



Butte-Silver Bow Health Department – 2012 Environmental Health Studies Fact Sheet No. _4_

Contaminants of Concern

Selecting contaminants to be quantitatively evaluated
in a human health baseline risk assessment

At hazardous waste sites, data are often available on the concentration of a wide variety of hazardous substances. Carrying a large number of contaminants through a quantitative risk assessment may be unnecessary and complex, and may consume significant amounts of time and resources. In these cases, a selection process is used to eliminate contaminants of interest which clearly present a minimal risk, and focus on those contaminants which should be investigated further in a quantitative risk assessment. Those analytes selected for further evaluation are identified as contaminants of concern. This process can include a comparison of onsite contaminant levels to background levels, an analysis of detection frequency, and an assessment of relative risk. This selection process is described in detail in EPA's Risk Assessment Guidance for Superfund, Part A

(<http://www.epa.gov/oswer/riskassessment/ragsa/index.htm>) and EPA Region 8's Risk Assessment Website (http://www.epa.gov/region8/r8risk/hh_exposure.html).

In 1988, the Butte Soils Screening Study was conducted to provide analytical data for the purpose of prioritizing future Remedial Investigation/ Feasibility Studies and removal activities in Butte, Montana. The study was conducted under a cooperative agreement with EPA, Montana Department of Health, the Montana Bureau of Mines and Geology and Montana Tech. A total of 701 soil samples were collected from the Butte study area (Figure 1, approximately 8.5 square miles) and analyzed for a complete suite of inorganics. The analysis was focused on inorganics because these are the contaminants typically associated with mining, milling and smelting processes.



Figure 1

These inorganics which were analyzed for are shown in Table 1. For the Butte Priority Soils Operable Unit (BPSOU) risk assessments, lead and arsenic were identified as contaminants of concern in soil for the BPSOU. Mercury was added as a contaminant of concern in soil for the Walkerville area. These three contaminants of concern in soil were then further investigated in quantitative human health risk assessments for the BPSOU and Walkerville sites. The other inorganics analyzed in soil were eliminated as contaminants of concern because residential areas were below conservative risk-based screening levels and considered to present a minimal health risk.

**Table 1
Inorganics Analyzed for the BPSOU**

Aluminum	Calcium	Magnesium	Silver
Antimony	Chromium	Manganese	Sodium
Arsenic	Cobalt	Mercury	Thallium
Barium	Copper	Nickel	Tin
Beryllium	Iron	Potassium	Vanadium
Cadmium	Lead	Selenium	Zinc

A different set of screening processes were used to identify contaminants of concern for ground water and surface water, based largely on existing regulatory standards for these analytes and sampling showing exceedances of these standards. Table 2 shows all of the contaminants of concern identified for soil, groundwater, and surface water for the BPSOU.

**Table 2
Summary of Human Health Chemicals of Concern for the
BPSOU, Silver Bow Creek/Butte Area NPL**

Chemical	Solid Media	Groundwater	Surface Water
Aluminum			X
Arsenic	X	X	X
Cadmium		X	X
Copper		X	X
Iron		X	X
Lead	X	X	X
Manganese		X	
Mercury	X	X	X
Silver			X
Zinc		X	X

Contact Information

Please contact the Butte Silver-Bow City/County Health Department for further information at 406-497-5020.