URBAN PB TALES FROM THE BUNKER

A look at urban lead, cleanup programs and efficacy at the Coeur d’Alene Basin Superfund Site

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FANS OF CONTENT?

Saturday June 17, 2017  Ceo Likes Asok's Presentation

OUR CEO SAID
HE LIKED YOUR
PRESENTATION.

HE MADE ME SHUT
UP AND SIT DOWN
BEFORE I GOT TO
MY FIRST SLIDE.

HE'S NOT A BIG
FAN OF CONTENT.
TODAY’S TOPICS

• COEUR D’ALENE BASIN ORIENTATION
• BACKGROUND – HISTORIC MINING & WASTE DISPOSAL PRACTICES
• REMEDIAL GOALS & STRATEGIES
• SNAPSHOTs OF SUCCESS
• GAGING SUCCESS
• QUESTIONS
SITE ORIENTATION

Coeur d'Alene Basin

You Are Here
Site Orientation

- Second Largest Superfund Designation in the Country
- Covers 1500 square mile area reaching from Montana to/beyond Spokane, WA
BACKGROUND
HISTORIC MINING & WASTE DISPOSAL PRACTICES
• Mining began in the early 1880's
• Mining District rich in Lead, Zinc & Silver
• Became the largest and richest Silver producing region in the world

• Area is still known today as the Silver Valley
• Bunker Hill Mine was the largest Lead and Zinc mine in the US
MINE AND MILLS DIRECTLY DISCHARGED WASTE MATERIALS INTO THE RIVERS & STREAMS
OR ON STEEP, DEVEGETATED HILLSIDES ➔ STREAMS
SURFACE WATER TRANSPORT

WASTE PILES ADJACENT AND UNDERLAY STREAMS
– KEEP ON GIVING
TOWNS BUILT IN FLOOD PLAINS
– KEEP ON RECEIVING
Bunker Hill Smelter was in operation from 1917-1981.
Sept of 1973 baghouse fire burnt through the smelter’s primary pollution control ➔ uncontrolled emissions.
Particulate emissions increased from 10-20 Tons/Mo up to 160 T/Mo, containing 50-70% lead.
1970s blood lead monitoring began. 99% of children tested in 1974 BLL of 40 µg/dL or greater (high of 164 µg/dL), average was 67.4 µg/dL.
Smelter shut down in December of 1981.
MEAN BLOOD LEAD LEVELS 1974

Distance in Miles from Smelter

Blood Lead (µg/dl)

0-1.0 1.0-2.5 2.5-5.0 5.0-8.0 8.0-12.0 Control
The awful lesson of Bunker Hill

Even 18 years after the fact, the news that managers of the Bunker Hill smelter near Kellogg, Idaho, endangered people and the environment by allowing the plant to spew out massive amounts of lead is shocking and infuriating.

Federal court records, made public only a month ago, and detailed in a story Monday by Post-Intelligencer reporter Bill Richards, show that in 1974 officials of the plant, then owned by Gulf Resources & Chemical Co., decided to pump thousands and thousands of pounds of lead directly into the air. Bunker Hill's vice president for environmental affairs said they did so because lead prices were high and they didn't want to stop production long enough to fix the fire-damaged baghouse which normally filtered out lead from the emissions.

In other words, profit was more important than the hundreds of Kellogg-area children who absorbed lead from the plant into their blood and thereby risked nerve, brain and kidney damage. Researchers found that 98 percent of the community's children had these years later, there is yet reason to dwell on this deplorable episode. The Bunker Hill mistakes are a warning to avoid similar ones today.

Facts about Bunker Hill's dirty emissions because a judge agreed to seal court records after Gulf paid $9 million to settle a lawsuit involving the alleged lead poisoning.
SITE HISTORY

- Mining from 1880 – present day (3).
- 1973, largest child lead poisoning event in U.S. history.
- 1981 Smelter closure.
- 1983 BHSS listed on NPL.
- 1986 Emergency removals/intervention
- 1989-2004: Box residential clean up
- 1994-2000: Industrial site clean up
- 1995: Institutional controls program established
- 2002: Coeur d’Alene Basin Rod, clean up
- 2007: Basin institutional controls program established
- 2012 Upper Basin Rod amendment, clean up
Yard Soil Lead Exposure

- **Area 1**: Homes eliminated near smelter
- **Area 2**: Smelter Closure
- **Area 3**: Yard Removals Initiated in 1989 (Exposure Reduction Reported in 1990)

Cleanup Commences for Populated and Non-Populated Areas in 1991.
SOURCE AREAS

• CDA BASIN IMPACTED BY OVER 100 YEARS OF MINING

• UNTIL 1968, 2200 TONS/DAY OF MINE WASTE DISCHARGED TO SOUTH FORK CDA RIVER

• PRIMARY SOURCE AREAS REMAIN IN THE UPPER BASIN

• MOST ADJACENT TO STREAMS WITH IMMINENT POTENTIAL OF MASS WASTING INTO SURFACE WATER

• ESTIMATED OVER 100 MILLION TONS OF MINE WASTE, INCLUDING 2.4 BILLION POUNDS OF LEAD, DISPERSED OVER 1,000'S OF ACRES
FATE AND TRANSPORT

