FINAL MULTI-PATHWAY RESIDENTIAL METALS ABATEMENT PROGRAM PLAN

PRIORITY SOILS OPERABLE UNIT
SILVER BOW CREEK/BUTTE AREA
NATIONAL PRIORITIES LIST SITE
BUTTE, MONTANA

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and

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TABLE OF CONTENTS

Acronyms

ASA	American Society of Agronomy
ARCO	Atlantic Richfield Company
BSB	Butte-Silver Bow County
BPSOU	Butte Priority Soils Operable Unit
CFRSSI	Clark Fork River Superfund Site Investigation
CV-AAS	cold vapor-atomic absorption spectrophotometer
DQOs	data quality objectives
DEQ	(Montana) Department of Environmental Quality
EPA	(U.S.) Environmental Protection Agency
GIS	Geographic Information System
HVS3	High Volume Small Surface Sampler
HEPA	High Efficiency Particulate Air
HUD	(U.S. department of) housing and urban development
LBP	lead-based paint
LAP	laboratory analytical protocol
MDLs	method detection limits
mg/kg	milligrams per kilogram
NPL	National Priority List
NIST	national institute of standards and testing
ROD	Record of Decision
RPD	relative percent difference
RSD	relative standard deviation
SOP	standard operating procedure
WIC	Women, Infants, and Children
XRF	X-Ray Florescence
µg/dL	micrograms per deciliter

PURPOSE STATEMENT

To ensure public and environmental health of the residents of the Butte Priority Soils Operable Unit and the adjacent areas by effectively identifying and mitigating potentially harmful exposures to sources of lead, arsenic and mercury.

1.0 INTRODUCTION

1.1 Program Components

The Multi-Pathway Residential Metals Abatement Program (hereafter referred to as the Program) is designed to mitigate potentially harmful exposure of residents of the Butte Priority Soils Operable Unit (BPSOU) of the Silver Bow Creek/Butte Area Superfund Site and identified Adjacent Area to sources of lead, arsenic, and mercury contamination. The boundary of the BPSOU and the boundary of the Adjacent Area are shown on the map attached as Appendix A to this document. The contamination may originate from both mining-related (waste rock, tailings, aerial emissions) and non-mining-related sources (lead-based paint and lead solder). The potential sources of lead, arsenic, and/or mercury exposure addressed include yard soil, interior living space dust, interior and/or exterior lead based paint, lead in drinking water from pipe solder, and attic dust when exposure pathways are identified. In addition, the program uses community awareness and education in conjunction with medical monitoring to ensure its effectiveness. Included as well is an Attic Abatement Area, which is in addition to and outside of the BPSOU and Adjacent Area boundaries. The boundary of the separate Attic Abatement Area is also shown on the map in Appendix B. This identified area, though not historically associated with mining or smelting waste dumps, may have an exposure pathway associated with attic dust. The Attic Abatement Area and the attic abatement implementation is further discussed in Section 9.0 of this Program plan.

The Program uses a multi-pathway approach to address both mining and non-mining-related lead, arsenic and mercury contamination at all residential properties which exceed action levels within the BPSOU site and the Adjacent Area. The Program, to be implemented by Butte-Silver Bow (BSB) Program staff, utilizes a prioritized approach to address affected and sensitive populations[1] expeditiously, yet also requires that every property within the BPSOU and the Adjacent Area be

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[1] Affected populations are those determined through medical monitoring to have elevated levels of lead or mercury in blood samples or elevated arsenic in urine samples. Sensitive populations include young children and pregnant or nursing mothers.

systematically sampled within 10 years following the Effective Date of the Consent Decree. Cleanup of residential areas shown to need such cleanup will occur within the BPSOU and the Adjacent Areas within 20 years following the Effective Date of the Consent Decree[2].

The Program requires sampling residential yard soil, interior living space dust, attic dust, and lead-based paint within the BPSOU and the Adjacent Area. Such properties with yard soil or interior living space dust exceeding solid media action levels, or indoor air exceeding the mercury vapor action level, will be remediated. If attic dust exceeds the action level and a pathway exists between the attic and living space, the attic will be remediated. If both living space and attic dust exceed the action levels, a pathway will be assumed and the attic will be remediated. Also, the Program has a process for determining when water samples will be collected and analyzed to determine if a home has lead pipes and/or lead solder that may be contributing to an unacceptable exposure.

The only Program sampling requirements applicable to the Attic Abatement Area is attic sampling, and systematic sampling of residential property attics in the Attic Abatement Area is not required. Within the Attic Abatement Area, Program staff will sample the attic of a residential property upon receiving a request for sampling from a residential property occupant or upon receipt of a development proposal which may result in development of an attic exposure pathway in a residential property.

Components of the Multi-Pathway Residential Metals and Abatement Program include a long-term tracking and data management program, an education and outreach plan, and a medical monitoring program. The long-term tracking and data management program ensures that properties that were not occupied or the owner refused access during the assessment period will be sampled, evaluated and abated in the future, if necessary. In addition, the tracking program will follow changes in ownership and note permits issued by BSB government for remodeling of homes where attic dust sampling found contamination above action levels, but a pathway did not exist when the assessment was completed. The long-term tracking and data management program will be continued for 99 years.

An extensive community awareness and education program to manage exposure to lead, arsenic, and/or mercury exposure within the BPSOU is an integral part of the Program. The focus of the community awareness component will be to raise general public awareness of potential risks from

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[2] The 10 year sampling and 20 year cleanup deadline may not be met if there are problems with owner access or other implementation issues. BSB, the lead SD for this effort, shall notify EPA and DEQ on periodic basis if such problems occur. If EPA, in consultation with DEQ, determines the reasons present represent a good faith effort by the SDs towards achieving these timeframes for sampling and cleanup, the failure to meet these time frames is not a violation of this Plan or the Consent Decree.

these metals, especially risks to young children from lead exposure, and to encourage participation in this effort.

The Program will include medical monitoring. Participation in medical monitoring will be encouraged through community awareness and education. Medical monitoring will use blood lead, blood mercury, and urinary arsenic data to identify individuals who have concentrations of those elements above risk-based thresholds. Blood mercury and urinary arsenic testing will be offered to the residents if elevated concentrations of mercury or arsenic are discovered during the environmental assessment process.

These aspects of the Multi-Pathway Residential Metals and Abatement Program are described in more detail in the remainder of this Program plan.

The U.S. Environmental Protection Agency's (EPA's) Record of Decision (ROD) for the BPSOU, as modified by the Explanation of Significant Differences (ESD), requires that all residential properties within the BPSOU and the Adjacent Area be sampled and assessed within 10 years following the Effective Date of the Consent Decree. The goal of this requirement is to use best efforts to obtain access to all residential properties within the BPSOU and the Adjacent Area that have not previously been sampled to complete indoor and outdoor assessment (i.e., residential yard soil, indoor and outdoor dust, attic dust, lead-based paint, drinking water, and mercury vapor).. During this 10-year period, the prioritized clean-up of residential properties that exceed the action levels will occur in concert with the assessment program. The ROD, as modified by the ESD, also requires that the Program address operation and maintenance issues and administer the attic dust component of the program. Since attic dust is not cleaned-up unless there is an established pathway of exposure, there is the requirement to track these properties over the long-term and to assess and abate attic dust problems when a potential exposure exists.

1.2 Cleanup Action Levels

Action levels for residential, commercial/ industrial, and recreational soils and dust are listed in Table 1. These action levels apply to all properties within the BPSOU and Adjacent Area and also to attics in the Attic Abatement Area, as described herein.

2.0 LONG-TERM TRACKING AND DATABASE MANAGEMENT

Sampling data gathered during environmental assessments and abatements shall be recorded in the Program database/tracking system. The database shall include, at a minimum, the follow information:

- Property address, Geo code, short legal description, current roll and card numbers for the date of assessment and assessor code;
- Date of environmental assessment and/or abatement;
- Reason for assessment (i.e. agency request, owner request, EBL investigation and permitting requirements);
- Assessment/Abatement access refusal flag (if applicable) for long-term tracking and follow-up;
- Sample data – sample number, sample date, sample location, sample media, sample results;
- XRF results (paint);
- Abatement description/completion dates/final inspection;
- Flag for long-term tracking if contaminated attic dust is present but was not abated;
- Property owner recommendations/acceptance signature post-abatement; and
- Deed restrictions recorded at Roll/Card.

See Appendix B - Property specific example of the data base and tracking system.

The data record shall be used to track sampling/abatement data and other pertinent information for each property. The information shall be used to identify and prioritize abatement projects (see Section 5).

A key component of the tracking system is that it will ensure that non-occupied properties or properties where the owner refused access during the assessment period will be abated in the future if necessary. The tracking program will also document changes in ownership and remodeling of homes that were found to have contaminated attic dust but no current pathway. The long-term tracking program will be continued for 99 years.

The tracking program will be utilized by the Residential Metals Abatement Program in conjunction with the Butte-Silver Bow Planning /Permitting Department and the Butte-Silver Bow Land Records Office. The data base/tracking system will be linked to the Planning/Permitting Department's permitting system. When a property owner applies for a specific permit for a residential property or commercial building permitted to become a residential property within the BPSOU that property will be identified as having an environmental assessment completed or is required to have an environmental assessment completed. The data obtained from the environmental assessment and the specific permit requested will be used to determine if a potential for exposure exists. The permits that will require an environmental assessment as part of the permit application include; wiring permits, structural remodeling permits, building permits, roofing permits, demolition permits and water and sewer line replacement permits. When a potential exposure is identified, the property owner will be directed to the appropriate program. Permits that require excavating and/or soil transporting will be referred to the Planning Department and required to comply with the Excavation and Dirt-Moving protocols. Permits for projects with a potential exposure to contaminated attic dust will be referred to the Residential Metals Abatement Program. The program will abate the potential exposure prior to a residential property owner starting a project. Only those commercial properties that are permitted to become residential properties will be sampled and tracked. The program will coordinate with the developer to mitigate potential exposures and to ensure proper disposal of contaminated waste.

See Attachment C – EPA Remedial Project Manager Memo

The data base/tracking system will be linked to the Land Records office and available when ownership/deeds are transferred for properties within the BPSOU.

The long term tracking program will be continued for 99 years.

3.0 Community Awareness and Education

The Center for Disease Control states that education is critical to the success of any metals intervention and abatement program. This Residential Metals Abatement Program (RMAP) shall provide a range of education components to enhance and maintain the community's awareness of potential sources of and risks to lead, arsenic, and/or mercury in and around homes and commercial properties, as well as approaches residents can take to avoid exposures. The educational components include the distribution of educational materials to local contractors (e.g., electricians, roofers, carpenters), hardware/lumber suppliers, childcare facilities/programs (e.g., Head Start), and housing authorities (e.g., Human Resource Council – Section 8 and LIEAP). Informative presentations are available for real estate agents and landlords. Periodic mailings to property owners and public service announcements aired by the local television station are also designed to provide public awareness. Outreach will also rely on the medical community, particularly pediatricians and the Women, Infant, and Children (WIC) program to inform the public about risk, health monitoring, and the programs' activities. The RMAP also participates in Community Health fairs and Family fairs to provide outreach to the community.

The education and outreach program specifically addresses portions of homes and commercial buildings that pose a risk for potential exposure.(See attachment – EPA Remedial Project Manager memo) Such portions addressed are the attic space, interior living space, and exterior yard areas. The program shall rely on educational materials and face-to-face consultations to ensure that homeowners, remodeling contractors, developers, home inspectors, potential buyers, and weatherization workers are aware of:

(1) (1) The potential presence of lead, arsenic, and/or mercury in attics or earthen basements;

(2) (2) The importance of restricting access to those areas by sensitive populations and taking the appropriate measures to ensure that dust is not tracked into the interior living space when infrequent access occurs; and

(3) (3) The proper contact information prior to implementing any remodeling project and/or landscaping project to ensure that dust and soil are appropriately handled and disposed of by a responsible entity and/or by approved contractors.

The educational materials shall be provided to all participants of the program at the time when an environmental assessment of the home is implemented (whether interior or exterior) as well as when applicable building permits are sought for remodeling projects. Recommendations made to each resident will be based on the results of environmental sampling at their homes and specific information collected by program staff about daily habits and activities.

See Appendix D (1-7) for examples of educational materials.

4.0 MEDICAL MONITORING

When individuals are found to have elevated blood lead, urinary mercury, or urinary arsenic, the home where the affected person or persons live shall be scheduled for immediate sampling and evaluation. Blood lead levels of 10 ug/dL will be considered as an elevated blood lead levels for children six years of age or less. Urinary mercury levels above the normal range of 0-10 ug/L will be considered as elevated mercury levels for all participants. Urinary arsenic levels above the normal range of 0-52.7 ug/L will be considered as elevated arsenic levels for all participants. (See Appendix E

Influencing factors such as food consumption (i.e. seafood) and dental amalgams will be taken into consideration in conjunction with the data collected during an environmental assessment to determine the source of exposure. Bio-monitoring participants will be required to complete a consent form for participation and an ATSDR approved individual questionnaire for urinary collection. (See Attachment F 1-3) Blood lead screening will be conducted by the Women, infants and children program and analysis will be conducted by an accredited laboratory. Urinary arsenic and mercury screenings will be contracted to a local physician and analysis will be conducted by a certified laboratory. Residential remediation shall then be performed if sampling determines that yard soil, interior living-space dust, or mercury vapor action levels are exceeded.

Participation in the medical monitoring program will be voluntary. However, participation will be encouraged through a variety of means, such as the existing Women, Infants, and Children (WIC) program and referrals from local physicians. Residents will also be encouraged to participate when they are contacted for sampling access.

4.1 HEALTH STUDIES

Butte-Silver Bow will perform public health studies every five years for a period of thirty years. The reports will respect the privacy of the participants and will be available to the public, the EPA, Montana Department of Environmental Quality (DEQ), and potentially responsible parties for the BPSOU. The health studies will include: Identifying chemicals that the residents may have been exposed to; Compiling and interpreting toxicology information on those chemicals; Routes of exposure; Compiling and interpreting the morbidity and mortality statistics as an epidemiology study; Compiling and interpreting health studies; and Compiling and interpreting influencing factors (environmental or cultural) for mortality rates. The public health studies will also include review of the latest epidemiological literature to determine if there are any newly established links between the contaminants of concern and specific diseases.

Data gathered through the Residential Metals Abatement Program's (RMAP) routine activities and the results of previous health studies will be utilized to determine the content of future health studies and potential improvements to RMAP routine activities.

5.0 PROPERTY PRIORITIZATION

Residential properties shall be remediated if sampling data indicate that action levels for yard soil or interior living space dust are exceeded or for indoor air when mercury concentrations exceed the mercury vapor action level. Residential remediation will involve removing and replacing the yard soil and a thorough, one-time house cleaning to mitigate the action level exceedances inside. If an attic to living space exposure pathway is identified during interior dust sampling or if the resident anticipates remodeling activities that could allow contaminated dust into the living space of the residence, the attic dust will be cleaned up by trained and certified professionals. This is discussed in detail in subsequent sections. Yard removal and replacement will only be performed if samples of yard soil exceed action levels. House cleaning will be performed if indoor dust vacuum samples exceed the stated action levels. Remediation of houses may include interior painting, exterior painting, and/or installation of siding if lead paint in poor condition is found. If lead exists in the home's plumbing system that results in elevated concentrations of lead in the drinking water, the plumbing system will be modified or replaced. The decision-making process for remediation of residential properties is summarized in Appendix G.

The Program utilizes a prioritized approach which addresses affected and sensitive populations as a priority; however, BSB will attempt to access every property within the BPSOU and Adjacent Area, and shall carry out abatement where required by the assessment results. If access is denied, the property will be flagged in the data base and reported to the Agencies on an annual basis for follow up. Affected populations are those determined through medical monitoring to have elevated levels of lead or mercury in blood samples or elevated arsenic in urine samples. Sensitive populations include young children and pregnant or nursing mothers. Residential properties shall be prioritized for remediation based on the following criteria, arranged from highest priority to lowest priority level:

- Homes occupied by one or more children with a blood lead equal to or greater than 10 µg/dL (which is considered to be an elevated blood lead);
- Homes occupied by an individual with elevated urinary arsenic;
- Homes occupied by an individual with elevated blood mercury;
- Secondary residences or subsequent homes occupied by children with elevated blood lead;
- Homes previously occupied by children with elevated blood lead, even if no child is currently living at the address;

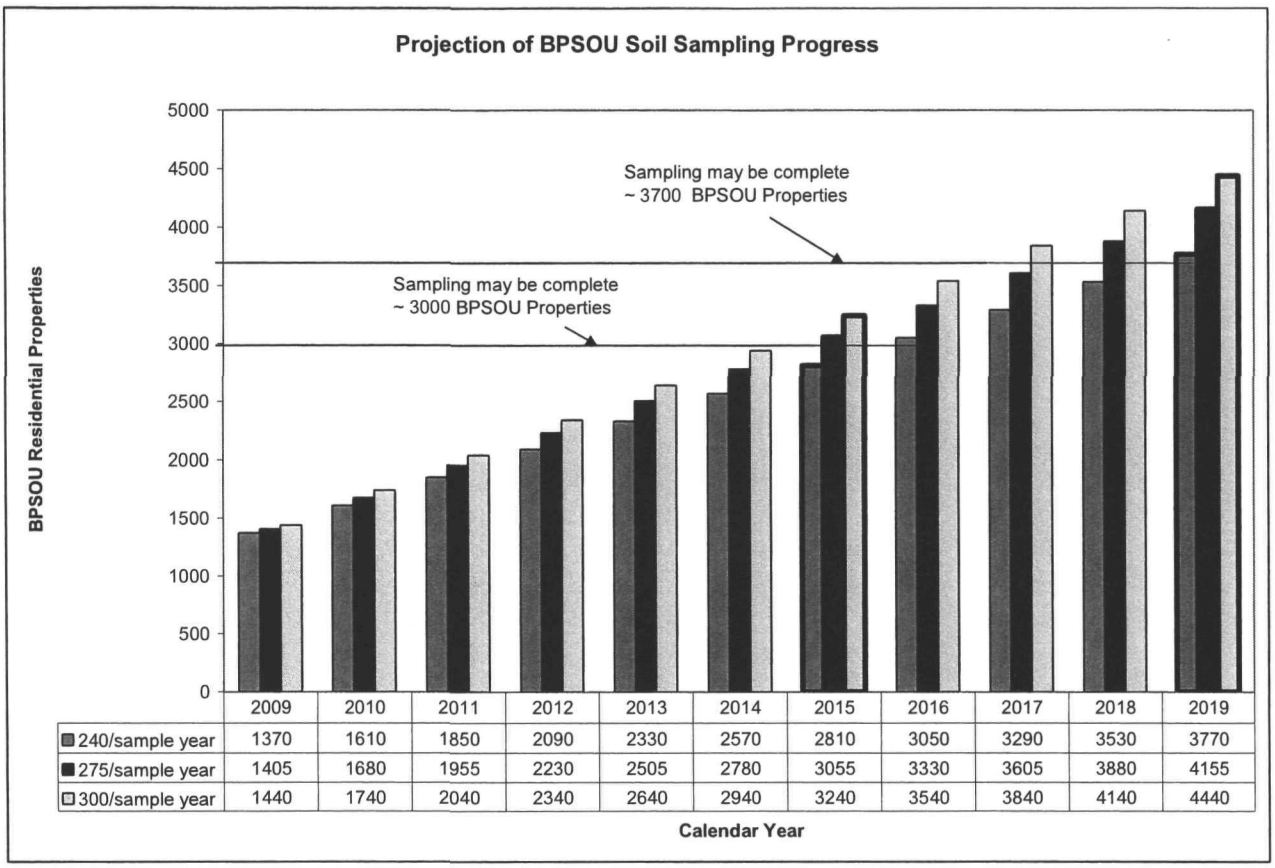
- Homes with very young children (e.g. <1 year) and blood lead of 5-9 micrograms per deciliter (µg/dL);
- Homes with no children, but with one or more sources (paint, water, soil, house dust) with a lead concentration that exceeds the 95th percentile as determined by the BSB. Particular attention should be given to homes built prior to 1940;
- Designated playgrounds;
- Informal play areas frequented by children with or without property owner's permission; and
- All other actual or potential residential areas.

