



FACT SHEET

Evaluation of Onsite Surface Soil Exposures by Recreational Users at Standard Mine – Gunnison County, Colorado

June 2008

BACKGROUND

Health Consultation Completed

The Colorado Cooperative Program for Environmental Health Assessments (CCPEHA) in cooperation with the Agency for Toxic Substances and Disease Registry (ATSDR) has recently completed a health consultation titled: "Evaluation of Onsite Surface Soil Exposures by Recreational Users". The consultation focused on exposures to contaminants found at the Standard Mine Site.

Site Background

The Standard Mine is located in the Ruby Mining District in the Rocky Mountains of central Colorado approximately 25 miles north of Gunnison and approximately 10 miles west of Crested Butte. Acid mine drainage and waste rock piles resulting from former mining operations are the major sources of contamination. The land use is primarily recreational - including mountain biking, hiking, ATV riding, and camping. The site is listed on the National Priorities List (NPL).

What did CDPHE find in the Health Consultation?

- A public health hazard exists based on the potential for non-cancer health effects for:
 - Exposure to lead in surface soils by young children and pregnant women who visit the Standard Mine site for recreational use of more than 12 days per year.
 - Acute exposures to copper and arsenic based on pica behavior. Less serious acute health hazards from copper and arsenic are possible.
- There is no apparent public health hazard for:
 - Average recreational exposures to lead (i.e., up to 12 days).
- Recreational exposure to all other contaminants is not likely to result in chronic, non-cancer adverse health effects.
- The theoretical cancer risks to recreational users are not of significant concern considering the conservative exposure assumptions and parameters used to calculate risk. However, remedial activities are recommended to reduce theoretical cancer risks to CDPHE's target cancer risk level of one in a million.

What's next?

- EPA will continue with clean-up.
- CDPHE will install signs to warn recreational users of potential public health hazards in highly contaminated areas.
- CDPHE will provide ongoing health education, as requested.
- CDPHE will complete another health consultation on the evaluation of recreational exposures to surface water, sediments, and fish consumption.

Where can I find this health consultation?

An electronic copy of the consultation can be found at: <http://www.cdphe.state.co.us/dc/ehs/healthconsult.html>. Printed copies of the consultation can be found at the Old Rock Community Library, 507 Maroon Ave, Crested Butte, Co 81224. To request a free copy of the health consultation, call Shannon Rossiter, Health Educator/Community Involvement Specialist, at 303-692-2617. For more information, please feel free to contact Thomas Simmons, Health Assessor, at 303-692-2961.

FREQUENTLY ASKED QUESTIONS

What is a health consultation? A health consultation provides advice on a specific public health issue related to real or possible human exposure to toxic material. A Health Consultation is a way for CDPHE to respond quickly to a need for health information on toxic substances and to make recommendations for actions to protect the public's health. Health Consultations may consider: 1. The levels (or "concentrations") of hazardous substances; 2. If and how people might be exposed to contamination (through "exposure pathways" such as breathing air, drinking or contacting water, contacting or eating soil, or eating food); 3. The harm the substances might cause to people (or the contaminants' "toxicity"); 4. If and how working or living nearby might affect people's health; and 5. Other dangers to people, such as unsafe buildings, abandoned mine shafts, or other physical hazards.

What is public health hazard? ATSDR defines a public health hazard as sites where evaluation of available relevant information suggests that, under site-specific conditions of exposure, long-term exposures to site-specific contaminants have had, are having, or are likely to have in the future, an adverse impact on human health that requires one or more public health interventions.

What is no apparent public health hazard? ATSDR uses this category is used for sites where human exposure to contaminated media may be occurring, may have occurred in the past, and/or may occur in the future, but the exposure is not expected to cause any adverse health effects.

What is bioavailability? Bioavailability is a measure of how much of a contaminant is absorbed when people are exposed to that contaminant through inhalation, skin contact or food intake.

What is relative bioavailability? Relative bioavailability is how much of a contaminant is absorbed from soil as compared to how much of that contaminant is absorbed from food or water.

What uncertainties are associated with the conclusions of this health consultation? A number of uncertainties exist in this evaluation: (a) uncertainty associated with acute health hazards for copper and arsenic due to the actual bioavailability of metals in onsite surface soils and the low likelihood of exposures at the maximum detected concentrations, (b) uncertainty associated with a determination whether the duration of site exposure could reasonably produce a body burden of lead that results in adverse health effects for adults who recreate on site, and (c) without site-specific data, there is uncertainty about how well the risk estimates predicted by computer modeling for lead and the default parameters reflect the true conditions on site.

What is pica behavior? Pica is an eating disorder associated with the frequent ingestion of large amounts of soil or other non-nutritive substances. ATSDR assumes 5000mg/day of soil ingestion for pica behavior. However, the ingestion of 400 mg/day of soil is also evaluated in this health consultation.

How do the site's metals affect human health?

Copper: Breathing high levels of copper can cause irritation of your nose and throat. Ingesting high levels of copper can cause nausea, vomiting, and diarrhea. Very-high doses of copper can cause damage to your liver and kidneys, and can even cause death.

Arsenic: Breathing high levels of inorganic arsenic can give you a sore throat or irritated lungs. Ingesting very high levels of arsenic can result in death. Exposure to lower levels can cause nausea and vomiting, decreased production of red and white blood cells, abnormal heart rhythm, damage to blood vessels, and a sensation of "pins and needles" in hands and feet. Ingesting or breathing low levels of inorganic arsenic for a long time can cause a darkening of the skin and the appearance of small "corns" or "warts" on the palms, soles, and torso. Skin contact with inorganic arsenic may cause redness and swelling.

Lead: The effects of lead are the same whether it enters the body through breathing or swallowing. Lead can affect almost every organ and system in your body. The main target for lead toxicity is the nervous system, both in adults and children. Long-term exposure of adults can result in decreased performance in some tests that measure functions of the nervous system. It may also cause weakness in fingers, wrists, or ankles. Exposure to high lead levels can severely damage the brain and kidneys in adults or children and ultimately cause death. In pregnant women, high levels of exposure to lead may cause miscarriage. Children are more vulnerable to lead poisoning than adults. Even at much lower levels of exposure, lead can affect a child's mental and physical growth.