



Lake County Building and Land Use Department

Building

Land Use

Environmental Health

Code Enforcement

Best Management Practices for Managing Lead, Arsenic and Cadmium Containing Soils In Lake County, Colorado

This document summarizes Best Management Practices (BMPs) for Lake County building permit applicants to consider when developing property within the boundaries of certain operable units of the California Gulch Superfund Site. Performance of these BMPs is not legally required for your building permit to be issued. This is an educational handout intended to inform the public regarding suggested procedures to consider that are recognized to be the most effective and practical means of addressing lead, arsenic and cadmium contamination in soil and preventing its distribution to other areas. Utilization of these procedures may minimize the disturbance, transfer, inhalation and ingestion of contaminated soils and may serve to reduce impacts to human health and to the Arkansas River watershed.

Introduction

Lead, arsenic and cadmium occur naturally in soil and water. Some soils are naturally high in lead, arsenic and cadmium, but many have been artificially enriched through a variety of means, principally industrialization.

Sources of lead in soil include natural background soil lead, lead-based paint, leaded gasoline, air emissions from smelters and mines, mine tailings and dust blown from tailings piles, and other various sources. Other common sources of lead exposure not related to soil include consumer products such as toys, imported candy and other household items. Lead in soil may or may not pose a health hazard, depending on several factors, including the amount of lead in soil (high or low), the type of lead (metals speciation) and the pathway to human exposure. High levels of lead exposure can adversely affect human health, however the most vulnerable population is preschool age children and pregnant and nursing women.

Sources of arsenic in soil include natural background soil arsenic, air emissions from smelters and mines, mine tailings and dust blown from tailings piles, pesticide use and wood preservatives. Arsenic also has many

beneficial uses but can cause human health problems if exposure is sufficient.

Sources of cadmium include natural background soil cadmium, air emissions from smelters and mines, mine tailings and dust blown from mine tailings piles and phosphate fertilizers. Exposure to high levels of cadmium can adversely affect human health.

Testing Your Soil

Applicants for a Lake County building permit may wish to determine whether the soil at the location of the project for which the permit is requested contains lead, arsenic or cadmium at levels that are deemed high by the U.S. Environmental Protection Agency. This is accomplished by soil testing through a qualified soil-testing laboratory. If soil lead, arsenic or cadmium levels are high, this document provides a recommended course of action for both residential and commercial development.

A review of historical activities at the subject property is one way to determine whether you may want to perform further testing. Suspect areas for lead, arsenic and cadmium may include property that contains or is near mine tailings from current or former mill sites or waste rock from metal mines or is within one mile of a former smelter operation. Permit applicants may suspect soil lead contamination if the property contains an older building or other structures once painted with lead-based paints. Permit applicants may also suspect soil lead contamination if the property is located near roadways or high traffic routes.

The first step, once you have decided to test your soil, is to locate a soil-testing laboratory to discuss requirements for soil sample size and containers before collecting samples. Generally, samples can be taken with a stainless steel or non-metallic trowel and placed in a Ziploc bag. Most laboratories have suggested soil sampling techniques.

Soil samples from suspect areas of the property or representative areas of the property may be taken. Particular attention may be paid to garden areas, areas of bare soil, distinct play areas for children, etc.

Soil sampling is not necessary in areas to be covered with asphalt pavement (two-inch minimum thickness), concrete, or at least 6 inches of clean soil

cap, because these types of barriers will assist in preventing any potential exposure to humans.

The U.S. Environmental Protection Agency recommends the following as the acceptable range of lead concentration in soil for the California Gulch Superfund Site:

Residential: Less than 3500 ppm lead
Commercial: Less than 6700 ppm lead
Recreational: Less than 16000 ppm lead

The U.S. Environmental Protection Agency recommends the following as the acceptable range of arsenic concentration in soil for the California Gulch Superfund Site:

Residential: 120-340 ppm arsenic

The U.S. Environmental Protection Agency recommends the following as the acceptable range of cadmium concentration in soil for the California Gulch Superfund Site:

Residential: 100 ppm cadmium

How to Manage Contaminated Soil

If test results demonstrate that soil lead, arsenic or cadmium exceed the above standards, EPA recommends the following methods for managing the lead, arsenic or cadmium contaminated soil.

1. Place a barrier or cap on the contaminated soil by covering with 6 inches of clean topsoil, a two-inch asphalt cap or concrete cap, a building or a structure, install and maintain landscaping (grass or gravel), or restrict access. Any method that serves to break the exposure pathway is effective.
2. Dig up and remove soil containing elevated lead, arsenic or cadmium concentrations. Transport the contaminated soil to the designated repository location in Lake County. Replace the excavated soil with soil containing acceptable lead, arsenic and cadmium levels. Take care not to replace the soil with contaminated soil. You can ensure this by testing the replacement soil or obtaining proof of testing from the person or entity providing the soil. You may also decide to excavate soil and leave it on your property with a

cap, landscaping or reuse onsite in an acceptable manner as described in #1 above.

Disclaimer

The use of this handout which outlines BMPs for lead in soil in Lake County shall not create any liability on the part of Lake County or any officer, agent or employee thereof for any claims of any kind alleged to be related to or arising from reliance on the contents of this handout.

Further Information

Further information regarding lead, arsenic and cadmium in soil can be obtained by contacting:

Colorado Department of Public Health and Environment

Doug Jamison, Project Manager Remedial Programs

Hazardous Materials and Waste Management Division

4300 Cherry Creek Drive South

Denver, Colorado 80246-1530

Telephone: 303-692-3404

or Alissa Schultz
303.692.3324

Craig Gander
303.692.3449

Linda Kiefer

The U.S. Environmental Protection Agency

Rebecca Thomas, Remedial Project Manager

1595 Wynkoop, EPR-SR

Denver, Colorado 80202-1129

Telephone: 303-312-6552

The Lake County Community Health Program (LCCHP) Phase 2

The LCCHP Phase 2 program serves as the institutional control for Operable Unit 9 of the California Gulch Superfund site. The LCCHP Phase 2 is a program operated by Lake County that includes lead educational services, blood lead testing for children ages 6 months to 6 years and pregnant women, including additional services to children and pregnant women with elevated levels of lead in their blood. For more information contact ~~Fran~~ Jimenez. Telephone 719-486-4148.

Judy Tyson

Colorado Department of Public Health and Environment Stormwater Regulations website:

Lake County Commissioners: Carl Schaefer 719.486.0993
Building + Land Use 4 719.486.2875

<http://www.cdphe.state.co.us/regulations/wqccregs/index.html>

List of Soil Testing Laboratories

ACZ Laboratories, Inc.
2773 Downhill Drive
Steamboat Springs, CO 80487
970-879-6590 800-334-5493
www.acz.com

Analytica Environmental Laboratories, Inc.
12189 Pennsylvania St.
Thornton, CO 80241
303-469-8868 800-873-8707
www.analyticagroup.com

Colorado Analytical Laboratory
240 Main St.
P.O. Drawer 507
Brighton, CO 80241
303-659-2313
www.coloradolab.com

Evergreen Analytical Inc.
4036 Youngfield St.
Wheat Ridge, CO 80033-3862
303-425-6021
www.evergreenanalytical.com

Severn-Trent Laboratories
10703 E. Bethany Dr.
Aurora, CO 80014
303-751-1780
www.stl-inc.com