6.0 PROPERTY SAMPLING

6.1 SCHEDULE

The BPSOU ROD, as modified by the ESD, states that all properties in the BPSOU and the Adjacent Area be assessed within 10 years, and that all properties requiring remediation be addressed within 20 years, following the Effective Date of the Consent Decree. The soil and dust sampling schedule is based upon three main variables. The first factor is the estimated number of residential properties within the BPSOU. According to the data provided by the BSB Geographic Information System (GIS) office, there are no more than 3,700 residential properties and possibly as few as 3,000 residential properties within the BPSOU. The second factor affecting the schedule is that some residents will not sign an access agreement to allow sampling. For those that authorize sampling, some residents will not sign an access agreement for abatement that includes the imposition of covenants to provide notice and protect response actions on the property via the access agreement. Third, the city of Butte has a very short sampling season. Past experience indicates that there are only about 20 weeks each year during which to complete residential soil sampling. The chart below (Projection of BPSOU Soil Sampling Progress) takes these factors into account and estimates when sampling may be completed.

Using best efforts to obtain access to and complete assessments for all residential properties in the BPSOU and the Adjacent Area within 10 years following the Effective Date of the Consent Decree allows BSB to prioritize sampling, as explained in Section 5.0, and also provides a reasonable period of time to work with landowners and EPA to access to those residential properties where residents do not sign access agreements. EPA will review BSB's progress toward completing sampling of the remaining residential properties in BPSOU and the Adjacent Area as part of a 5-year review of the Program. While EPA requires that BSB attempt to obtain access and complete the assessment of such residential properties within 10 years, BSB's inability to gain access to and complete the Program assessment and subsequent remediation activities, where necessary, within 20 years as required by this Plan is not a violation of the Consent Decree.



	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
240/sample year	1370	1610	1850	2090	2330	2570	2810	3050	3290	3530	3770
275/sample year	1405	1680	1955	2230	2505	2780	3055	3330	3605	3880	4155
300/sample year	1440	1740	2040	2340	2640	2940	3240	3540	3840	4140	4440

6.2 ACCESS

Prior to conducting any sampling or clean-up activities at a residential property, access must be obtained from the property owner. A written Sample Request form must be obtained from the property owner before sampling and a written Access Agreement must be obtained before abatement begins. Any dispute concerning access should be brought to the attention of the Agencies. It is essential to begin access procurement as early as possible in the remedial process to avoid potentially lengthy delays. It is recommended that access be obtained by going door-to-door. If residents are not home, a blank Sample Request Form with instructions for signature and submission to BSB, along with relevant contact information will be left at the residence (but not in the mailbox). Experience has shown that one must use all means (mail, email, phone calls, and knocking on doors) to get access to some properties. An example of the access agreement is presented in Appendix A. Additionally, at the same time, access must be obtained for any interior dust sampling and/or remediation that will be performed at the property. The status of property access will be tracked in the Program's database tracking system (see also Section 2).

6.3 SAMPLING PROCEDURES

6.3.1 Residential Yards

This section summarizes the procedure for sampling residential yards. The complete standard operating procedure (SOP) for sampling residential yards must be followed and can be found in the *Clark Fork River Superfund Site Investigation (CFRSSI) SOP* document (ARCO 1992a).

A. Visually inspect the property and determine the number of sections needed for composite sampling. A photographic record will be made to document the pre-removal condition of the specific areas (e.g., east, west, south or north yards) of each park, play area or residential yard identified by BSB for soils removal, and a copy of such record will be provided to the owner (and occupant). Copies will be made available for review by EPA. Such record will: 1) note the areas from which soils will be removed; and 2) document any physical structures or features (e.g., fences, trees, shrubs) that may be impacted by the removal work and that will be repaired or replaced as appropriate and necessary. The owner (and occupant) will be invited to provide input into the creation of this record to ensure that any particular concerns he/she may have are documented. The owner will have to sign an access agreement (Appendix H) before work can begin. The owner (and occupant) will be given written information noting the following.

    1. The date on which the removal is expected to begin and the expected duration of the work.

    2. The names and telephone numbers of the BSB and EPA contacts as well as the contact for the contractor(s) who will conduct the removal work. Any delays or changes in contact personnel or their telephone numbers will be promptly communicated to the owner (and occupant).

B. B.) Draw a scaled map of each yard or lot that shows property boundaries, house, garage, structures, driveways, contaminant source material, gardens, lawns and patios. Using measuring tapes and drawing yard features on graph paper shall yield an accuracy of approximately ± 2.0 feet. Each yard shall be divided into polygons (e.g., east yard, west) for sampling, and these areas shall be identified on the map. Composite samples of each polygon shall be produced from subsamples. The location of each subsample shall also be shown on the map.

C. Label a bag for each composite sample with the address and the location of the sample.

D. Take five sub-samples in an X pattern (if possible) for each composite sample sections. Samples will be collected at depths of 0-2 inches, 2-6 inches, and 6-12 inches.

E. Decontaminate the shovel and other sampling equipment after each polygon is sampled and use a new scoop for each section.

For each yard or lot the following will be recorded:

- Legal address;
- Location of polygon (north, south, east, west yard, garden, earthen driveway, source area, north, south, east, west perimeter);
- Sample number (1, 2, 3, etc.) composite from location;
- Sample Date;
- Codes: NY – North Yard
  SY – South Yard
  EY – East Yard
  WY – West Yard
  G – Garden Area
  ED – Earthen Driveway
  EB – Earthen Basement
  S – Source Area
  PRT – Pre-Removal Testing
  Example: 412EGOLD – NY1-PRT represents the pre-removal test composite sample from the first 625 square-foot area in the north yard of a residence at 412 East Gold Street.

Chain-of-custody procedures will follow CFRSSI SOP G-7 (ARCO 1992a). All sampling identification information shall be input to the Program's database tracking system.

F. Large Lot Sampling. Either the property boundary or a smaller natural boundary within the yard/lot will be used to establish the extent of the sample area. The yard area shall be defined as a maximum of 125 feet from the center of the residence, unless a property boundary or natural barrier (e.g., fence, hedge, tree line, abrupt change in grade, etc.) is encountered at a distance less than 125 feet. It is generally anticipated that the property lot within the BPSOU represents the sample area. The 125-ft definition, therefore, will be applied predominantly to residential yards located in the Adjacent Area of the Butte Site.

6.3.2 Indoor Dust

This section summarizes the procedure for sampling indoor residential dust using a High Volume Small Surface Sampler (HVS3). The complete SOP must be followed and can be found in *High Volume Small Surface Sampler (HVS3) Operation Manual* (CS3 Inc. 1998). A composite HVS3 vacuum sample shall be collected consisting of subsamples using the following procedure.

A. Label a bottle/bag for the sample with the address and the location of the sample.

B. Collect samples from:

- the floor area directly inside the main entries;
- the floor areas in the most frequently occupied rooms (Normally living room and/or kitchen);
- the floors in the children's bedrooms; and
- the floor areas adjacent to or under attic pathways.

C. Empty dust sample into the labeled bottle/bag.

D. Clean vacuum parts.

Samples shall be collected in certified clean sample bottles. A number system for tracking each sample will be established. At the time of sampling, the sample number shall be recorded in the sample log and the chain-of-custody record completed. The HVS3 vacuum shall be decontaminated before each use. The log, sample label, and chain-of-custody record shall be checked for identical entries. Chain-of-custody procedures will follow CFRSSI SOP G-7 (ARCO 1992a). All sampling identification information shall be input to the Program's database tracking system.

6.3.3 Earthen Basements

This section summarizes the procedure for sampling earthen basements. Although a SOP does not exist specifically for earthen basements, samplers shall adhere to the CFRSSI SOP for residential yards, to the extent practicable (ARCO 1992a).

A. Visually inspect the basement for any hazards.

B. Draw a map of the basement, including each area

C. Label a bag for each composite sample with the address and the location of the sample.

D. Collect five subsamples for each composite sample throughout the basement and put them in a properly labeled bag.

E. Mark the locations of the subsamples taken on the map.

F. Take photographs of the areas in the basement that were sampled.

Chain-of-custody procedures will follow CFRSSI SOP G-7 (ARCO 1992a). All sampling identification information shall be input to the Program's database tracking system.

6.3.4 Attic/Crawl spaces

This section summarizes the procedure for sampling attics and crawl spaces. Dust in these areas shall be sampled as part of the Program assessment within BPSOU and the Adjacent Area, whether or not an exposure pathway exists. The sampler(s) must follow the complete SOP, which can be found in the *Interior and Attic Dust Sampling and Analysis Plan* (ARCO 2007).

A. Label a bottle/bag for the sample with the address and the location of the sample.

B. Visually inspect the attic/crawl space for any hazards.

C. Move insulation and/or debris to find the dust.

D. Collect enough dust to meet laboratory specifications for a sample.

E. Take photographs of the attic/crawl space.

F. Replace any disturbed insulation and close access.

G. Clean sample bottle and hose for the next sample location.

Attic dust composite sampling will be conducted using the Quick Take 30 sampling pump, HVS3 dust sampler, or a scoop and brush. The amount of dust and insulation present in the attic space shall determine the sampling method used. Each sample shall consist of at least 100 grams of material. Samples shall be collected in certified clean sample bottles. A numbering system for tracking each sample will be established. At the time of sampling, the sample number shall be recorded in the sample log and the chain-of-custody record completed. The log, sample label, and chain-of-custody record shall be checked for identical entries. Chain-of-custody procedures will follow CFRSSI SOP G-7 (ARCO 1992a). All sampling identification information shall be input to the Program's database tracking system.

6.3.5 Paint

This section summarizes the procedure for sampling painted surfaces in the residential setting. The sampler(s) must follow the manufacturer's procedure for operating the X-Ray Florescence (XRF) instrument. Paint assessment shall begin with a visual inspection of the building following U.S. Housing and Urban Development (HUD) guidelines to determine if there are potential lead-based paint hazards. Interior and exterior components of the building, including outbuilding and fences shall be sampled with the portable XRF to determine the presence of lead-based paint. The information obtained during this assessment shall be recorded on a lead-based paint (LBP) data sheet.

A. Calibrate the XRF in accordance with manufactures specifications using known standards, before and after each home is assessed.

B. Visually inspect the property.

C. Start on the interior of the house, in the room farthest from the entry point (if possible).

D. Test all painted surfaces in each room, closets and hallways.

E. After every shot write down the information required for every shot on the LBP testing data sheets.

F. Move to the exterior of the house and shoot as many different surfaces as possible on each wall.

G. After the house has been sampled, move to any outbuildings/fences and test all painted surfaces possible.

H. Re-calibrate the XRF.

I. Download the XRF data onto the computer and enter that data and all other sampling information into the Program's database tracking system.

J. Generate the report using the information from the LBP testing data sheets.

The information recorded on the data sheet shall include:

- Date;
- Legal Address;
- XRF Serial Number;
- XRF calibration data and time;
- Property owners name and mailing address;

- Personnel conducting risk assessment;
- Sample location (room, wall, interior, exterior);
- Component sampled;
- Substrate (wood, metal, concrete);
- Paint condition;
- Paint color; and
- Sample result.

A report containing all the above-listed information shall be provided to the property owner. The report shall be recorded in the Program database and tracking system.

6.3.6 Lead Pipes

Drinking water shall be sampled for the presence of lead if elevated blood lead occur and no other potential source of lead is discovered during the residential investigation.

6.4 SAMPLE LOGGING, TRACKING, AND CUSTODY

Sample identification information for the yard soil, earthen basement material, indoor dust, and attic dust samples shall be recorded using the following procedures.

A) Assign each sample a corresponding sample number.

B) Log the identification information for each sample into the BSB sample logbook.

C) Make sure that each sample is labeled with a sample number, address, and sample location.

D) Fill out a chain-of-custody form and deliver it with the samples to the laboratory for testing.

E) Ensure that all dust samples will be tested for lead, arsenic and mercury and all soil samples will be tested for lead and arsenic by the previously-used methods so the data will be representative and comparable to the historic data.

F) After the lab delivers the results, log sample results into the BSB logbook and into the Program's database.

A sample chain-of-custody protocol will be initiated during the field collection and handling of samples for this Program. Chain-of-custody records ensure that samples are traceable from the time of collection until final disposition. A sample is in custody under any of the following circumstances:

- The sample is in the person's physical possession;
- The sample is in the person's view after being in possession;
- The sample has been locked in a secure area after it was in the person's possession; and
- The sample was in the person's possession and then was transferred to a designated secure area.

The chain-of-custody record will be initiated by the individual physically in charge of the sample collection. The chain-of-custody record may be completed concurrently with the field sampling or before shipping samples to the laboratory. The sampler is personally responsible for the care and custody of the samples until they are shipped. When transferring the sample possession, the individual relinquishing and receiving the sample will sign and record the date and time of day on the chain-of-custody record.

6.5 SAMPLE PREPARATION

Sample preparation will be consistent with the XRF analytical instrument manufacture's specification or with that of the laboratory method to be used (Table 3). As previously stated, all samples will be tested for lead, arsenic and mercury by the previously-used methods so that any newly-collected data will be representative and comparable to the historic data.

7.0 BACKFILL SAMPLING AND SELECTION

To determine if a potential backfill (i.e., replacement soil) source is uncontaminated, representative soil samples shall be collected and analyzed by either a laboratory- grade XRF or by standard wet chemistry methodology. Backfill material shall meet the cover soil requirements contained in the Butte Hill Re-vegetation Specification prior to its use. In addition, the maximum rock (course fragment) size must be <1 inch in diameter and constitute <10% (by volume) of the cover soil. If the backfill meets these specifications it will be deemed approved as the designated source for all soil replacement work. If another source of the backfill is needed, additional composite samples will be analyzed and the source approved by the EPA prior to its use. Sample logging, tracking, custody shall be the same as that used for yard soils (see Section 6.4).

8.0 RESIDENTIAL YARD REMEDIATIONS

The residential abatement program is described below. Once actions level exceedances are determined through sampling, abatement shall proceed as soon as possible. The abatement of residential soil will be conducted by appropriately trained Program staff or local contractors in accordance with all Federal and State rules and regulations and all procedures adopted by BSB. Training includes reading, understanding, and signing the site-specific health and safety plan. All abatement projects will be supervised by BSB Program staff. All BPSOU and Adjacent Area yards and other media (described in Section 9.0 below) shall be completed within 20 years following the Effective Date of the Butte Site Consent Decree.

8.1 Yard-specific Removal Plans

The removal action shall be preceded by an interview with the landowner and the renter if the property is rented, in order to understand their concerns. At least one week prior to initiating any removal action, a yard-specific removal plan must be developed for approval by the landowner (in writing). Each removal plan shall include the following:

- A description of the scope of the removal that includes a recognition of the landowner's concerns;
- Identification of the areas to be removed;
- An inventory of all the features (e.g., trees, shrubs, fences) of the yard including a map showing all the features that may be impacted by removal activities (the map made during the sampling of the yard can be used as a template);
- A list of the features that will be replaced, and steps that will be taken to minimize damage to features that will not be removed;
- Specific dates for the removal; and
- A list of the names and phone numbers of the BSB person responsible for the removal action and the BSB contractors.

The removal plan shall be made available for review and approval by oversight personnel, which include the MDEQ and EPA, at least one week prior to the initiation of removal activities. Sufficient time shall be allotted to address any potential concerns of the oversight personnel and property owners.

8.2 SOIL REMOVAL AND DISPOSAL

Contaminated soil which exceeds action levels shall be removed from residential areas to a maximum depth of 12 inches or to the soil bedrock interface (if bedrock is encountered before the 12-inch depth), and to a depth of 24 inches in vegetable garden areas. Soil will be excavated using conventional equipment such as backhoes, small Bobcat-type loaders, and hand tools. Excavated soils shall be transported to the Butte Mine Waste Repository using dump trucks. Precautions shall be implemented to prevent fugitive dust emissions during excavation and from the dump trucks during transportation. This could include spraying water on the surface of the soil or covering the trucks with tarps. Street cleaning will be conducted on an as-needed basis. At each removal location, prior to backfilling, a layer of lightweight Geotextile fabric will be placed over the exposed surface as a marker of the extent of soil removal/replacement and as a visual indicator that the underlying soil may contain arsenic, lead, or mercury concentrations above action levels.