• FLUVIAL PROCESSES: TAILINGS TRANSPORTED DOWNSTREAM ESPECIALLY DURING HIGH-FLOW EVENTS
  • DEPOSITED IN DOWNSTREAM BEDS, BANKS AND FLOODPLAINS
  • FINE GRAINED MATERIAL WASHED THROUGH LAKE COEUR D’ALENE AND DEPOSITED IN SPOKANE RIVER

• AREAL DISCHARGES RESULTED IN SIGNIFICANT DEPOSITION

• TAILINGS AND MINE WASTE USED AS FILL
  • BENEATH COMMUNITIES
  • RAILROAD EMBANKMENTS
  • HIGHWAYS, ROADS, & OTHER INFRASTRUCTURE CONSTRUCTION
THE DOWNSTREAM OUTCOME
- HOW DO YOU CLEAN THIS UP?
STRATEGY TO ACCOMPLISH REMEDIAL ACTION

OBJECTIVES (1991)

• REMEDIATE ALL COMMUNITY SOILS > 1000 MG/KG PB & REPLACE W/ CLEAN SOIL BARRIER < 100 MG/KG PB
• ADDRESS DRINKING WATER WHEN HIGH LEAD LEVELS
• MEAN COMMUNITY LEAD SOIL CONCENTRATIONS 400 MG/KG
• CONTROL FUGITIVE DUST THROUGHOUT SITE
• MEAN INTERIOR HOUSE DUST LEVEL < 500 MG/KG PB
• NO HOUSE DUST LEAD CONCENTRATION > 1000 MG/KG
• CREATE CLEAN RECREATIONAL OASES (LOWER BASIN)
• CONTINUE THE LEAD HEALTH INTERVENTION & I/C’S
• < 5% BLL ABOVE 10 UG/DL  NONE ABOVE 15 UG/DL
PROPERTY REMEDIATION

- Individual properties were sampled (Usually to a depth of 18”)
- Contaminated soil is removed to prescribed depth (Usually 6-12”) and replaced with clean materials
- Contaminants or native soils below the 12” depth remain on site.
- Thus creating a “barrier” of clean material
- If contaminants below the clean barrier sampled \( \geq 1000 \text{ppm Lead} \) or \( \geq 100 \text{ppm Arsenic} \) a barrier fabric is installed to denote where the clean soils stops

Soils below this 12” barrier: 27,600 ppm Lead
1100 ppm Arsenic
MINE/MILL TYPICAL ACTIONS

• ACTION AT 125 MINE AND MILL SITES
• FOCUS ON KEY SOURCE AREAS
  FLOODPLAIN TAILINGS AND MINE/MILL
  AREAS PRONE TO EROSION, HUMAN
  HEALTH EXPOSURE AND LEACHING
• ACTIONS ARE STANDARD FOR MINING SITES
• INCLUDES ACTIVE WATER TREATMENT
SNAPSHOTS OF SUCCESS
REMEDIATION IN COMMUNITIES

PROPERTY REMEDIATION

ROADS
REMEDY PROTECTION IN COMMUNITIES
NON-POPULATED AREA REMEDIAL ACTIONS

• 3.3 MILLION CUBIC YARDS OF CONTAMINATED SOILS CONSOLIDATED/CAPPED IN SMELTER CLOSURE AND CIA CLOSURE
• 3300 ACRES OF HILLSIDES REVEGETATED
• 800 ACRES CAPPED TO PREVENT DIRECT EXPOSURE AND FUGITIVE DUST
• 1799 ACRES TRANSFERRED FROM EPA TO DEQ
• CONSOLIDATE & CAP SOURCE AREAS (>600K CYDS IN UPPER BASIN SINCE 2012)
SNAPSHOTS OF SUCCESS
- SOURCE CONTROL @ INTERSTATE MINE & MILL SITE
**Education and Outreach Materials**

**Riley's Family**

**Papa, Mama, Rita, Ricky and Riley**

**Keep Clean, Eat Clean, Play Clean**

**COLORING CONTEST**

Enter for a chance to WIN! One free bike rental from Excelsior Cycles or one free season pool pass to City of Kellogg or City of Wallace Pools. Excelsior Cycle Kellogg Pool Wallace Pool.

Two winners will be selected from ages 3-8 years old. Submit entries to Wallace Harvest Foods, or Skua's Market in Kellogg. Entries due by June 1st.

**WE PLAY Clean**

We use area made for playing, camping and bike riding.

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**Life-long Good Health**

Because lead exposure often occurs with no obvious or immediate symptoms, it frequently goes unrecognized. Even small amounts of lead exposure during pregnancy can have an effect, especially for young children.

Kellogg Panhandle Health District offers lead blood lead testing for children and expecting mothers. If you live or recreate in the Coeur d'Alene River Basin call the Kellogg Panhandle Health District to schedule an appointment for a free blood lead screening.

