



Paris Mill Heritage Site - Public Health Implications of Indoor Exposures to Contaminated Soils and Dust. Alma, Park County, Colorado

March 2011

The Hazardous Materials and Waste Management Division (HM&WMD) of the Colorado Department of Health and Environment (CDPHE) requested assistance from the Colorado Cooperative Program for Environmental Health Assessments (CCPEHA) to evaluate the potential health hazards with respect to future exposures to workers at the Paris Mill Heritage Site. This current evaluation addresses potential risks resulting from ingestion of indoor soils and dust contaminated with metals to the workers who will be present inside the historic Mill building after rehabilitation and redevelopment of the Paris Mill site. Workers are not present inside the Mill at this time.

Site Background

- The Paris Mill is located in Park County Colorado, approximately three miles west of the town of Alma. Today, the Paris Mill, built in 1894, is a Park County Historic Landmark. The processing of gold, silver, and lead ores is known to have left heavy metal remnants in tailings and as dust inside the historic mill structure.
- Most of the original ore processing equipment still resides in the Mill; in particular, many of the old drive shafts, giant belt wheels, electric motors and motor mounts are still in place.
- The outdoor contamination from mining sources has been remediated.
- The floor inside the Mill building is exposed dirt with wood planking suspended over wood floor joists. Additional dust will be generated from this dirt floor during the planned remediation activities for the interior surface of the Mill building.
- The County plans to adapt the site to include a new guest lodge, recreational mining, and a living history museum.

What did CCPEHA find in the Health Consultation?

- Exposure to lead in the indoor soils and dust inside the Paris Mill Heritage Site could harm the health of developing fetuses of pregnant workers.
- Exposure to arsenic, chromium, cadmium, iron, and mercury in the indoor soils and dust inside the Paris Mill Heritage Site is not expected to harm the health of adult workers.

What's next?

- The remediation of the Mill building should reduce exposure to lead either by remediating of contaminated indoor soil and dust, or by creating a barrier to prevent exposure to contaminated dust and soils inside the Mill building.
- Indoor soil samples should be collected after remediation is complete to test for completion of remediation or identify the end-point of cleanup.
- Upon request, CCPEHA will review any additional soil data collected from the inside the Mill building.
- Upon request, CCPEHA will provide appropriate health education activities on the findings of this health consultation to stakeholders and the community.

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/ehs/healthconsult.html>. To request a free copy of this health consultation, or for more information about the health consultation call Shannon Rossiter at 303-692-2617. For other site-related concerns, please call Mark Rudolph (Project Manager, Hazardous Materials and Waste Management Division), at 303-692-3311(direct) or toll free at 1-888-569-1831, ext. 3311

What is lead? Lead is a naturally occurring bluish-gray metal found in small amounts in the earth's crust. Lead can be found in all parts of our environment. Much of it comes from human activities including burning fossil fuels, mining, and manufacturing.

How can lead affect my health? 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. Lead exposure also causes small increases in blood pressure, particularly in middle-aged and older people and can cause anemia. 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. High-level exposure in men can damage the organs responsible for sperm production.

How likely is lead to cause cancer? The Department of Health and Human Services (DHHS) has determined that lead and lead compounds are reasonably anticipated to be human carcinogens and the EPA has determined that lead is a probable human carcinogen. The International Agency for Research on Cancer (IARC) has determined that inorganic lead is probably carcinogenic to humans and that there is insufficient information to determine whether organic lead compounds will cause cancer in humans.

How does lead affect children? Children are more vulnerable to lead poisoning than adults. A child who swallows large amounts of lead may develop blood anemia, severe stomach ache, muscle weakness, and brain damage. If a child swallows smaller amounts of lead, much less severe effects on blood and brain function may occur. Even at much lower levels of exposure, lead can affect a child's mental and physical growth. Exposure to lead is more dangerous for young and unborn children. Unborn children can be exposed to lead through their mothers. Harmful effects include premature births, smaller babies, decreased mental ability in the infant, learning difficulties, and reduced growth in young children. These effects are more common if the mother or baby was exposed to high levels of lead. Some of these effects may persist beyond childhood.