8.3 YARD RECLAMATION

8.3.1 Backfill Material

The excavated areas will be backfilled with soil that meets the requirements set forth in the Butte Hill Revegetation Specifications and stated in Section 7. Backfill material (i.e., replacement soil) shall not contain any trash, debris, or large roots from shrubs or trees. The backfill material shall be from the pre-approved source as described in Section 7. Backfill material for garden areas must be suitable for germination and cultivation of flowers and vegetables with ordinary amendments. Dust suppression measures such as spraying water on the surface of the soil in trucks or covering trucks with tarps will be implemented as necessary to prevent fugitive dust emissions during transportation of the soils material to the repository and during transport of the backfill material.

For driveways, a pit-run gravel base capped with six inches of <3/4 inch road-mix gravel will be applied in most cases. Each source of gravel will be analyzed for metals in the same manner as other backfill material. Concrete or asphalt will be applied when determined necessary by BSB.

8.3.2 Sod

A weed-free sod, composed of Kentucky bluegrass and/or a sod-forming fescue species, will be placed over the replacement soil in the residential yards and BSB parks from which soils were removed. Sod is not required over the replacement soil of play areas and the perimeters of structures. The topsoil attached to the sod constitutes the topsoil layer.

8.3.3 Seeding

Seeding will be used for open spaces. Soil surface preparation and seeding methods will be in accordance with EPA-approved techniques for use in the Priority Soils OU, which are described in the Butte Hill Revegetation Specifications. For these areas, the seed density shall be at least 58

pure live seed per square foot using the following species and rates, as provided in the Butte Hill specifications:

- Slender Wheatgrass 3.0 pounds/acre
- Thickspike Wheatgrass 2.0 pounds/acre
- Intermediate Wheatgrass 4.0 pounds/acre
- Sheep Fescue 2 pound/acre
- Canada Bluegrass 1 pound/acre
- Basin Wildrye 3 pounds/acre
- Crested Wheatgrass 1 pound/acre
- Ladak Alfalfa 1 pound/acre
- Red Clover 2 pounds/acre
- Birdsfoot Trefoil 1 pound/acre

It is recognized that the seed mixture and rate may need to be adjusted over time as more reclamation experience is gained and new varieties of species are released for reclamation purposes. Before altering the seed mixture or rates, BSB shall obtain approval from the oversight agency and update the Butte Hill Re-vegetation Specifications to reflect those changes.

9.0 Other Media Abatement

The interior residential abatement program is described herein and summarized below. As required for the yard removals, interior residential abatements will be conducted as part of the Program within BPSOU and the Adjacent Area by appropriately trained Program staff or local contractors in accordance with all Federal and State rules and regulations and all procedures adopted by BSB. Trained Program staff or local contractors will also complete all attic abatements in the Attic Abatement Area, where required and in accordance with this Program plan. Training includes reading, understanding, and signing the site-specific health and safety plan. All abatement projects will be supervised by BSB Program staff.

For the media discussed below, BSB shall interview the landowner and the renter if the property is rented, to understand their concerns, and then prepare an abatement plan specific for that residence. Non-mine waste lead sources [e.g., Lead-based paint] that are determined to be in fair or poor condition in accordance with the HUD guidelines will be abated in the following circumstances: when determined necessary for cap protection, when determined to be a potential source of elevated interior dust levels and when determined to be a source of exposure during

Elevated Blood Lead investigations. For example, paint abatements for cap protection purposes will consist of painted areas adjacent to the soil replacement project only. Property owners will be responsible for maintaining their property, including paint after an abatement/risk assessment has been completed. At least one week prior to initiating any abatement, BSB will review the plan with the property owner, and renter if the property is rented; written approval must be obtained from the property owner (and tenant) before abatement begins. Any dispute concerning access should, after good faith efforts to resolve the dispute by the implementer of this plan, be brought to the attention of the Agencies. Each abatement plan must:

- Describe the scope of the abatement;
- Provide the specific dates for the abatement; and
- Provide a list of the names and phone numbers for the BSB oversight person and the BSB contractors.

The removal plan shall be made available for review by agency oversight personnel, which include the DEQ and EPA, at least one week prior to the initiation of removal activities. Sufficient time shall be allotted to address any potential concerns of the oversight personnel.

9.1 Indoor Dust

If living space dust exceed either the arsenic, lead, or mercury action level, living space floors will be thoroughly cleaned with a remediation grade/High Efficiency Particulate Air (HEPA) filter vacuum or carpets will be removed and replaced. Non-living spaces will also be cleaned if an action level in those areas is exceeded and there is either a pathway allowing dust into the living space or the property owner is planning a remodel that will disturb the non-living space dust.

9.2 Earthen Basements

If soils in earthen basements exceed action levels, the soil will be capped or encapsulated via surfactant as appropriate for the space as determined by EPA in consultation with DEQ and BSB.

9.3 Attic/Crawl Spaces

Attic insulation, excluding HVAC insulation and thermal system insulation, and debris will be removed in conjunction with the contaminated attic dust. The removal of the insulation and debris is necessary due to the fact that the insulation/debris cannot be segregated from the contaminated dust.

Containment shall be achieved using 6-mil thick polyethylene at the attic access before attic dust removal/abatement begins. Attic dust removal/abatement shall be conducted using HEPA equipped vacuums systems. The dust shall be collected in doubled 6-mil poly bags. The contained attic dust, insulation and debris shall be transported to the local repository.

9.4 Paint

Deteriorated and peeling lead paint will be abated by painting walls and other surfaces with non-lead-based paint.

9.5 Lead Within Pipes

If water testing indicates that lead within the plumbing system of a house (i.e., lead solder at pipe joints) exceeds the safe drinking water standards, piping will be replaced.

10.0 ATTIC ABATEMENT AREA

Within the Attic Abatement Area, outside the BPSOU, Program staff will sample the attic of a residential property upon receiving a request for sampling from a residential property occupant or upon receipt of a development proposal which may result in development of an attic exposure pathway in a residential property. Experience with attic sampling in BPSOU has shown that contamination above action levels is associated with older residential properties. Therefore, BSB staff will prioritize their resources to target sampling of older residential properties, and only sample properties constructed after issuance of the 2006 ROD under extraordinary circumstances. An attic will be cleaned if an action level, as determined by Program sampling results, is exceeded and there is either a pathway allowing dust from the attic to enter the living space or the property owner is planning a remodel that will disturb the attic (non-living space) dust. Since attic dust is not cleaned-up unless there is an established pathway of exposure, properties that are sampled in the Attic Abatement Area and do not have a current exposure pathway will be tracked over the long-term to abate attic dust above action levels if exposure pathways arise in the future.

11.0 AIR MONITORING FOR MERCURY

Air monitoring for mercury will be performed by BSB in the three areas of residences frequented by children (BSB 2006); these are 1) a floor area directly inside the main entry to the residence, 2) a floor area in the most frequently occupied room (normally living room or kitchen), and 3) a floor area in the child's bedroom or another frequently occupied room if no children are present in the home. This sampling will be done if dust in the residence exceeds the residential action level for mercury, which is 147 mg/kg. Furthermore, a basement air sample will be collected if the mercury action level is exceeded in samples collected from exposed earthen basement soils. Butte-Silver Bow will conduct the mercury vapor sampling by collection of airborne elemental mercury in a

passive dosimeter or active sampling device and subsequent analysis using a cold vapor-atomic absorption spectrophotometer (CV-AAS – see Table 2).

12.0 HEALTH AND SAFETY

A site-specific health and safety plan has been developed by BSB for work in the BPSOU, including work under the ROD, as modified by the ESD for this OU, the Adjacent Area and the Attic Abatement Area. Updates to the site-specific health and safety plan will be made as necessary and provided to the agencies for review. The plan describes the air monitoring and dust suppression methods that will be employed and when work will be temporarily stopped, if necessary, to prevent potentially unacceptable exposures of abatement workers or the public to contaminants of concern.

Prior to conducting any contaminant abatement, all workers are required to read, understand, and sign the site-specific health and safety plan. Butte-Silver Bow will provide the signature page of the plan to the agencies upon request.

13.0 DUST MONITORING AND SUPPRESSION

13.1 MONITORING PARTICULATE DUST LEVELS

Air monitoring for dust levels during open space reclamation was conducted as part of the remedial investigation and feasibility study. It was determined by EPA and ARCO that dust levels during land reclamation activities are not a human health concern. Consequently, air monitoring of particulate dust during reclamation activities in open spaces and residential yards is not required, providing dust suppression techniques are used.

Dust monitoring during the abatement of attics has not been conducted to date so it is unknown if a potential hazard to workers exists. Until it is demonstrated not to be necessary, BSB abatement contractors will use respiratory protection during attic dust abatement activities whenever particulate matter is visually observable in the ambient air.

13.2 DUST SUPPRESSION TECHNIQUES

Routine dust control, including wetting of soils or lawns with water, will be performed as necessary during all soil excavations and backfilling activities. Soils being transported to or from each excavation also will be watered or the trucks shall be covered with tarps, as necessary, to prevent fugitive dust emissions.

14.0 DATA QUALITY CONTROL

14.1 General Requirements

The EPA has issued guidelines to help Superfund data users develop site-specific data quality objectives (DQOs) (EPA 1987). In addition to those general guidelines, EPA has approved data quality control documents for use in the Clark Fork River Superfund Site Investigations (CFRSSI). For implementing the residential yard work, BSB will be consistent with both the general EPA DQO guidelines and the CFRSSI documents. The key CFRSSI documents are: the Standard Operating Procedures (1992a); the Quality Assurance Project Plan (1992b); and the Laboratory Analytical Protocol (1992c). The protocol provided in these documents will be used to ensure that the quality of data generated under the multi-pathway program are known and documented.

The overall quality assurance objective for measurement data is to ensure the collection of representative samples and to provide analytical data of sufficient quantity and quality for decision-making. Important aspects of data quality are precision, accuracy, representativeness, and detection limits for the analytes. Definitions of each of these and how they apply specifically to the multi-pathway program are discussed below.

Accuracy is the degree of agreement of a measured value with the true or expected value. Accuracy will be measured in two different ways during the multi-pathway program. For laboratory data, accuracy will be assessed by measuring recovery of laboratory control standards, specifically national institute of standards and testing (NIST) for the metals. Recovery is calculated and bias evaluated.

Precision is the degree of mutual agreement of independent measurements of the same sample. Precision will be measured in multi-pathway program by analyzing both laboratory duplicate and "blind" field duplicate samples. Precision can be expressed as relative percent difference (RPD) or relative standard deviation (RSD).

Representativeness is the degree to which sample data represent a characteristic of a population, parameter, or environmental condition. Representativeness is a qualitative parameter that is most concerned with proper design of the sampling and analytical schemes. Representativeness is achieved by determining the number and locations of samples and the appropriate sampling techniques needed to depict, as accurately and precisely as necessary, the conditions being measured. Representativeness deals with protocols for storage, preservation and transportation of samples; analyzing samples with appropriate methods, techniques, and instrumentation; and the use of methods to document these protocols.

Both in-place soils and backfill material will be analyzed by laboratory grade XRF using protocols from the CFRSSI documents, as amended. The standard reference material for metals analysis will

be NIST reference material No. 2711 or another reference material with similar matrix conditions if the 2711 material is not available.

Method detection limits (MDLs) for metals analysis will be determined quarterly by the XRF laboratory. The MDL is defined as three (3) times the standard deviation of a series of measurements near the detection limit. Approximate detection limits are as follows: arsenic 6 milligrams per kilogram (mg/kg); and lead 9 mg/kg. These detection limits will be reevaluated and may change on a quarterly basis, but will typically be within ±5 mg/kg of the values provided above.

14.2 Laboratory Quality Control

Required elements of laboratory QC are found in CFRSSI guidance documents: the CFRSSI QAPP (ARCO 1992b), laboratory analytical protocol (LAP) for standard wet chemistry analyses (ARCO 1992c), and LAP for XRF analysis (Ashe Analytics and MKE 1992). Specific laboratory quality control samples, the frequency of analysis, control windows and corrective action to be taken when windows are exceeded are provided in these documents. Analytical instruments are initially calibrated using standards and blanks, and the calibration is routinely verified. The calibration is checked using an independent reference and instrument performance is monitored using method-specified QC check samples. Matrix spikes and laboratory duplicates measure method performance. All appropriate laboratory QC samples included in the XRF LAP are to be implemented in this response action.

14.3 Data Quality Reporting

Butte-Silver Bow will prepare annual data summary reports and make these available to the agencies upon request. These reports will document the procedures used in the field to collect and transport samples including chain of custody.

15.0 ANNUAL CONSTRUCTION COMPLETION REPORT

Construction Completion Reports will be compiled for the fiscal year and will be disseminated to ARCO and the agencies by the end of December of each year. The report will include a description of the year's activities and the costs associated with the work. The report will also include a summary of the clinical and educational intervention programs conducted by the BSB Health Department.

16.0 REFERENCES

ARCO 1992a. Clark Fork River Superfund Standard Operating Procedures. Anaconda, Montana. September.

ARCO 1992b. Clark Fork River Superfund Quality Assurance Project Plan. Anaconda, Montana.

ARCO 1992c. Clark Fork River Superfund Laboratory Analytical Protocol. Anaconda, Montana.

ARCO 2007. Interior and Attic Dust Sampling and Analysis Plan, June 19.

Ashe Analytics and MKE 1992. XRF Laboratory Analytical Protocol. Butte, Montana.

BSB/ARCO 2006. Allocation and Settlement Agreement and Mutual Release Claims By and Between the City and County of Butte-Silver Bow and Atlantic Richfield Company. Exhibit 20 – Multi-Pathway Program Protocol. November 15 (draft).

CS3 Inc. 1998. High Volume Small Surface Sampler (HVS3) Operation Manual.

EPA 2000. Guidance for Data Quality Objectives Process. EPA QA/G-4. August.

EPA 2006. Record of Decision, Butte Priority Soils Operable Unit, Silver Bow Creek/Butte Area NPL Site.

TABLE 1

Soil, Dust, Backfill, and Vapor Action Levels in Residential Areas
Butte Priority Soils Operable Unit
Silver Bow Creek/Butte Area NPL Site

Contaminant of Concern	Exposure Scenario	Concentration
Lead	Residential	1,200 mg/kg
	Non-Residential	2,300 mg/kg
Arsenic	Residential	250 mg/kg
	Commercial	500 mg/kg
	Recreational	1,000 mg/kg
Mercury	Residential	147 mg/kg
	Residential (vapor)	0.43 ug/m3

TABLE 2
Testing Method References for Soil, Dust, Backfill, Gravel Material, and Vapor[1]
Butte Priority Soils Operable Unit
Silver Bow Creek/Butte Area NPL Site

Parameter	Application	Reference/Method	Comments[2]
Lead, Arsenic, Cadmium, Copper, Zinc, and Mercury	Soil, Dust, and Backfill material	Ashe Analytics and MKE Services/XRF or EPA Methodology	By XRF: with EPA – approved modifications
Mercury (vapor)	Ambient interior air	Cold vapor-atomic absorption spectrophotometer (CV-AAS). OSHA ID-	
pH and Saturation Percent	Soil and Backfill material	ASA Monograph No.9 (most recent version)/Method 10-2.3.1	Measured from a saturated paste extract
Electrical Conductivity	Soil and Backfill material	ASA Monograph No.9 (most recent version)/Method 10-3.3	Measured from a saturated paste extract.
NO_3 – Nitrogen, Phosphorus, Potassium	Soil	ASA Monograph No.9 (most recent version)	
Percent Organic Matter	Soil	Walkley-Black procedure; ASA Method Soil Analysis, Method 29-3.5.2.	
Texture and Percent Rock Fragment	Soil and Backfill material	ASA Monograph No.9 (most recent version)/Method 15.5	Percent rock fragment is the > 2mm size fraction.
Gravel	Driveway Material	No reference/ standard sieving method	Pit run material capped with gravel consisting of 100% being < 3/4 inch

[1] Except for mercury in ambient air, all parameters and testing methods follow the Butte Hill Revegetation Specifications (EPA 2006).
[2] Soil testing must be done for every 5,000 yd^3 of material used.