**Free Blood Lead Testing**

114 W. Riverside Ave., Kellogg
July 27-31 9:00am-6:00
August 1 10:00am-2:00

(208) 783-0707

**Be Smart Around Lead, Play, Eat & Keep Clean!**

- Wash hands before eating.
- Bring water for all personal use. Don’t use filtered river water.
- Eat on a table or blanket in grassy areas.
- Soil tracked home is an exposure source.
- Remove dirt on clothes, toys, pets & equipment before leaving.

**RecreatE SAFELY**

- Avoid dust covering over mouth & nose when riding off-road trails.
- Recreate in designated areas & stay on trails.
- Follow fish consumption advisories. It is best to eat fillets only.
- Do not harvest edible plants from floodplain areas.

Know your child’s blood lead level through simple blood testing

**Panhandle Health District**: 208-783-0707

Know how to reduce your child’s exposure to lead in soil

Idaho 832-3152 www.deq.idaho.gov/PlayClean

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**The ICP reminds you to Protect Your Barrier!**

CALL US BEFORE YOU DIG

783-0707

Institutional Controls Program (ICP)

Remember...lead contamination may remain below clean soil or other protective barriers in yards and elsewhere on public and private property throughout the Bunker Hill Superfund Site. Protect your family and property value by making sure these barriers remain in place and effective.

**Panhandle Health District**

114 W. Riverside Ave. · Kellogg, ID 83837 · (208) 783-0707
What potential health risks might someone encounter here?
Exploring the area either on ATVs or on foot can be a great adventure. Hikers and ATV riders should avoid hillslides covered with mine waste rock and tailings. Disturbing the hillslides can cause exposure to heavy metals that you don’t want to breathe or bring home. The creek may look inviting, but bare hillslides and rock piles are your clue to stay away.

**East Fork Nine Mile**

What do you think is in this water?
The water looks clean, BUT... Unfortunately, you can’t see, taste or smell lead. We know that there are high levels of lead in creek and river banks along the South Fork and Main Stem of the Coeur d’Alene River because we can test for lead. The bark along this creek was tested by PHD and is 13,000 parts per million (ppm) lead. That’s a lot of lead!

**Canyon Creek**
NEW SIGNAGE

Welcome to Burke Canyon

Play Safe. Protect Your Health.

Stay on trails and off mine tailing piles.
Stay out of old mines, mining structures, and buildings.
Wash your hands with clean water or wipes before eating or drinking.
Do not smoke at dry wood is extremely flammable.
Keep a table or on a blanket, not on the ground.
Avoid the rock for swimming or washing hands.
Wear proper off road gear including dust protection.
Remove dirt from clothes, toys, pets, cars, and equipment. Dirt tracked home may result in future lead exposure.

Burke, Idaho was once a thriving mining town. The town featured nearly 200 feet wide of streets. It is to assume that the first town was destroyed by fire in 1887. Historic buildings remained, however, and the presence of mining-related artifacts has been noted in the town. In 1888, over 200 buildings lined the canyons. By the early 1900s, Burke was home to over 1,200 residents. A wildfire that burned in September 1914, destroyed the town, and fire crews had to be called in to help. A second fire on June 11, 1923, destroyed the community. Mining and flooding disasters occurred regularly in the canyons, resulting in thousands of lives and property. By the 1990s, the town's infrastructure was picked up, and most businesses closed. The town was the last to go.

Panhandle Health District

Please respect private property.

For more information:
(208) 783-0707
deq.idaho.gov/playclean
WHEN CONTAMINANTS REMAIN ON SITE - MANAGEMENT REQUIRED

Below the Barriers

2004 Residential Remediation Complete
INSTITUTIONAL CONTROLS (IC’S)

HOW ARE WE GOING TO PROTECT AND MANAGE THIS REMEDY?

➢ IC’s are “non-engineered instruments, such as administrative and legal controls, that help minimize the potential for human exposure to contamination and protect the integrity of the remedy.”

➢ The Institutional Controls Program (ICP) was established under Panhandle Health District. Goals of the ICP are:

  ✓ Protect the Remedy

  ✓ Protect Public Health

  ✓ Assist with Land Transactions within the Site Boundary
GAGING SUCCESS
NEIGHBORHOOD SOIL LEAD CONCENTRATIONS  SMELTerville
- 1989
✓ Goal to reduce community wide Lead concentrations to 200-400 mg/kg
✓ Goal – Remediate Properties when Lead/Soil concentrations >1000mg/kg
PERCENT OF CHILDREN WITH BLOOD LEAD LEVELS \( \geq 10 \, \text{UG/DL} \), BOX AND BASIN, 1988-2017

Goal < 5% above 10 Ug/Dl
"The health effects associated with lead are the same whether it enters the body through breathing or swallowing. Lead can affect almost every organ and system in the body, especially the nervous system. No safe level of lead exposure has been identified."

– Centers for Disease Control and Prevention
QUESTIONS???

✓ Revegetate Hillsides to prevent Fugitive Emissions
EXTRA SLIDES