



## Follow-up Evaluation of Recreational Exposure to Residual Onsite Surface Soil Contamination

October 2011

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: "Follow-up Evaluation of Recreational Exposure to Residual Onsite Surface Soil Contamination". The consultation focused on exposures to residual soil contamination that remains at the Standard Mine site following EPA's response actions.

### 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. In recent years, however, it has been difficult for recreational users to access the site due to privately controlled access points and washed out 4x4 trails. The site was listed on the National Priorities List (NPL) because of the potential for site-related contaminants to have an adverse impact on Crested Butte's water supply and the surrounding environment.

### Past ATSDR activities conducted at the site

A number of activities have taken place at the Standard Mine site since it was listed on the NPL. This includes data collection and analysis, health risk evaluation activities, and removal and disposal of contaminated soil. Below is the summary of findings of past health consultations completed by CCPEHA for the Standard Mine site:

- *Fall 2006: ATSDR Health Consultation on the potential impacts to Crested Butte water supply (ATSDR 2006):* It was found that the Standard Mine does not impact Crested Butte's drinking water supply (Coal Creek) to a degree that would pose a public health hazard to residents.
- *Summer 2008: ATSDR Surface Soil Health Consultation (ATSDR 2008a):* It was determined that the Standard Mine site constitutes a public health hazard due to exposure to lead by young children and pregnant women that visit the site on the above-average basis for recreational purposes such as camping, ATV riding, and hiking.
- *Fall 2008: ATSDR Health Consultation on the evaluation of recreational exposures to surface water, sediment, and fish consumption (ATSDR 2008b):* It was concluded that exposure to onsite surface water and sediment contaminated with lead poses a public health hazard to children who visit the Standard Mine site for recreational purposes.

### What did CCPEHA find in the Health Consultation?

- CCPEHA and ATSDR have reached one conclusion regarding recreational surface soil exposures based on current land use at the Standard Mine site.
  - Recreational acute (arsenic and copper) and chronic (aluminum, antimony, arsenic, barium, cadmium, chromium, cobalt, copper, iron, lead, and manganese) exposures to surface soil at the Standard Mine site are not expected to harm people's health.

This conclusion was reached because the estimated theoretical lifetime excess cancer risks are below or within the EPA acceptable cancer risk range (i.e., one in a million to hundred in a million). In addition, the estimated acute and chronic non-cancer exposure doses are below levels of health concern. Overall, the estimated theoretical cancer risks and non-cancer hazards are associated with a very low increased risk.

## What's next?

- EPA will continue addressing site-related contamination.
- CDPHE will review any additional data collected from the Standard Mine and complete another health consultation on the evaluation of recreational exposures to surface water, sediments, and fish consumption.
- CDPHE will administer another land-use survey if and when there is a change in land use activities.

## 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 the Colorado Department of Public Health and Environment 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, explosive hazards, or other physical hazards.

### Where can I find this health consultation?

An electronic copy of this health consultation can be found at: <http://www.cdphe.state.co.us/dc/envtox/ccpehasites.html>  
Printed copies of the consultation can be found at the Security Public Library located at 715 Aspen Drive, Security, Colorado 80911. To request a free copy of this health consultation, call Rosine Angbanzan, Health Educator, at 303-691-4078. For more information about the health consultation, please feel free to contact Thomas Simmons, Health Assessor, at 303-692-2961. For other site-related concerns, please call Dave Walker, CDPHE Site Project Manager, at 303-692-3354(direct) or toll free at 1-888-569-1831, ext. 3354.

**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 ingestion.

**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 with any health consultation or risk assessment. The primary uncertainties associated with 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 actual exposures to lead at the 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. Children aged 2-3 years are the most likely group of individuals to exhibit pica behavior. At the Standard Mine, pica behavior is not expected to be a major concern due to limited accessibility and steep terrain, which is likely to deter young children. However, to be prudent of public health, acute pica exposures were considered in this evaluation.