Appendices

A

NOTICE

SDMS Number: 1165107

This item is not suitable for scanning, but is available for review at the U.S. Environmental Protection Agency (EPA), Region 8 Superfund Records Center, Helena, Montana

Document Date: Feb. 2, 2010

Title: "Final Multi-Pathway Residential Metals Abatement Program Plan"

Item Description: Map – 2009 Residential Metals Expanded Area Attic Only

B

LOCATION

								PARCEL NUMBER:	PROPERTY TYPE:
01	1197	12	1		13	0000	0000 5000		Residential

ADDRESS	NUMBER	DIR	STREET	TYPE	CITY	Abatement Criteria
		W	DALY	ST	Butte	Child/No child and >= 1 le

COMMENT		SAMPLING CRITERI
	West WLK Add. S12,TO3 N, RO8W, lot 17 W 7 of 18 Blk 14 Roll 22, Card 433	Owner Request

SOIL SAMPLES

Smpl #	Date	Location	Mode	Agency	Comment	Lab#	RESU
1	7/26/2000	South Yard	C	EPA			R
2	7/26/2000	South Perimeter	C	EPA			R
3	7/26/2000	North Yard	C	EPA			R
4	7/26/2000	North Yard	C	EPA			R
5	7/26/2000	North Yard	C	EPA			R
6	7/26/2000	North Yard	C	EPA			R
7	7/26/2000	East Yard	C	EPA			R
8	7/26/2000	East Yard	C	EPA			R
9	7/26/2000	East Yard	C	EPA			R
96001	4/28/1998	South Yard	C	BSB LEAD		S008904	R
96002	4/28/1998	South Perimeter	C	BSB LEAD		S008905	R
6003	4/28/1998	West Perimeter	C	BSB LEAD		S008906	R
96004	4/28/1998	East Yard	C	BSB LEAD		S008907	R
96005	4/28/1998	North Perimeter	C	BSB LEAD		S008908	R
96006	4/28/1998	North Yard	C	BSB LEAD		S008909	R
96007	4/28/1998	Driveway	C	BSB LEAD		S008910	R
96008	7/31/1998	Driveway	C	BSB LEAD	NORTH DRIVE	S009131	R
96009	7/31/1998	Driveway	C	BSB LEAD	MID-DRIVE	S009132	R
96010	7/31/1998	Driveway	C	BSB LEAD	BOTTOM-DRIVE	S009133	R
96011	2/26/1999	Other	P	BSB LEAD	DIRT INSIDE WALLS	9-0041	R
96012	4/23/1999	Basement	C	BSB LEAD		9-0117	R
96013	4/23/1999	Basement	C	BSB LEAD		9-0118	R
96014	9/22/2005	Attic	C	BSB LEAD			R

\BATEMENTS:

Abatement#	Date	Location	Agency	Comment
1	8/31/1999	INTERIOR	BSB Lead Multipathway	
2	8/31/1999	BASEMEN	BSB Lead Soils	
3	6/30/2001	YARD	BSB Lead Soils	WLK-E
4	9/21/2005	OTHER	BSB Lead Soils	Attic Dust

PAINT SAMPLES

XRF DATE	XRF	LBP	LOCATION	AGENCY	COMMENT
7/13/1998	☑	☑	INTERIOR AN	BSB LEAD	

PROJECT SUMMARY

INTERIOR WALLS/CEILINGS WERE ENCLOSED WITH SHEET ROCK AND PAINTED, INSULATION WAS ALSO ADDED TO WALLS. INTERIOR DOORS WERE REPLACED, WINDOWS WERE REPLACED, CARPETS WERE REPLACED, THE FRONT AND BACK DOORS WERE REPLACED WITH NEW METAL DOORS. THE HOUSE WAS ALSO RE-WIRED, AND NEW PLUGS/SWITCHES WERE ADDED. HOMEOWNER PROVIDED FIXTURES. EXTERIOR SOFFITS/FASCIA WAS ENCLOSED WITH VINYL SOFFIT AND ALUMINUM FASCIA, EXTERIOR WINDOW CASINGS WERE ENCLOSED WITH NEW WOOD CASING. THE BASEMENT WALKWAY WAS CAPPED WITH CONCRETE.
EAST YARD(SOUTH OF DRIVE) AND SOUTH YARD EXCAVATED 18" FOLLOWED BY ONE LAYER GEOTEXTILE, 14" CLEAN FILL, 2" TOPSOIL, & SOD. PORTION OF RET WALL ALONG DALY REPLACED-8" SIDE AND EXTENDING FROM 125 W DALY TO CONCRETE STAIRS OF 123 W DALY. PORTION OF WALL EAST OF CONCRETE STAIRS RESURFACED WITH EPOXY & MORTAR. 3' CHAINLINK FENCE INCORPORATED INTO TOP OF WALL. FLOWER BED IN SOUTH YARD EXCAVATED 18" FOLLOWED BY ONE LAYER GEOTEXTILE AND 18" TOPSOIL.

ATTIC: THE NORTH PORTION OF THE ATTIC WAS EXPOSED DUE TO ROOFING WORK BY THE PROPERTY OWNER. THE CONAMIANTED DUST AND INSULATION WAS REMOVED FROM THIS SECTION OF THE ATTIC USING A HEPA VACUUM SYSTEM. THIS PORTION OF THE ATTIC WAS THEN RE-INSULATED.

›ROJECT RECOMMENDATIO

THE HOMEOWNER IS CAUTIONED NOT TO DISTURB THE ABATED COMPONENTS: SHEETROCKED WALLS/CEILINGS, SOFFITS/FASCIA; BASEMENT SOIL, ATTIC SPACE NOT ABATED; OR YARD SOILS BELOW 18" CAP WITHOUT PRIOR CONSULTATION WITH THE CLPPP. IMPROPER RENOVATION PRACTICES MAY RESULT IN UNNECESSARY EXPOSURE TO LEAD.

Soil Samples	Abatements	Paint Samples	Project Summary	Project Recommendations

Hassler, Eric

From: Sparks.Sara@epamail.epa.gov
Sent: Tuesday, February 02, 2010 2:47 PM
To: Hassler, Eric
Subject: RMAP

Eric: This is what I mean when it comes to the data base and commericial property: There are times when a request is made to sample a commericial property. If the property is sampled, the sampling data needs to go into BSB's database. If there is remediation on the property, that information should go into the data base also. Example: 1)Sears building was sampled by BSB. 2) Contamination was present in the samples. 3) Property is being turned into apartments (residential Property). 4) Add to data base what was done by the developer to address contamination and protect people who move into the apartments. Sara

Sara Weinstock Sparks
Remedial Project Manager
US EPA
155 W. Granite Street
Butte, MT 59701
(406) 782-7415
Fax (406) 782-3838

D

Daily Cleanup

Wear protective clothing and respirator.

Collect all debris and large paint chips. Vacuum floors and other surfaces with HEPA vacuum cleaner. Household vacuum cleaners propel lead dust back into the air.

Wash all surfaces with trisodium phosphate (TSP), dishwasher detergent high in phosphate content (Electrosol® or Cascade® are two), or other deleading cleaner such as Ledizolv®.)

Clean work areas thoroughly at the end of each working day.

Final Cleanup

Carefully wrap the debris and cleaning materials. Keep them out of the reach of children.

Dispose of these materials according to your board of health recommendation.

Wash all surfaces again 24 hours after deleading is completed with TSP or other deleading cleaner.

Note: Dust settles over a period of hours and days. Repeat wet mopping with TSP or equivalent is necessary to avoid the buildup of leaded dust.

Medical Safety Tip

It is strongly recommended that all members of the family be tested for lead poisoning once renovation or deleading is completed.

General Information

Call your local health department, one of the Childhood Lead Poisoning Prevention Programs listed below, or 1-800-354-6465.

Butte-Silver Bow Health Department
[redacted]

Cascade County Health Department
454-6950

Missoula City-County Health Department
523-4750

Yellowstone City-County Health Department
256-2757

Occupational Exposure/ Abatement Information

Occupational and Radiological Health Bureau
MT. Department of Health and Environmental Sciences
444-3671

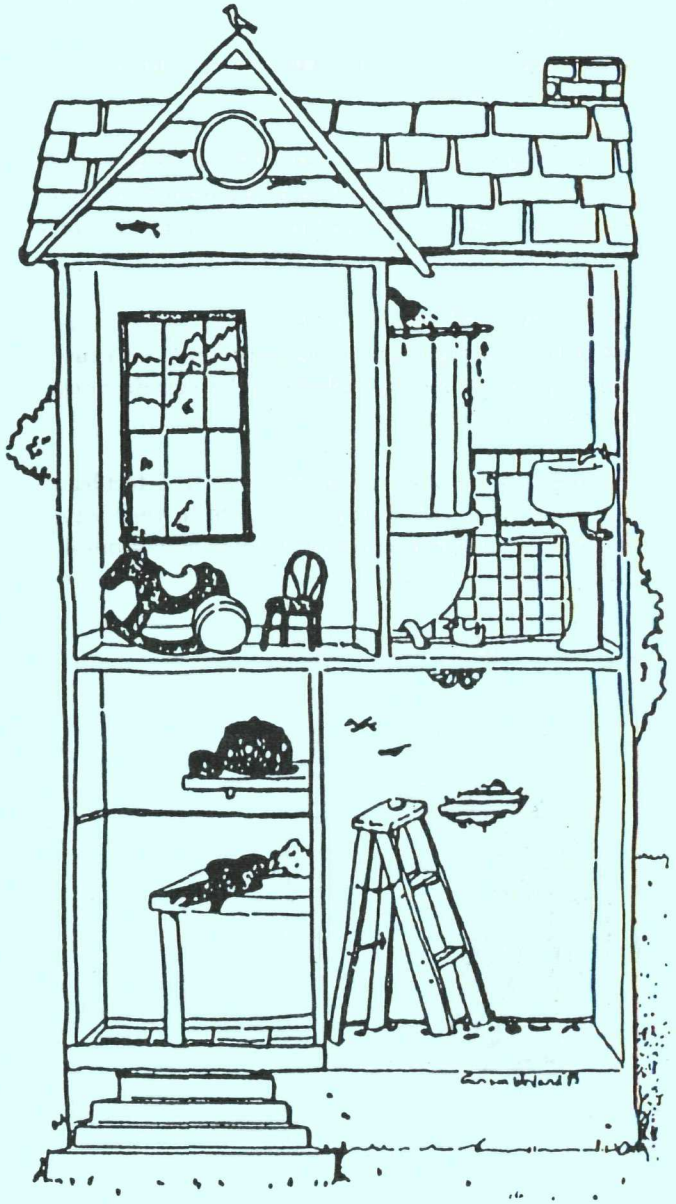
Soil Testing

Chemistry Lab Bureau
MT Department of Health and Environmental Sciences
444-5262

This publication was supported by grant no. PB998241-01-01 from the U.S. Environmental Protection Agency. Its contents are the sole responsibility of the authors and do not necessarily represent the official view of the USEPA.

20,000 copies of this public document were published at an estimated cost of .025¢ per copy, for a total cost of $500.00, which includes $500.00 for printing and $.00 for distribution.

The Risks of Renovation



Lead-Based Paint Danger

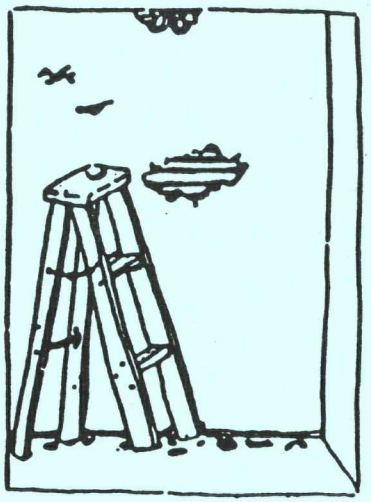
Most homes built before 1960, and some as late as 1978, were painted with lead-based paint.

There is no completely safe method for do-it-yourself renovations, according to the U.S. Consumer Product Safety Commission. The only way to detect lead paint is to have a lead inspection done by a licensed contractor.

Renovating or refinishing lead painted surfaces can create dust, fumes and debris, which can cause lead poisoning. Children and adults can become lead poisoned during efforts to remove leaded paint.

Even very small amount of lead can cause serious harm to a young child. Lead poisoning can cause learning and behavior problems, and in certain cases, mental retardation.

There are no symptoms. The only way to detect lead poisoning early is to bring your child to your local clinic, lead program, or pediatrician to have a simple blood test performed.



Safety Alert

The safest time to renovate/delead is when the home is unoccupied. Only the contractor or person(s) doing the actual lead abatement (or deleading) should be in the work area. *Children, nursing or pregnant women, pets or bystanders should never enter a deleading work area.*

If you are living in the house, you should stay elsewhere until all the work and a thorough cleanup has been completed.

Before Work Begins

You should protect all food, appliances, furniture, personal items, cooking and eating utensils, bedding, toys and clothing from dust. Remove them from the work area or bag them in plastic and seal tightly.

Although all methods of paint removal are hazardous, wet scraping, covering and/or replacement according to EPA lead abatement guidelines is the best way to minimize toxic fumes and dust.

Highest Risk Methods

- Torch or flame burning.
- Dry abrasive blasting using sand, grit or any other particulate.
- On-site use of methylene chloride or solutions containing methylene chloride.
- Use of potassium or sodium hydoxide-based solutions except in paste form.
- Machine sanding except to feather edges and prepare substrate for repainting or sealing.

Deleading Safety Guidelines

Always wear a respirator fitted with a HEPA filter. A paper mask does not protect against lead dust or fumes.

Wear protective clothing, hair cover, shoes, goggles and gloves. This clothing should be used for work only.

Cover carpets with heavy plastic and seal with tape on all edges.

Use adequate dropcloths in indoors and outdoors to protect living areas, gardens and play yards from dust and debris. Contaminated soil can be a health hazard.

Work in one room at a time

- Seal off the work area from the rest of the house.
- Close and tape heavy plastic around doors.
- Seal heating ducts, vents and grates against dust.
- Use an exhaust window fan with an improvised filter such as a 1/4" foam rubber or furnace filter to prevent dust from spreading outside.

Exterior Work

When exterior paint is being removed seal windows and vents so that dust cannot get inside.

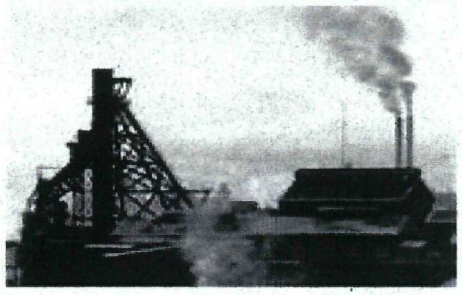
Place a damp floor mat outside the door of the work area to collect lead from the bottom of shoes.

Be careful not to:
Walk around clean areas of the house with work clothes.

Transfer dust from hands or clothing to the mouth by eating, drinking or smoking in the work area.

Butte-Silver Bow
Residential Metals Program

The Butte-Silver Bow Residential Metals Program is designed to mitigate potentially harmful exposure of residents living within the Butte Priority Soils Operable Unit (BPSOU) and the adjacent areas to sources of lead, arsenic, and mercury.



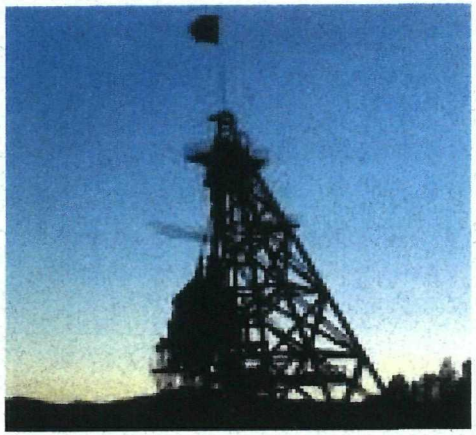
Butte-Silver Bow
Health Department

25 W. Front St.
Butte, MT 59701

Phone: 406-497-5040
Fax: 406-723-7245

Residential Metals Program

Butte-Silver Bow
Health Department



Tel: 406-497-5040

Program Services Provided

Sample collection to determine if contaminants of concern are present:

* Prior to sample collection, the property owner must complete a sample request form provided by the program.

The samples collected are:

- Attic dust
- Indoor dust
- Soil (yards, earthen basements)
- Lead-based paint

Contaminants of Concern are:

Lead, Arsenic, and Mercury

The attic dust and indoor dust samples are analyzed by a certified lab for lead, arsenic, and mercury

The soil samples are analyzed by a certified lab for lead and arsenic.

Lead-based paint will be analyzed using a XRF analyzer in accordance with HUD guidelines

Confidential sample results will be provided to the property owner approximately 10 days after samples are collected.

Local Action Levels for Dusts and Soils:

The local action level for **lead** is **1200 mg/kg.**

The local action level for **arsenic** is **250 mg/kg.**

The local action level for **mercury** is **147 mg/kg.**

Sample Results That Exceed the Local Action Levels:

Any sample results that exceed the local action levels for any or all of the three contaminants of concern will be prioritized for remediation of the contaminants.

An Access Agreement shall be completed by the property owner and notarized prior to the remediation process.

Remediation:

* The property owner is not liable for any costs or responsibilities associated with the remediation of the property.

Contaminated attic dust – dust and any potentially contaminated materials are removed from the attic with a HEPA -equipped industrial vacuum.

Contaminated indoor dust - dust is removed with a HEPA- equipped vacuum and all horizontal surfaces are wiped-down to ensure that the contaminants are removed.

Contaminated soils - soils are removed and replaced with clean fill, sod, and/or other specified materials. Trees, shrubs, fences, sidewalks, etc. are left in place upon the owners request.

Lead-based Paint - lead-based paint will be addressed in conjunction with soil remediation projects as necessary. Lead-based paint will be addressed when a resident is identified with an elevated blood-lead level determined by blood-lead testing.

Blood-Lead Testing:

Free blood-lead testing is offered and encouraged through the Women Infants & Children (WIC) office located at the Butte-Silver Bow Health Department. All elevated results are reported to the Residential Metals Program for further evaluation.

Residential Metals Program

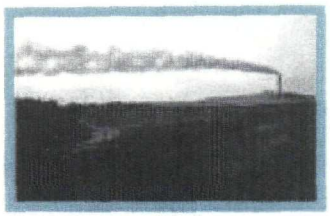
Butte-Silver Bow Health Department

25 W. Front St.
Butte, MT 59701

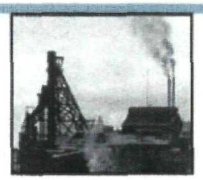
Phone: 406-497-5040
Fax: 406-723-7245

Butte-Silver Bow Residential Metals Program

The Butte-Silver Bow Residential Metals Program is designed to mitigate potentially harmful exposure of residents living within the Butte Priority Soils Operable Unit (BPSOU) and the adjacent areas to sources of lead, arsenic, and mercury.



Anaconda Smelter



Mining Activity in Butte

Butte-Silver Bow Health Department

25 W. Front St.
Butte, MT 59701

(406) 497-5040

Butte-Silver Bow Health Department

Residential Metals Program

Attic Dust Testing and Abatement Program

406-497-5040

Attic Dust Testing

Homes built prior to 2006 within Butte are subject to potential attic dust contamination due to past mining activities. Approximately 81% of the homes tested in Butte have been found to have contaminated attic dust. The Butte-Silver Bow Residential Metals Program provides free sampling, analysis, and necessary abatement of the attic space for the residents of Butte.

Sampling:

Contact the B-SB Residential Metals Program and schedule a time to have a sample taken from the attic space.
497-5040

*Prior to the sampling procedure a sample request form provided by the program shall be completed by the property owner.

