are fatal
- ◆ Lower amounts cause nausea and vomiting
- ◆ Decreased production of red blood cells
- ◆ Abnormal heart rhythm
- ◆ Sensation of "Pins and Needles" in hands and feet
- ◆ Small "corns" or "warts" on the body
- ◆ Redness and swelling
- ◆ Increases the risk of different types of cancer

To find out if you have been exposed:

- ◆ Get tested—health care providers can test for arsenic



*Example of arsenic in water
(photographer unknown)*



- ◆ Your health care provider can test for arsenic
- ◆ A simple Urine Test can detect arsenic in the blood
- ◆ Other minor tests may be performed

Copper and Zinc

These elements are most common in the earth's crust, and in rock, soil, water, sediment, and low levels of air.

Copper

- The human body is very efficient about removing excess copper through urination and through feces
- Children with dirt eating behaviors should be monitored if their copper levels elevate

Zinc

- Zinc compounds are used in industry and can be found in vitamins, sun screen, diaper rash ointment, and deodorant
- Ingestion of contaminated soil is not expected to cause adverse reactions except for children who have dirt eating behavior (Pica)

Links and Resources

For more information about the IS&R and/or the Carr Fork Mine Operations, the following websites can give you more detail:

Environmental Protection Agency narrative discussion about the IS&R and Carr Fork history can be found at:

EPA Region Eight International Smelter and Refining visit:

<http://www.epa.gov/region8/superfund/ut/intrntnlsmelt/index.html>

To learn more about the Railroad and the IS&R visit:

<http://utahrails.net/utahrails/tooele-valley.php>

To learn more about the Public Health Assessment of the IS&R visit:

<http://www.atsdr.cdc.gov/hac/pha/pha.asp?docid=798&pg=1>

For more information about Arsenic visit:

www.atsdr.cdc.gov/tfacts2.html

For more information about Lead visit:

www.atsdr.cdc.gov/tfacts13.html



Tooele County Health Department

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"Protecting Your Future"

VISIT OUR WEBSITE AT:

[HTTP://
WWW.TOOELEHEALTH.ORG](http://WWW.TOOELEHEALTH.ORG)



*Visit our Healthy Smiles
Dental Clinic*

Tooele County is located 28 miles from Salt Lake City at the base of the Great Salt Lake.

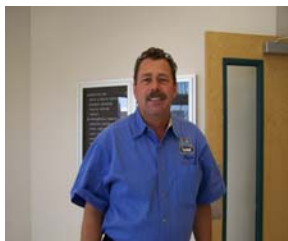
Tooele County has had the highest growth rate in the state since 2000.

Tooele has a colorful past and a vibrant future.

It is truly the best of both worlds. It has a rural feel to it, and only 30 minutes from the biggest city in Utah, Salt Lake City.

Contact Us:

Tooele County Health Department is located at 151 North Main Street across the street from Walgreens and Wells Fargo Bank.



Myron E. Bateman, Director of Health



Jeff Coombs, Deputy Director

Administration: 435-277-2460

Community Services 435-277-2440

Environmental Health 435-277-2440

Family and School Health 435-277-2310