Analysis:

The attic dust sample is analyzed for three contaminants of concern (COC):

Lead, Arsenic, and Mercury

The local action levels for these contaminants of concern are:

1200 mg/kg for Lead

250 mg/kg for Arsenic

147 mg/kg for Mercury

Attic Dust Abatement

Properties with elevated dust sample results are placed on an abatement list.

Prioritization: Contaminated attics are placed on an abatement list and prioritized according to risk of potential exposure. Such risks include but are not limited to:

Remodeling plans

Re-wiring plans

Insulating plans

*Prior to attic abatement activities the property owner shall complete a Residential Access Agreement. The property owner is not liable for any cost or responsibilities associated with an attic abatement.

Contaminated dust and materials are removed from the attic with a HEPA-equipped industrial vacuum by trained/certified personnel.

Insulation: The contaminated insulation removed during the abatement process will be replaced based on a case by case basis.

Variables such as a residence that was previously un-insulated or has non-compliant wiring, do not qualify for insulation installment.

The Residential Metals Program shall remove contaminated material from the attic space and may re-insulate at a later time after code requirements are met.

.....For more details contact the

Residential Metals Program

Butte-Silver Bow Health Department

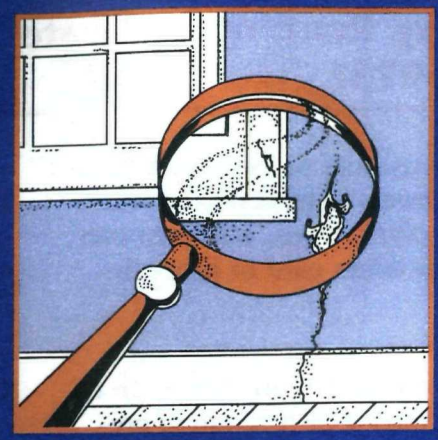
25 W. Front St.
Butte, MT 59701

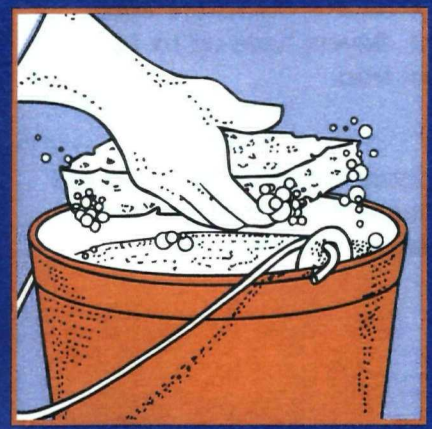
(406) 497-5040

Simple Steps To Protect Your Family From Lead Hazards

If you think your home has high levels of lead:

- Get your young children tested for lead, even if they seem healthy.
- Wash children's hands, bottles, pacifiers, and toys often.
- Make sure children eat healthy, low-fat foods.
- Get your home checked for lead hazards.
- Regularly clean floors, window sills, and other surfaces.
- Wipe soil off shoes before entering house.
- Talk to your landlord about fixing surfaces with peeling or chipping paint.
- Take precautions to avoid exposure to lead dust when remodeling or renovating (call 1-800-424-LEAD for guidelines).
- Don't use a belt-sander, propane torch, high temperature heat gun, scraper, or sandpaper on painted surfaces that may contain lead.
- Don't try to remove lead-based paint yourself.





Protect Your Family From Lead In Your Home

EPA United States Environmental Protection Agency

United States Consumer Product Safety Commission

United States Department of Housing and Urban Development

Are You Planning To Buy, Rent, or Renovate a Home Built Before 1978?

Many houses and apartments built before 1978 have paint that contains high levels of lead (called lead-based paint). Lead from paint, chips, and dust can pose serious health hazards if not taken care of properly.

OWNERS, BUYERS, and RENTERS are encouraged to check for lead (see page 6) before renting, buying or renovating pre-1978 housing.

Federal law requires that individuals receive certain information before renting, buying, or renovating pre-1978 housing:

LANDLORDS have to disclose known information on lead-based paint and lead-based paint hazards before leases take effect. Leases must include a disclosure about lead-based paint.

SELLERS have to disclose known information on lead-based paint and lead-based paint hazards before selling a house. Sales contracts must include a disclosure about lead-based paint. Buyers have up to 10 days to check for lead.

RENOVATORS disturbing more than 2 square feet of painted surfaces have to give you this pamphlet before starting work.

IMPORTANT!

Lead From Paint, Dust, and Soil Can Be Dangerous If Not Managed Properly

FACT: Lead exposure can harm young children and babies even before they are born.

FACT: Even children who seem healthy can have high levels of lead in their bodies.

FACT: People can get lead in their bodies by breathing or swallowing lead dust, or by eating soil or paint chips containing lead.

FACT: People have many options for reducing lead hazards. In most cases, lead-based paint that is in good condition is not a hazard.

FACT: Removing lead-based paint improperly can increase the danger to your family.

If you think your home might have lead hazards, read this pamphlet to learn some simple steps to protect your family.

Lead Gets in the Body in Many Ways

Childhood lead poisoning remains a major environmental health problem in the U.S.

People can get lead in their body if they:

- Breathe in lead dust (especially during renovations that disturb painted surfaces).
- Put their hands or other objects covered with lead dust in their mouths.
- Eat paint chips or soil that contains lead.

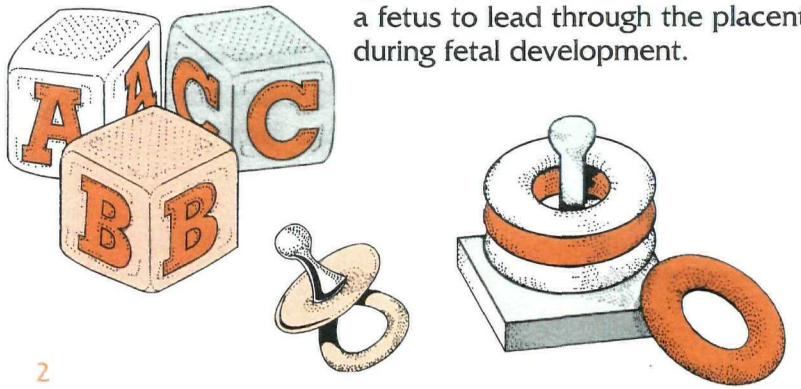
Lead is even more dangerous to children under the age of 6:

- At this age children's brains and nervous systems are more sensitive to the damaging effects of lead.
- Children's growing bodies absorb more lead.
- Babies and young children often put their hands and other objects in their mouths. These objects can have lead dust on them.

Even children who appear healthy can have dangerous levels of lead in their bodies.

Lead is also dangerous to women of childbearing age:

- Women with a high lead level in their system prior to pregnancy would expose a fetus to lead through the placenta during fetal development.



Lead's Effects

It is important to know that even exposure to low levels of lead can severely harm children.

In children, lead can cause:

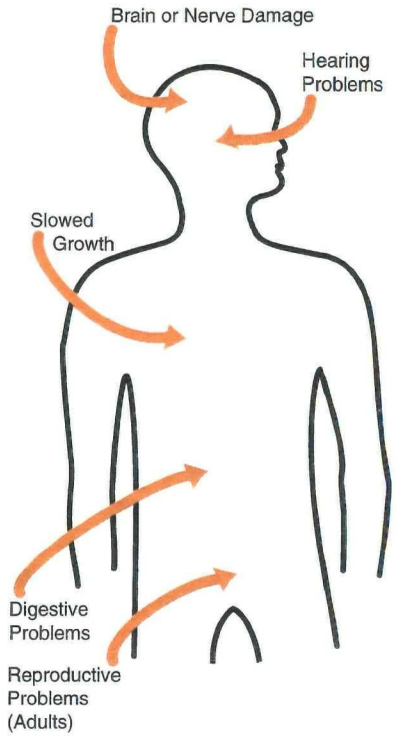
- Nervous system and kidney damage.
- Learning disabilities, attention deficit disorder, and decreased intelligence.
- Speech, language, and behavior problems.
- Poor muscle coordination.
- Decreased muscle and bone growth.
- Hearing damage.

While low-lead exposure is most common, exposure to high levels of lead can have devastating effects on children, including seizures, unconsciousness, and, in some cases, death.

Although children are especially susceptible to lead exposure, lead can be dangerous for adults too.

In adults, lead can cause:

- Increased chance of illness during pregnancy.
- Harm to a fetus, including brain damage or death.
- Fertility problems (in men and women).
- High blood pressure.
- Digestive problems.
- Nerve disorders.
- Memory and concentration problems.
- Muscle and joint pain.



Lead affects the body in many ways.

Where Lead-Based Paint Is Found

In general, the older your home, the more likely it has lead-based paint.

Many homes built before 1978 have lead-based paint. The federal government banned lead-based paint from housing in 1978. Some states stopped its use even earlier. Lead can be found:

- In homes in the city, country, or suburbs.
- In apartments, single-family homes, and both private and public housing.
- Inside *and* outside of the house.
- In soil around a home. (Soil can pick up lead from exterior paint or other sources such as past use of leaded gas in cars.)

Checking Your Family for Lead

Get your children and home tested if you think your home has high levels of lead.

To reduce your child's exposure to lead, get your child checked, have your home tested (especially if your home has paint in poor condition and was built before 1978), and fix any hazards you may have. Children's blood lead levels tend to increase rapidly from 6 to 12 months of age, and tend to peak at 18 to 24 months of age.

Consult your doctor for advice on testing your children. A simple blood test can detect high levels of lead. Blood tests are usually recommended for:

- Children at ages 1 and 2.
- Children or other family members who have been exposed to high levels of lead.
- Children who should be tested under your state or local health screening plan.

Your doctor can explain what the test results mean and if more testing will be needed.

Identifying Lead Hazards

Lead from paint chips, which you can see, and lead dust, which you can't always see, can both be serious hazards.

Lead-based paint is usually not a hazard if it is in good condition, and it is not on an impact or friction surface, like a window. It is defined by the federal government as paint with lead levels greater than or equal to 1.0 milligram per square centimeter, or more than 0.5% by weight.

Deteriorating lead-based paint (peeling, chipping, chalking, cracking or damaged) is a hazard and needs immediate attention. It may also be a hazard when found on surfaces that children can chew or that get a lot of wear-and-tear, such as:

- Windows and window sills.
- Doors and door frames.
- Stairs, railings, banisters, and porches.

Lead dust can form when lead-based paint is scraped, sanded, or heated. Dust also forms when painted surfaces bump or rub together. Lead chips and dust can get on surfaces and objects that people touch. Settled lead dust can re-enter the air when people vacuum, sweep, or walk through it. The following two federal standards have been set for lead hazards in dust:

- 40 micrograms per square foot ($\mu g/ft^2$) and higher for floors, including carpeted floors.
- 250 $\mu g/ft^2$ and higher for interior window sills.

Lead in soil can be a hazard when children play in bare soil or when people bring soil into the house on their shoes. The following two federal standards have been set for lead hazards in residential soil:

- 400 parts per million (ppm) and higher in play areas of bare soil.
- 1,200 ppm (average) and higher in bare soil in the remainder of the yard.

The only way to find out if paint, dust and soil lead hazards exist is to test for them. The next page describes the most common methods used.

Checking Your Home for Lead

Just knowing that a home has lead-based paint may not tell you if there is a hazard.

You can get your home tested for lead in several different ways:

- A paint **inspection** tells you whether your home has lead-based paint and where it is located. It won't tell you whether or not your home currently has lead hazards.
- A **risk assessment** tells you if your home currently has any lead hazards from lead in paint, dust, or soil. It also tells you what actions to take to address any hazards.
- A combination risk assessment and inspection tells you if your home has any lead hazards and if your home has any lead-based paint, and where the lead-based paint is located.

Hire a trained and certified testing professional who will use a range of reliable methods when testing your home.

- Visual inspection of paint condition and location.
- A portable x-ray fluorescence (XRF) machine.
- Lab tests of paint, dust, and soil samples.

There are state and federal programs in place to ensure that testing is done safely, reliably, and effectively. Contact your state or local agency (see bottom of page 11) for more information, or call **1-800-424-LEAD (5323)** for a list of contacts in your area.

Home test kits for lead are available, but may not always be accurate. Consumers should not rely on these kits before doing renovations or to assure safety.

What You Can Do Now To Protect Your Family

If you suspect that your house has lead hazards, you can take some immediate steps to reduce your family's risk:

- **If you rent, notify your landlord of peeling or chipping paint.**
- **Clean up paint chips immediately.**
- **Clean floors, window frames, window sills, and other surfaces weekly**. Use a mop or sponge with warm water and a general all-purpose cleaner or a cleaner made specifically for lead. REMEMBER: NEVER MIX AMMONIA AND BLEACH PRODUCTS TOGETHER SINCE THEY CAN FORM A DANGEROUS GAS.

- **Thoroughly rinse sponges and mop heads after cleaning dirty or dusty areas**.
- **Wash children's hands often, especially before they eat and before nap time and bed time.**
- **Keep play areas clean.** Wash bottles, pacifiers, toys, and stuffed animals regularly.
- **Keep children from chewing window sills or other painted surfaces.**
- **Clean or remove shoes before entering your home to avoid tracking in lead from soil.**
- **Make sure children eat nutritious, low-fat meals high in iron and calcium,** such as spinach and dairy products. Children with good diets absorb less lead.

Reducing Lead Hazards In The Home

Removing lead improperly can increase the hazard to your family by spreading even more lead dust around the house.

Always use a professional who is trained to remove lead hazards safely.

In addition to day-to-day cleaning and good nutrition:

- You can **temporarily** reduce lead hazards by taking actions such as repairing damaged painted surfaces and planting grass to cover soil with high lead levels. These actions (called "interim controls") are not permanent solutions and will need ongoing attention.
- To **permanently** remove lead hazards, you should hire a certified lead "abatement" contractor. Abatement (or permanent hazard elimination) methods include removing, sealing, or enclosing lead-based paint with special materials. Just painting over the hazard with regular paint is not permanent removal.

Always hire a person with special training for correcting lead problems—someone who knows how to do this work safely and has the proper equipment to clean up thoroughly. Certified contractors will employ qualified workers and follow strict safety rules as set by their state or by the federal government.

Once the work is completed, dust cleanup activities must be repeated until testing indicates that lead dust levels are below the following:

- 40 micrograms per square foot ($\mu g/ft^2$) for floors, including carpeted floors;
- 250 $\mu g/ft^2$ for interior windows sills; and
- 400 $\mu g/ft^2$ for window troughs.

Call your state or local agency (see bottom of page 11) for help in locating certified professionals in your area and to see if financial assistance is available.

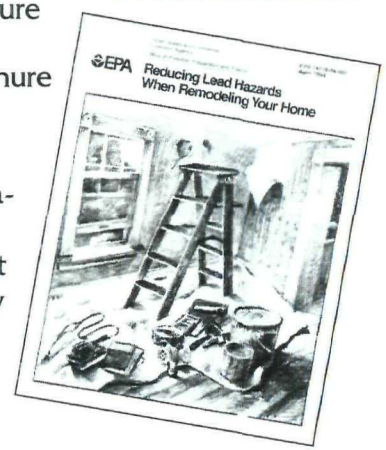
Remodeling or Renovating a Home With Lead-Based Paint

Take precautions before your contractor or you begin remodeling or renovating anything that disturbs painted surfaces (such as scraping off paint or tearing out walls):

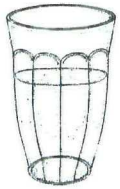
- **Have the area tested for lead-based paint.**
- **Do not use a belt-sander, propane torch, high temperature heat gun, dry scraper, or dry sandpaper** to remove lead-based paint. These actions create large amounts of lead dust and fumes. Lead dust can remain in your home long after the work is done.
- **Temporarily move your family** (especially children and pregnant women) out of the apartment or house until the work is done and the area is properly cleaned. If you can't move your family, at least completely seal off the work area.
- **Follow other safety measures to reduce lead hazards.** You can find out about other safety measures by calling 1-800-424-LEAD. Ask for the brochure "Reducing Lead Hazards When Remodeling Your Home." This brochure explains what to do before, during, and after renovations.

If you have already completed renovations or remodeling that could have released lead-based paint or dust, get your young children tested and follow the steps outlined on page 7 of this brochure.

If not conducted properly, certain types of renovations can release lead from paint and dust into the air.



Other Sources of Lead



While paint, dust, and soil are the most common sources of lead, other lead sources also exist.

- **Drinking water.** Your home might have plumbing with lead or lead solder. Call your local health department or water supplier to find out about testing your water. You cannot see, smell, or taste lead, and boiling your water will not get rid of lead. If you think your plumbing might have lead in it:
  - Use only cold water for drinking and cooking.
  - Run water for 15 to 30 seconds before drinking it, especially if you have not used your water for a few hours.
- **The job.** If you work with lead, you could bring it home on your hands or clothes. Shower and change clothes before coming home. Launder your work clothes separately from the rest of your family's clothes.
- Old painted **toys** and **furniture.**
- Food and liquids stored in **lead crystal** or **lead-glazed pottery or porcelain.**
- **Lead smelters** or other industries that release lead into the air.
- **Hobbies** that use lead, such as making pottery or stained glass, or refinishing furniture.
- **Folk remedies** that contain lead, such as "greta" and "azarcon" used to treat an upset stomach.

For More Information

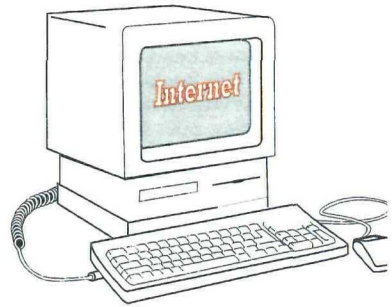
The National Lead Information Center

Call **1-800-424-LEAD (424-5323)** to learn how to protect children from lead poisoning and for other information on lead hazards. To access lead information via the web, visit **www.epa.gov/lead** and **www.hud.gov/offices/lead/.**

EPA's Safe Drinking Water Hotline

Call **1-800-426-4791** for information about lead in drinking water.

Consumer Product Safety Commission (CPSC) Hotline



To request information on lead in consumer products, or to report an unsafe consumer product or a product-related injury call **1-800-638-2772**, or visit CPSC's Web site at: **www.cpsc.gov.**

Health and Environmental Agencies

Some cities, states, and tribes have their own rules for lead-based paint activities. Check with your local agency to see which laws apply to you. Most agencies can also provide information on finding a lead abatement firm in your area, and on possible sources of financial aid for reducing lead hazards. Receive up-to-date address and phone information for your local contacts on the Internet at **www.epa.gov/lead** or contact the National Lead Information Center at **1-800-424-LEAD.**

For the hearing impaired, call the Federal Information Relay Service at **1-800-877-8339** to access any of the phone numbers in this brochure.

EPA Regional Offices

Your Regional EPA Office can provide further information regarding regulations and lead protection programs.

EPA Regional Offices

Region 1 (Connecticut, Massachusetts, Maine, New Hampshire, Rhode Island, Vermont)

Regional Lead Contact
U.S. EPA Region 1
Suite 1100 (CPT)
One Congress Street
Boston, MA 02114-2023
1 (888) 372-7341

Region 2 (New Jersey, New York, Puerto Rico, Virgin Islands)

Regional Lead Contact
U.S. EPA Region 2
2890 Woodbridge Avenue
Building 209, Mail Stop 225
Edison, NJ 08837-3679
(732) 321-6671

Region 3 (Delaware, Maryland, Pennsylvania, Virginia, Washington DC, West Virginia)

Regional Lead Contact
U.S. EPA Region 3 (3WC33)
1650 Arch Street
Philadelphia, PA 19103
(215) 814-5000

Region 4 (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee)

Regional Lead Contact
U.S. EPA Region 4
61 Forsyth Street, SW
Atlanta, GA 30303
(404) 562-8998

Region 5 (Illinois, Indiana, Michigan, Minnesota, Ohio, Wisconsin)

Regional Lead Contact
U.S. EPA Region 5 (DT-8J)
77 West Jackson Boulevard
Chicago, IL 60604-3666
(312) 886-6003

Region 6 (Arkansas, Louisiana, New Mexico, Oklahoma, Texas)

Regional Lead Contact
U.S. EPA Region 6
1445 Ross Avenue, 12th Floor
Dallas, TX 75202-2733
(214) 665-7577

Region 7 (Iowa, Kansas, Missouri, Nebraska)

Regional Lead Contact
U.S. EPA Region 7
(ARTD-RALI)
901 N. 5th Street
Kansas City, KS 66101
(913) 551-7020

Region 8 (Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming)

Regional Lead Contact
U.S. EPA Region 8
999 18th Street, Suite 500
Denver, CO 80202-2466
(303) 312-6021

Region 9 (Arizona, California, Hawaii, Nevada)

Regional Lead Contact
U.S. Region 9
75 Hawthorne Street
San Francisco, CA 94105
(415) 947-4164

Region 10 (Alaska, Idaho, Oregon, Washington)

Regional Lead Contact
U.S. EPA Region 10
Toxics Section WCM-128
1200 Sixth Avenue
Seattle, WA 98101-1128
(206) 553-1985

CPSC Regional Offices

Your Regional CPSC Office can provide further information regarding regulations and consumer product safety.

Eastern Regional Center
Consumer Product Safety Commission
201 Varick Street, Room 903
New York, NY 10014
(212) 620-4120

Western Regional Center
Consumer Product Safety Commission
1301 Clay Street, Suite 610-N
Oakland, CA 94612
(510) 637-4050

Central Regional Center
Consumer Product Safety Commission
230 South Dearborn Street, Room 2944
Chicago, IL 60604
(312) 353-8260

HUD Lead Office

Please contact HUD's Office of Healthy Homes and Lead Hazard Control for information on lead regulations, outreach efforts, and lead hazard control and research grant programs.

U.S. Department of Housing and Urban Development
Office of Healthy Homes and Lead Hazard Control
451 Seventh Street, SW, P-3206
Washington, DC 20410
(202) 755-1785

U.S. EPA Washington DC 20460
U.S. CPSC Washington DC 20207
U.S. HUD Washington DC 20410

EPA747-K-99-001
June 2003

United States
Environmental Protection
Agency

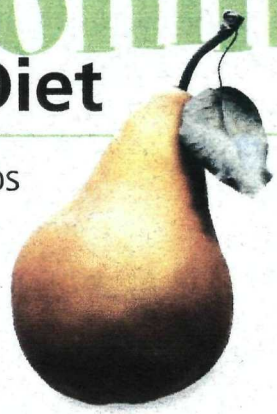
Office of Pollution Prevention
and Toxics (7404)

EPA-747-F-01-004
November 2001

EPA

Fight Lead Poisoning with a Healthy Diet

Lead Poisoning Prevention Tips for Families

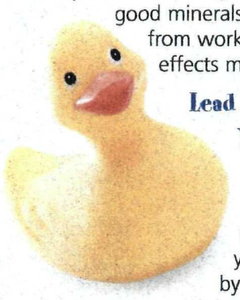


Lead and a Healthy Diet

What You Can Do to Protect Your Child

Lead's Effects on the Body

Lead is a poisonous metal that our bodies cannot use. Lead poisoning can cause learning, hearing, and behavioral problems, and can harm your child's brain, kidneys, and other organs. Lead in the body stops good minerals such as iron and calcium from working right. Some of these effects may be permanent.



Lead Awareness and Your Child

Children with lead poisoning usually do not look or act sick. The only way to know if your child has lead poisoning is by getting a blood test. Ask your doctor or health care provider to test your child under six years of age at least once a year.

Lead Hazards

Where is Lead Found?

Main Sources of Lead

Lead-based paint is a hazard if it is peeling, chipping, chalking, or cracking. Even lead-based paint that appears to be undisturbed can be a problem if it is on surfaces that children chew or that get a lot of wear and tear. The older your home is, the more likely it is to contain lead-based paint.

Contaminated dust forms when lead paint is dry-scraped or sanded. Dust can also become contaminated when painted surfaces bump or rub together. Lead chips and dust can gather on surfaces and objects that people touch or that children put into their mouths.

Lead poisoning occurs **without** any **obvious symptoms** and **harms** your child's body.

Contaminated soil occurs when exterior lead-based paint from houses, buildings, or other structures flakes or peels and gets into the soil. Soil near roadways may also be contaminated from past use of leaded gasoline in cars. Avoid these areas when planting vegetable gardens.

Other Sources of Lead

Contaminated drinking water from older plumbing fixtures

Lead-based painted toys and household furniture

Imported lead-glazed pottery and leaded crystal

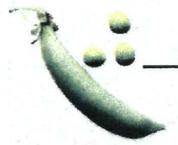
Lead smelters

Hobbies

Folk remedies like azarcon and pay-loo-ah

Cosmetics like kohl and kajal

Do not store **food** in glazed pottery **from foreign countries.**



Meal and Snack Ideas

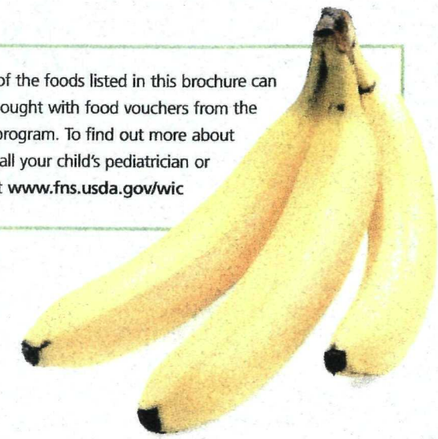
Tips to help you and your children plan meals and snacks

Breakfast	Lunch	Dinner
Oatmeal swirlers Sliced banana Orange juice	Grilled cheese & tomato Coleslaw Low-fat milk	Sloppy joes Watermelon Low-fat milk
-or-	-or-	-or-
Cheese omelet Applesauce Low-fat milk	Tuna salad sandwich Cranberry juice Pear slices	Macaroni and cheese Stewed tomatoes Melon slice
-or-	-or-	-or-
French toast Orange sections Low-fat milk	Pizza bagel 100% fruit juice Fresh or canned peaches Low-fat milk	Chicken stew Rice Strawberries

Between meals offer small snacks such as:

Cereal with low-fat milk, whole wheat crackers with cheese, apple or pear slices, oranges or bananas, raisins, yogurt, frozen fruit juice pops, and fruit smoothies.

Many of the foods listed in this brochure can be bought with food vouchers from the WIC program. To find out more about WIC, call your child's pediatrician or visit **www.fns.usda.gov/wic**

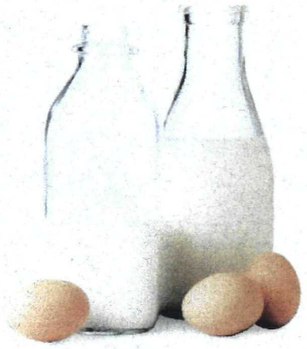


Oatmeal Swirlers • Makes 4–6 servings

1 1/2 cups of quick cooking oats
1/3 cup of peanut butter
1/3 cup of fruit jelly or jam

Steps:

- Follow the package directions to cook oats.
- Spoon peanut butter and jelly on top of cooked oatmeal.
- Stir and spoon into bowls.
- Serve with low-fat milk.



French Toast • Makes 4–6 servings

3 eggs, beaten
1/2 cup of low-fat milk
Vegetable oil
6 slices of bread
Cinnamon
2 bananas, sliced

Steps:

- Mix eggs and milk.
- Lightly coat pan with vegetable oil. Use medium heat.
- Dip bread into egg mixture, so that bread is covered.
- Brown one side of bread in pan.
- Sprinkle top with cinnamon.
- Turn over bread and brown the other side. Top with sliced banana.
- Serve with low-fat milk.

Cheese Omelet • Makes 2–3 servings

3 eggs
1 tablespoon of low-fat milk
Vegetable oil
3 tablespoons of cheese

Steps:

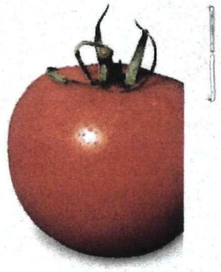
- Mix eggs and milk in a bowl.
- Lightly coat pan with vegetable oil. Use medium heat.
- Add egg mixture and cook.
- When omelet is cooked on the bottom, add cheese.
- When cheese is melted, fold omelet in half.
- Top with salsa if you like.
- Serve with toast, fruit, and low-fat milk.

Grilled Cheese & Tomato Sandwich • Makes 1 serving

2 slices of bread
2 slices of American cheese
1 slice of tomato
Vegetable oil

Steps:

- Make sandwich using bread, cheese, and tomato.
- Lightly coat pan with vegetable oil.
- Brown sandwich on both sides over low heat to melt the cheese.
- Serve with low-fat milk or fruit juice.



Tuna Salad Sandwich • Makes 2 servings

4 slices of bread
1 can of water packed tuna
4 teaspoons of low-fat mayonnaise
Onion and celery, chopped

Steps:

- Mix tuna with low-fat mayonnaise, onion, and celery.
- Try your sandwich with cheese and tomato.
- Serve with low-fat milk.

Pizza Bagels • Makes 2–3 servings

1 bagel
2 tablespoons of tomato sauce
Garlic, basil, or oregano
2 tablespoons of cheddar cheese or part-skim mozzarella

Steps:

- Preheat oven to 400 degrees.
- Slice open a bagel and place on a flat pan.
- Add tomato sauce, seasonings, and cheese.
- Bake for 3 minutes or until cheese melts.
- Serve with fruit juice.

Sloppy Joes • Makes 4–6 servings

1 pound of lean ground beef, turkey, or chicken
1 small onion, chopped
1/2 green pepper, chopped
1 cup of tomato sauce
Your choice of seasonings
5 hamburger buns or pita pocket breads

Steps:

- In a pan, cook lean ground meat, onion, and green pepper until meat is well done.
- Drain fat.
- Stir in tomato sauce and seasonings.
- Cook for 5 to 10 minutes.
- Spoon into hamburger bun or pita.
- Serve with fruit juice.

Baked Macaroni and Cheese • Makes 3–5 servings

4 cups of cooked macaroni
3 cups of grated cheddar cheese
2 tablespoons of margarine
2 tablespoons of flour
Vegetable oil
2 cups of low-fat milk
Salt and pepper

Steps:

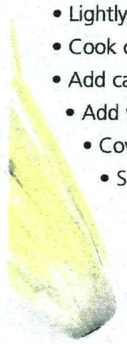
- Preheat oven to 375 degrees. Lightly coat casserole dish with vegetable oil.
- Mix cooked macaroni with grated cheese and pour into casserole.
- Melt margarine in a pan. Remove from heat, stir in flour. Return to heat.
- Add low-fat milk slowly, stirring until smooth.
- Season with salt and pepper to taste.
- Pour over macaroni. Stir.
- Cover. Bake for 30 minutes.
- Uncover and bake for another 15 minutes.

Chicken Stew • Makes 6–8 servings

3 pounds of frying chicken, cut up into small pieces
Vegetable oil
1 medium onion, chopped
1 stalk of celery, chopped
28 ounce can of stewed tomatoes
Poultry seasoning

Steps:

- Lightly coat pot with vegetable oil. Use medium heat.
- Cook chicken until it is well done.
- Add can of stewed tomatoes.
- Add vegetables and seasoning.
- Cover and cook over low heat for 30 minutes.
- Serve with rice or noodles.

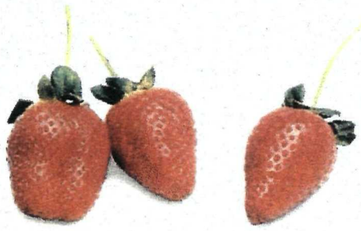


Banana Strawberry Smoothie • Makes 2–3 servings

1 cup of low-fat milk
1 cup of fresh or frozen strawberries, mashed
1 ripe banana, mashed

Steps:

- Mix all together in a blender or use a wire whisk.
- Eat as a snack or for dessert.



Regularly Eat Healthy Foods

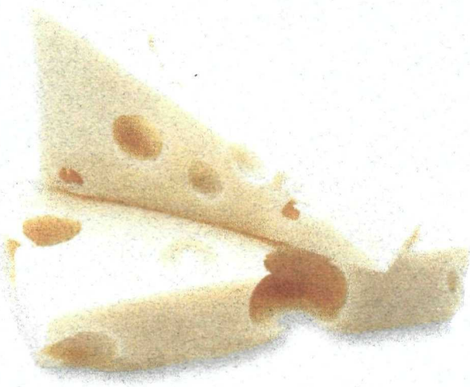
Children with empty stomachs absorb more lead than children with full stomachs. Provide your child with four to six small meals during the day. The following nutrients can help protect your child from lead poisoning:

Iron-Rich Foods
Normal levels of iron work to protect the body from the harmful effects of lead. Good sources of dietary iron include:

Lean red meats, fish, and chicken
Iron-fortified cereals
Dried fruits (raisins, prunes)

Calcium-Rich Foods
Calcium reduces lead absorption and also helps make teeth and bones strong. Good sources of dietary calcium include:

Milk
Yogurt
Cheese
Green leafy vegetables (spinach, kale, collard greens)



Vitamin C-Rich Foods
Vitamin C and iron-rich foods work together to reduce lead absorption. Good sources of vitamin C include:

Oranges, orange juice
Grapefruits, grapefruit juice
Tomatoes, tomato juice
Green peppers

A healthy diet can help **protect** your **child** **from the harmful effects of lead.**

Simple Steps You Can Take
to Protect Your Family from Lead Hazards

If you think your home has high levels of lead:

- Make sure your children eat healthy, low-fat foods high in iron, calcium, and vitamin C.
- Get your children tested for lead, even if they seem healthy.
- Get your home tested for lead if it was built before 1978. Call **1-800-424-LEAD** for more information.
- Always wash your hands before eating.
- Wash children's hands, bottles, pacifiers, and toys.
- Do not use imported pottery to store or serve food.
- Let tap water run for one minute before using.
- Use only cold water for making your baby's formula, drinking, and cooking.
- Regularly clean floors, windowsills, and other surfaces using wet methods that control dust.
- Wipe or remove shoes before entering your house.
- If you rent, it is your landlord's job to keep paint in good shape. Report peeling or chipping paint to your landlord and call your health department if the paint is not repaired safely.
- Take precautions to avoid exposure to lead dust when remodeling or renovating.
- Don't try to remove paint yourself!

Lead poisoning is **completely preventable.**

For more information on childhood lead poisoning prevention:

Call

- Your child's pediatrician
- The National Lead Information Center **1-800-424-LEAD (424-5323)**
- U.S. Environmental Protection Agency's (EPA) Safe Drinking Water Hotline **1-800-426-4791**

LEAD Awareness Program

Visit

- EPA Lead Program Web site **www.epa.gov/lead**
- U.S. Centers for Disease Control and Prevention (CDC) Web site **www.cdc.gov/nceh/lead**
- U.S. Department of Housing and Urban Development (HUD) Web site **www.hud.gov/offices/lead**

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Butte-Silver Bow Residential Metals Program (406) 497-5040

Butte– Silver Bow Health Dept.
25 W. Front St.
Butte, MT 59701
Fax: 406-723-7245

FREE Sampling for Property Owners

Samples are analyzed for potential Lead, Arsenic, and Mercury contamination due to past mining activity in the area

- **Property owner completes the sample request form**
- **Schedule a time for samples to be collected**
- **Attic dust, indoor dust, and soil samples (weather pending) are collected and analyzed by a certified lab**
- **Confidential results will be mailed to the property owner**
- **Results with elevated lead, arsenic, or mercury qualify for remediation**
- **Access agreement to be completed by property owner and notarized**
- **Contamination is cleaned-up free of charge**

Eric Hassler **406-497-5042** **ehassler@bsb.mt.gov**	**Michele Bay** **406-497-5045** **mbay@bsb.mt.gov**

Hassler, Eric

From: Sparks.Sara@epamail.epa.gov
Sent: Tuesday, February 02, 2010 3:11 PM
To: Hassler, Eric
Subject: Fw: Butte Arsenic and Mercury levels of Concern

Sara Weinstock Sparks
Remedial Project Manager
US EPA
155 W. Granite Street
Butte, MT 59701
(406) 782-7415
Fax (406) 782-3838
----- Forwarded by Sara Sparks/MO/R8/USEPA/US on 02/02/2010 03:10 PM -----

Susan Griffin/R8/USEPA/US
02/02/2010 02:44 PM

To: Sara Sparks/MO/R8/USEPA/US@EPA
cc:
Subject: Re: Butte Arsenic and Mercury levels of Concern(Document link: Sara Sparks)

The Walkerville Biomonitoring program used normal physiological ranges to determine if an exceedence occurred. For example, the reference range for mercury in urine was 0-10 ug/L and for arsenic in urine was
0-52.7 ug/L. If people were within those ranges they were fine. They only tested blood for lead. Both mercury and arsenic levels can be highly influenced by the ingestion of seafood. People are advised to avoid seafood in their diet 1 week prior to testing. If a total arsenic comes back with elevated levels, a speciated arsenic can be run on the sample to separate inorganic from organic arsenic. I imagine the same could be done for mercury.

From: Sara Sparks/MO/R8/USEPA/US

To: Susan Griffin/EPR/R8/USEPA/US

Date: 02/02/2010 02:09 PM

Subject: Butte Arsenic and Mercury levels of Concern

Susan: Do you have any numerical values associated with urinary arsenic or mercury in

blood as levels of concern for human health. We were trying to put something in our residential metals abatement program that would act as triggers to take an action. Sara

Sara Weinstock Sparks
Remedial Project Manager
US EPA
155 W. Granite Street
Butte, MT 59701
(406) 782-7415
Fax (406) 782-3838

LEAD

CAS # 7439-92-1

This fact sheet answers the most frequently asked health questions (FAQs) about lead. For more information, call the ATSDR Information Center at 1-888-422-8737. This fact sheet is one in a series of summaries about hazardous substances and their health effects. It's important you understand this information because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

HIGHLIGHTS: Exposure to lead can happen from breathing workplace air or dust, eating contaminated foods, or drinking contaminated water. Children can be exposed from eating lead-based paint chips or playing in contaminated soil. Lead can damage the nervous system, kidneys, and reproductive system. Lead has been found in at least 1,026 of 1,467 National Priorities List sites identified by the Environmental Protection Agency (EPA).

What is lead?

(Pronounced lĕd)

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.

Lead has many different uses. It is used in the production of batteries, ammunition, metal products (solder and pipes), and devices to shield X-rays.

Because of health concerns, lead from gasoline, paints and ceramic products, caulking, and pipe solder has been dramatically reduced in recent years.

What happens to lead when it enters the environment?

- Lead itself does not break down, but lead compounds are changed by sunlight, air, and water.
- When lead is released to the air, it may travel long distances before settling to the ground.
- Once lead falls onto soil, it usually sticks to soil particles.
- Movement of lead from soil into groundwater will depend on the type of lead compound and the characteristics of the soil.
- Much of the lead in inner-city soils comes from old houses painted with lead-based paint.

How might I be exposed to lead?

- Eating food or drinking water that contains lead
- Spending time in areas where lead-based paints have been used and are deteriorating
- Working in a job where lead is used
- Using health-care products or folk remedies that contain lead
- Engaging in certain hobbies in which lead is used (for example, stained glass)

How can lead affect my health?

Lead can affect almost every organ and system in your body. The most sensitive is the central nervous system, particularly in children. Lead also damages kidneys and the reproductive system. The effects are the same whether it is breathed or swallowed.

At high levels, lead may decrease reaction time, cause weakness in fingers, wrists, or ankles, and possibly affect the memory. Lead may cause anemia, a disorder of the blood. It can also damage the male reproductive system. The connection between these effects and exposure to low levels of lead is uncertain.

How likely is lead to cause cancer?

The Department of Health and Human Services has determined that lead acetate and lead phosphate may reasonably

be anticipated to be carcinogens based on studies in animals. There is inadequate evidence to clearly determine lead's carcinogenicity in people.

How can lead affect children?

Small children can be exposed by eating lead-based paint chips, chewing on objects painted with lead-based paint, or swallowing house ducst or soil that contains lead.

Children are more vulnerable to lead poisoning than adults. A child who swallows large amounts of lead may develop blood anemia, severe stomachache, muscle weakness, and brain damage. A large amount of lead might get into a child's body if the child ate small pieces of old paint that contained large amounts of lead. 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.

How can families reduce the risk of exposure to lead?

Avoid exposure to sources of lead. Do not allow children to chew or mouth painted surfaces that may have been painted with lead-based paint (homes built before 1978). Run your water for 15 to 30 seconds before drinking or cooking with it. This will get rid of lead that may have leached out of pipes. Some types of paints and pigments that are used as make-up or hair coloring contain lead. Keep these kinds of products away from children. Wash children's hands and faces often to remove lead dusts and soil, and regularly clean the house of dust and tracked in soil.

Is there a medical test to show whether I've been exposed to lead?

A blood test is available to measure the amount of lead in your blood and to estimate the amount of your exposure to lead. Blood tests are commonly used to screen children for lead poisoning. Lead in teeth and bones can be measured with X-rays, but this test is not as readily available. Medical treatment may be necessary in children if the lead concentration in blood is higher than 45 micrograms per deciliter (45 µg/dL).

Has the federal government made recommendations to protect human health?

The Centers for Disease Control and Prevention (CDC) recommends that children ages 1 and 2 be screened for lead poisoning. Children who are 3 to 6 years old should be tested for lead if they have never been tested for lead before and if they receive services from public assistance programs; if they live in or regularly visit a building built before 1950; if they live in or visit a home built before 1978 that is being remodeled; or if they have a brother, sister, or playmate who has had lead poisoning. CDC considers children to have an elevated level of lead if the amount in the blood is 10 µg/dL.

The EPA requires lead in air not to exceed 1.5 micrograms per cubic meter (1.5 $\mu g/m^3$) averaged over 3 months. EPA limits lead in drinking water to 15 µg per liter.

The Occupational Health and Safety Administration (OSHA) develops regulations for workers exposed to lead. The Clean Air Act Amendments of 1990 banned the sale of leaded gasoline. The Federal Hazardous Substance Act bans children's products that contain hazardous amounts of lead.

Source of information

Agency for Toxic Substances and Disease Registry (ATSDR). 1999. Toxicological Profile for Lead. Atlanta: U.S. Department of Health and Human Services, Public Health Service.

Where can I get more information? For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology, 1600 Clifton Road NE, Mailstop E-29, Atlanta, GA 30333. Phone: 1-888-422-8737, FAX: 404-639-6359. ToxFAQs Internet address via WWW is http://www.atsdr.cdc.gov/toxfaq.html ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.

ATSDR

ARSENIC

Agency for Toxic Substances and Disease Registry April 1993

This fact sheet answers the most frequently asked health questions about arsenic. For more information, you may call 404-639-6000. This fact sheet is one in a series of summaries about hazardous substances and their health effects. This information is important because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

SUMMARY: Exposure to higher than average levels of arsenic happens mostly in the workplace, near hazardous waste sites, or in areas with high natural levels. Arsenic is a powerful poison. At high levels, it can cause death or illness. This chemical has been found in at least 781 of 1,300 National Priorities List sites identified by the Environmental Protection Agency.

What is arsenic?
(Pronounced ar' sĕ - nik)

Arsenic is found in nature at low levels. It's mostly in compounds with oxygen, chlorine, and sulfur. These are called inorganic arsenic compounds. Arsenic in plants and animals combines with carbon and hydrogen. This is called organic arsenic. Organic arsenic is usually less harmful than inorganic arsenic.

Most arsenic compounds have no smell or special taste.

Inorganic arsenic compounds are mainly used to preserve wood. They are also used to make insecticides and weed killers. You can check the labels of treated wood and insecticides to see if they contain arsenic.

Copper and lead ores contain small amounts of arsenic.

What happens to arsenic when it enters the environment?

- It doesn't evaporate.
- Most arsenic compounds can dissolve in water.
- It gets into air when contaminated materials are burned.
- It settles from the air to the ground.
- It doesn't break down, but can change from one form to another.
- Fish and shellfish build up organic arsenic in their tissues, but most of the arsenic in fish isn't toxic.

How might I be exposed to arsenic?

- Breathing sawdust or burning smoke from wood containing arsenic
- Breathing workplace air
- Ingesting contaminated water, soil, or air at waste sites
- Ingesting contaminated water, soil, or air near areas naturally high in arsenic.

How can arsenic affect my health?

Inorganic arsenic is a human poison. Organic arsenic is less harmful.

High levels of inorganic arsenic in food or water can be fatal. A high level is 60 parts of arsenic per million parts of food or water (60 ppm). Arsenic damages many tissues including nerves, stomach and intestines, and skin. Breathing high levels can give you a sore throat and irritated lungs.

Lower levels of exposure to inorganic arsenic may cause:

- Nausea, vomiting, and diarrhea
- Decreased production of red and white blood cells
- Abnormal heart rhythm
- Blood vessel damage
- A "pins and needles" sensation in hands and feet.

Long term exposure to inorganic arsenic may lead to a darkening of the skin and the appearance of small "corns" or "warts" on the palms, soles, and torso.

Direct skin contact may cause redness and swelling.

How likely is arsenic to cause cancer?

The Department of Health and Human Services (DHHS) has determined that arsenic is a known carcinogen. Breathing inorganic arsenic increases the risk of lung cancer. Ingesting inorganic arsenic increases the risk of skin cancer and tumors of the bladder, kidney, liver, and lung.

Is there a medical test to show whether I've been exposed to arsenic?

Tests can measure your exposure to high levels of arsenic. These tests are not routinely performed in a doctor's office.

Arsenic can be measured in your urine. This is the most reliable test for arsenic exposure. Since arsenic stays in the body only a short time, you must have the test soon after exposure.

Tests on hair or fingernails can measure your exposure to high levels of arsenic over the past 6-12 months. These tests are not very useful for low level exposures.

These tests do not predict whether you will have any harmful health effects.

Has the federal government made recommendations to protect human health?

The Environmental Protection Agency (EPA) sets limits on the amount of arsenic that industrial sources can release. It restricted or canceled many uses of arsenic in pesticides and may restrict more. EPA set a limit of 0.05 parts per million (ppm) for arsenic in drinking water. EPA may lower this further.

The Occupational Safety and Health Administration (OSHA) established a maximum permissible exposure limit for workplace airborne arsenic of 10 micrograms per cubic meter ($\mu g/m^3$).

Glossary

Carcinogen: Substance that can cause cancer.
Ingesting: Taking food or drink into your body.
PPM: Parts per million.
Microgram (µg): One millionth of a gram.

References

Agency for Toxic Substances and Disease Registry (ATSDR). 1993. Toxicological profile for arsenic. Atlanta: U.S. Department of Health and Human Services, Public Health Service.

Agency for Toxic Substances and Disease Registry (ATSDR). 1993. Case studies in environmental medicine: Arsenic toxicity. Atlanta: U.S. Department of Health and Human Services, Public Health Service.

Where can I get more information?

ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns. For more information, contact: Agency for Toxic Substances and Disease Registry, Division of Toxicology, 1600 Clifton Road NE, Mailstop E-29, Atlanta, GA 30333, Phone: 404-639-6000.

ATSDR
AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY

CONTENTS

RELATED RESOURCES

ToxFAQ™	106k
ToxFAQ™ en Español	91k
Public Health Statement	151k
Public Health Statement en Español	395k
Toxicological Profile	8.9MB
MMG	77k

A-Z INDEX

A B C D E
F G H I J K
L M N O P
Q R S T U
V W X Y Z

ATSDR RESOURCES

ToxFAQs™
ToxFAQs™ en Español

April 1999

ToxFAQs™ for Mercury
(Mercurio)

CAS# 7439-97-6

This fact sheet answers the most frequently asked health questions about mercury. For more information, you may call the ATSDR Information Center at 1-888-422-8737. This fact sheet is one in a series of summaries about hazardous substances and their health effects. This information is important because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

HIGHLIGHTS: Exposure to mercury occurs from breathing contaminated air, ingesting contaminated water and food, and having dental and medical treatments. Mercury, at high levels, may damage the brain, kidneys, and developing fetus. This chemical has been found in at least 714 of 1,467 National Priorities List sites identified by the Environmental Protection Agency.

What is mercury?

Mercury is a naturally occurring metal which has several forms. The metallic mercury is a shiny, silver-white, odorless liquid. If heated, it is a colorless, odorless gas.

Mercury combines with other elements, such as chlorine, sulfur, or oxygen, to form inorganic mercury compounds or "salts," which are usually white powders or crystals. Mercury also combines with carbon to make organic mercury compounds. The most common one, methylmercury, is produced mainly by microscopic organisms in the water and soil. More mercury in the environment can increase the amounts of methylmercury that these small organisms make.

Metallic mercury is used to produce chlorine gas and caustic soda, and is also used in thermometers, dental fillings, and batteries. Mercury salts are sometimes used in skin lightening creams and as antiseptic creams and ointments.

back to top

Public Health Statements
Toxicological Profiles
Minimum Risk Levels
MMGs
MHMIs
Interaction Profiles
Priority List of Hazardous Substances
Division of Toxicology

What happens to mercury when it enters the environment?

- Inorganic mercury (metallic mercury and inorganic mercury compounds) enters the air from mining ore deposits, burning coal and waste, and from manufacturing plants.
- It enters the water or soil from natural deposits, disposal of wastes, and volcanic activity.
- Methylmercury may be formed in water and soil by small organisms called bacteria.
- Methylmercury builds up in the tissues of fish. Larger and older fish tend to have the highest levels of mercury.

back to top

How might I be exposed to mercury?

- Eating fish or shellfish contaminated with methylmercury.
- Breathing vapors in air from spills, incinerators, and industries that burn mercury-containing fuels.
- Release of mercury from dental work and medical treatments.
- Breathing contaminated workplace air or skin contact during use in the workplace (dental, health services, chemical, and other industries that use mercury).
- Practicing rituals that include mercury.

back to top

How can mercury affect my health?

The nervous system is very sensitive to all forms of mercury. Methylmercury and metallic mercury vapors are more harmful than other forms, because more mercury in these forms reaches the brain. Exposure to high levels of metallic, inorganic, or organic mercury can permanently damage the brain, kidneys, and developing fetus. Effects on brain functioning may result in irritability, shyness, tremors, changes in vision or hearing, and memory problems.

Short-term exposure to high levels of metallic mercury vapors may cause effects including lung damage, nausea, vomiting, diarrhea, increases in blood pressure or heart rate, skin rashes, and eye irritation.

back to top

How likely is mercury to cause cancer?

There are inadequate human cancer data available for all forms of mercury. Mercuric chloride has caused increases in several types of tumors in rats and mice, and methylmercury has caused kidney tumors in male mice. The EPA has determined that mercuric chloride and methylmercury are possible human carcinogens.

back to top

How does mercury affect children?

Very young children are more sensitive to mercury than adults.

Mercury in the mother's body passes to the fetus and may accumulate there. It can also can pass to a nursing infant through breast milk. However, the benefits of breast feeding may be greater than the possible adverse effects of mercury in breast milk.

Mercury's harmful effects that may be passed from the mother to the fetus include brain damage, mental retardation, incoordination, blindness, seizures, and inability to speak. Children poisoned by mercury may develop problems of their nervous and digestive systems, and kidney damage.

back to top

How can families reduce the risk of exposure to mercury?

Carefully handle and dispose of products that contain mercury, such as thermometers or fluorescent light bulbs. Do not vacuum up spilled mercury, because it will vaporize and increase exposure. If a large amount of mercury has been spilled, contact your health department. Teach children not to play with shiny, silver liquids.

Properly dispose of older medicines that contain mercury. Keep all mercury-containing medicines away from children.

Pregnant women and children should keep away from rooms where liquid mercury has been used.

Learn about wildlife and fish advisories in your area from your public health or natural resources department.

back to top

Is there a medical test to show whether I've been exposed to mercury?

Tests are available to measure mercury levels in the body. Blood or urine samples are used to test for exposure to metallic mercury and to inorganic forms of mercury. Mercury in whole blood or in scalp hair is measured to determine exposure to methylmercury. Your doctor can take samples and send them to a testing laboratory.

back to top

Has the federal government made recommendations to protect human health?

The EPA has set a limit of 2 parts of mercury per billion parts of drinking water (2 ppb).

The Food and Drug Administration (FDA) has set a maximum permissible level of 1 part of methylmercury in a million parts of seafood (1 ppm).

The Occupational Safety and Health Administration (OSHA) has set limits of 0.1 milligram of organic mercury per cubic meter of workplace air (0.1 mg/m^3) and 0.05 mg/m^3 of metallic mercury

vapor for 8-hour shifts and 40-hour work weeks.

back to top

References

Agency for Toxic Substances and Disease Registry (ATSDR). 1999. Managing Hazardous Materials Incidents. Volume III – Medical Management Guidelines for Acute Chemical Exposures: Mercury. Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service.

Agency for Toxic Substances and Disease Registry (ATSDR). 1999. Toxicological Profile for mercury. Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service.

back to top

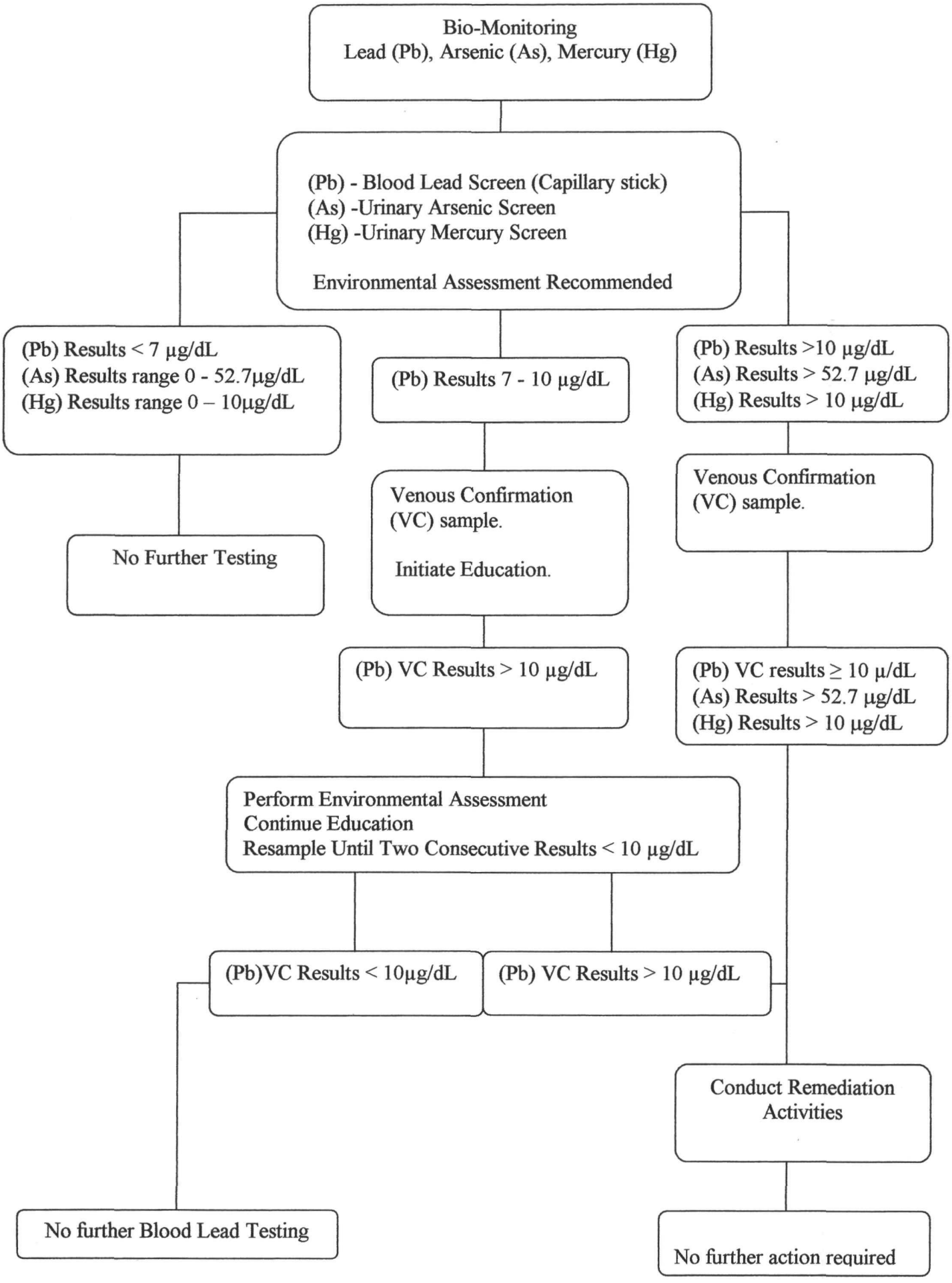
Where can I get more information?

ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.

For more information, contact:

Agency for Toxic Substances and Disease Registry
Division of Toxicology
1600 Clifton Road NE, Mailstop F-32
Atlanta, GA 30333
Phone: 1-888-42-ATSDR (1-888-422-8737)
FAX: (770)-488-4178
Email: ATSDRIC@cdc.gov

back to top


Bio-Monitoring
Lead (Pb), Arsenic (As), Mercury (Hg)
(Pb) - Blood Lead Screen (Capillary stick)
(As) -Urinary Arsenic Screen
(Hg) -Urinary Mercury Screen
Environmental Assessment Recommended
(Pb) Results < 7 µg/dL
(As) Results range 0 - 52.7µg/dL
(Hg) Results range 0 – 10µg/dL
(Pb) Results 7 - 10 µg/dL
(Pb) Results >10 µg/dL
(As) Results > 52.7 µg/dL
(Hg) Results > 10 µg/dL
No Further Testing
Venous Confirmation
(VC) sample.
Initiate Education.
Venous Confirmation
(VC) sample.
(Pb) VC Results > 10 µg/dL
(Pb) VC results ≥ 10 µ/dL
(As) Results > 52.7 µg/dL
(Hg) Results > 10 µg/dL
Perform Environmental Assessment
Continue Education
Resample Until Two Consecutive Results < 10 µg/dL
(Pb)VC Results < 10µg/dL
(Pb) VC Results > 10 µg/dL
Conduct Remediation
Activities
No further Blood Lead Testing
No further action required

F

INFORMED CONSENT FOR LEAD TESTING

CHILD'S NAME	BIRTHDATE	MEDICAID #	RESULTS

A small amount of blood will be collected for the analysis of lead. The sample will be collected by a fingerstick from a finger or toe or by venipuncture from the arm. The risks of blood collection may include: discomfort/bruising, bleeding or swelling at the puncture site.

The results will remain confidential to the client's family, WIC, Butte Silver Bow Lead Program, and the client's physician. If the results are provided to other groups, all client identifiers (names and numbers, etc.) will be removed from the data.

I agree to hold Butte Silver Bow Health Department harmless and free from liability from any medical claim that may arise from authorized release of information or injury during the sample collection.

RELEASE OF INFORMATION FOR LEAD

Permission to send to:

Name of Person/Facility _____

Address: _____

City, State, Zip _____

III. The information to be released is from my WIC Chart and includes: (Mark as appropriate)

☐ The entire record

☐ Only information related to (specify)_____

☐ Only the period or events from_____

IV. I understand that I may revoke this authorization in writing at any time, except to the extent that action has been taken in reliance on the authorization. If this authorization has not been revoked, it will terminate one year from the date of my signature.

Signature of Participant: _____ _____ (Date)

Signature of Parent/Guardian or Authorized Representative (if necessary) _____ _____ (Date)

This information is to be released for the purpose stated above and may not be used by the recipient for any other purpose.

Standards for eligibility and participation in the WIC Program are the same for everyone, regardless of race, color, national origin, age, disability, or sex. If you feel you have been discriminated against, write immediately to the Secretary of Agriculture, Washington D.C. 20250, and/or the Office of Civil Rights. USDA – Food and Consumer Services. 1244 Speer Boulevard, Room 903. Denver, CO 80204.

Participant Consent

I have read the description of the exposure investigation. All of my questions have been answered to my satisfaction. I voluntarily request that I/my child be included in this investigation.

Participant Name (print): _____

Signature: _____

Address: _____

_____

Phone: _____ Age:_____ Date:_____

Parent/Guardian's Signature (Print name):_____

Witness (print): _____

Witness (signature): _____

My test results may be shared with other Federal, state, or local public health or environmental agencies so that they can conduct follow-up activities if necessary.

Signature: _____

Thank you for your cooperation

INDIVIDUAL QUESTIONNAIRE FOR URINE COLLECTION

Name of person giving urine sample:_____

Date and time urine sample given (urine voided):_____

Name of Person filling out the questionnaire (Parents/guardians to fill this out for the child who has passed the urine sample):_____

Please answer the following questions for you/your child, for the 3 day period just before passing the urine sample. This will help us interpret the results of your/your child's urine test better.

Qs.1 Did you/your child, eat or drink any of the following foods during the three days before giving urine for testing? (circle the correct answers)

seafood (fish, shrimp, etc.)	YES	NO
rice	YES	NO
Red Wine	YES	NO

Qs.2 These questions are about your child whose urine is being tested:

In the last three days,

a) Did your child eat dirt? YES NO

b) Did your child play in the dirt outside the house? YES NO

Qs.3 In the last 3 days how many hours did you/your child spend outside your home?

Hours_____ Date_____

Thank you.

PRIORITIZED CRITERIA, YARD REMOVAL PROCEDURES AND ABATEMENT DEFINITIONS

Prioritized Criteria for Yard and House Abatement (highest to lowest):

On March 2, 1993 the Lead Levels Advisory Committee recommended the implementation of a long term Lead Poisoning Prevention and Abatement Program in Butte-Silver Bow County. The following criteria was prepared by the Committee and presented to the Butte-Silver Bow Health Board.

1. Homes occupied by one or more children with a blood lead (PbB) equal to or greater than 10 μg/dL {which is considered to be an elevated blood lead (EBL)}.
2. Secondary residence or subsequent homes occupied by children with an EBL.
3. Homes previously occupied by children with an EBL, even if no child is currently living at the address.
4. Homes with very young children (e.g. <1 year) and PbB of 5-9 μg/dL.
5. Homes with no children but with one or more sources (paint, water, soil, house dust) with a lead concentration which exceeds the 95th percentile as determined by the Butte-Silver Bow Environmental Health Lead Study (1990). Particular attention should be given to homes built prior to 1940.
6. Designated playgrounds maintained by Butte-Silver Bow.
7. Informal play areas frequented by children with or without property owners permission.

General Yard Abatement Procedures:

Each yard removal was conducted according to the following procedures:

- Soil Sampling Request form signed by the landowner.
- Soil sampling of yards according to approved sampling protocol.
- Back-fill and top soil sampling.
- Yard Specific Removal Plans developed for each removal.
- Access Agreement signed by landowner.
- Yard Specific Removal Plans submitted to EPA for approval.
- EPA, BSB and ARCO site visit.
- Finalize Yard Specific Removal Plan.
- BSB and contractor site visit.
- Photographic and/or video record on each yard to document pre- and post-removal condition of property.
- Yard excavated to a depth of 18 inches and contaminated soil hauled to repository. Yard back-filled as follows:

  Geotextile fabric
  Clean soil—14 inches (approx.)
  Topsoil—2-3 inches
  Sod installed

General House Abatement Procedures:

Replacement Replace old lead based painted components with new.

Enclose Mechanically attached solid surface sealed to prevent dust escape.

Encapsulate Application of a liquid material that hardens to the lead painted surface and prevents dust escape. Usually with a thickness of 10 millimeters.

Paint Stabilization Occurs when painted surface is capable of holding new paint. Area is wetted with a spray bottle, scraped, primed and re-painted.

General Attic Dust Abatement Procedures:

Each attic abatement was conducted according to the following procedures:

- Sampling Request form signed by the landowner.
- Dust sampling of attics according to approved sampling protocol.
- Dust Specific Removal Plans developed for each removal.
- Access Agreement signed by landowner.
- Dust Specific Removal Plans submitted to EPA for approval.
- EPA, BSB and ARCO site visit.
- Finalize Dust Specific Removal Plan.
- BSB and contractor site visit.
- Photographic and/or video record on each attic to document pre- and post-removal condition of property.
- Containment is set up at the entrance/exit to each attic, insulation and debris is hand bagged when necessary, remaining debris and contaminated dust is removed with a HEPA equipped vacuum system, all materials removed are double bagged and disposed of at the repository.

H

RESIDENTIAL ACCESS AGREEMENT

_____ ("Owner") and Butte-Silver Bow County ("BSB") enter into this Residential Access Agreement ("Agreement") this _____ day of _____.

RECITALS

A. BSB has received funding to conduct certain sampling and abatement activities on certain residential properties located in Butte-Silver Bow County.

B. BSB desires to conduct sampling and abatement activities on certain residential property owned by Owner on the terms and conditions set forth herein.

C. Owner is willing to permit BSB to conduct certain sampling and abatement activities on residential property owned by Owner on the terms and conditions set forth herein.

THEREFORE, in consideration of the mutual covenants and promises contained in this Agreement, Owner and BSB agrees as follows:

1. GRANT OF ACCESS. Owner hereby grants to BSB, EPA (Environmental Protection Agency), MDEQ (Montana Department of Environmental Quality), ATLANTIC RICHFIELD, and their representatives the right to enter Owner's real property, as further described in Exhibit 1 hereto (the "Property") for the purpose of conducting the sampling and abatement activities described in paragraph 2 below. Owner warrants and represents to BSB that, to the best of the Owner's knowledge, Owner possesses ownership in the Property, except as follows:

_____

_____

and has the right to grant access to BSB to conduct the described activities.

2. WORK TO BE PERFORMED. Owner agrees to permit BSB and their respective representatives to conduct the sampling and abatement activities described in the Work Plan attached hereto as Exhibit 2 (the "Work") on the Owner's Property. The Work will consist of the following phases:

a.) Initial assessment phase consisting of site and structure analysis, development of abatement strategy, and materials estimate.

b.) Activities related to the excavation and removal of soils, monitoring and sampling of environmental media and conducting other information gathering activities such as field investigation, data collection, soil boring, testing and periodic monitoring.

c.) Work phase consisting of the actual residential abatement process.

d.) Follow up sampling procedure to take place approximately one year after completion of the abatement project.

BSB will make every reasonable effort to minimize any inconvenience to Owner during the performance of the Work on the Property, and will work closely with Owner to address any concerns Owner may have about the Work. Unless otherwise agreed in writing by Owner and BSB, or required by EPA, all tools, equipment or other property taken or placed upon the Property by or at the direction of BSB shall remain the property of BSB and may be removed by BSB at any time within a reasonable period after completion of the Work.

3. FUTURE ACCESS. Owner hereby grants access to the Property at all reasonable times to BSB, EPA, MDEQ, ATLANTIC RICHFIELD and their representatives for the purpose of: (a) monitoring Property Owner's compliance with the Covenants set forth in Exhibit 4, (b) conducting any investigation, monitoring, sampling, or other activities with respect to the Property, or (c) undertaking any action that is deemed necessary or advisable with respect to the Property to address environmental conditions thereon.

4. RECORDATION. Owner agrees to permit BSB to create a photographic/video record to document the initial condition of specific areas of the Property, as well as, the post-Work condition of the Property. Copies will be made available for review upon owner's request.

5. INDEMINIFICATION OF OWNER. BSB agrees to indemnify and hold harmless Owner from any and all actions, claims, demands, liabilities, losses, damages or expenses, including damage to property or for loss of use of property, which may be imposed on or incurred by Owner as a result of BSB's negligent, reckless, or willful acts or omissions while on the Property, except to the extent that such actions, claims, demands, liabilities, losses, damages or expenses result from the acts or omissions of the Owner. Owner and BSB agree that the Work described in Exhibit 2 shall not give rise to a claim for indemnification under this provision.

6. COVENANT NOT TO SUE AND RELEASE. Owner covenants not to sue BSB and Atlantic Richfield Company ("ATLANTIC RICHFIELD") for, and releases BSB and ATLANTIC RICHFIELD from any liability for actions, claims, demands, losses, damages, expenses, injunctive relief, indemnification or any other relief or liabilities, including, but not limited to, damages to property or for loss of use of property, arising out of or related to Work described in Exhibit 2, provided that the Work is conducted in accordance with Exhibit 2.

7. COVENANTS, NOTICE OF COVENANTS AND NOTICE OF COMPLETION. Owner hereby agrees to abide by and impose the Covenants set forth in Exhibit 4. Contemporaneous with the execution of this Agreement, in order to provide notice of the Covenants and the Work performed, Owner also hereby agrees to execute the Notice of Covenants attached hereto as Exhibit 5. It is understood and agreed that the Work Plan attached hereto as Exhibit 2, together with any written modifications thereto, that are agreed upon by BSB and Owner following the execution of the Agreement, shall be attached to and made part of the Notice of Covenants. It is further understood and agreed that BSB shall promptly record the executed Notice of Covenants in the Butte-Silver bow County real property records following the completion of the Work phase of the residential abatement process.

8. SALE, LEASE, OR OTHER CONVEYANCE OF PROPERTY. Owner agrees that if he/she sells, leases, or otherwise conveys any portion of his/her right, title, or interest in any portion of the Property that all the Covenants set forth in Exhibit 4 shall be included in or attached to the deed, lease, or other conveyance document. The Owner agrees that such Covenants shall be binding on all subsequent owners. If, for any reason, the Owner fails to either abide by the Covenants or include the Covenants in a subsequent sale, lease, or other conveyance of all or any part of the Property, then the indemnification provisions of this Agreement shall be void and of no further force and effect.

9. NOTICE. BSB shall provide Owner with either written or oral notice seven (7) days prior to first commencing the work described in Exhibit 2 on the Property.

10. DELIVERY OF NOTICE. All notices by or pertaining this Agreement shall be in writing and shall be sent to Owner and BSB at the respective addresses below. Either Owner or BSB may designate a different address for receipt of notice by providing written notice of such change to the other. All notices shall be sent by certified mail, return receipt requested to:

BSB: Eric Hassler
Butte-Silver Bow County
Residential Metals Program
25 West Front Street, Butte, Montana 59701

OWNER: _____

_____

_____

_____

11. RESTORATION OF PROPERTY. Upon completion of the Work described in Exhibit 2, BSB will, with the exception of the necessary abatement improvements, return the Property to the condition it was in at the time BSB first entered the Property under this Agreement to the extent practicable, provided that such restoration is not inconsistent with the Work described in Exhibit 2.

12. SOIL SAMPLES. BSB agrees to use its' best efforts to provide, upon Owner's prior written request, a portion of any sample taken on Owner's Property. A "SAMPLE REQUEST" form, attached as Exhibit 3 for Owner's use to request a sample portion has been provided to Owner by BSB.

13. MISCELLANEOUS

a. Effect of Agreement. Except as otherwise expressly provided in this Agreement, nothing in this Agreement is intended or shall be construed as a waiver of any right, claim, or defense by any party to this Agreement against the other or against any other person or entity under CERCLA or any other law, or as creating any right or benefit in favor of any person or entity. This Agreement and the rights and obligations created hereby shall be binding upon and inure to the benefit of Owner and BSB and their respective assigns and successors in interest.

b. Negation of Agency Relationship. The Agreement shall not be construed to create, either expressly or by implication the relationship of agency or partnership between Owner and BSB. Neither Owner nor BSB is authorized to act on behalf of the other in any manner related to the subject matter of this Agreement, and neither shall be liable for acts, errors, or omissions of the other entered into, committed, or performed with respect to or in the performance of this Agreement.

c. Termination. Except with respect to paragraph three (3) on page one, this Agreement will terminate following BSB's written notification that work described in Exhibit 2 is complete.

d. Governing Law. This Agreement shall be governed by and construed in accordance with the laws of the State of Montana and will be in the State of Montana.

e. Construction. Whenever possible, each provision hereof will be interpreted in such a manor as to be effective and valid under applicable law, but if any provision hereof is held to be prohibited by or invalid under applicable law, such provision will be ineffective only to the extent of such prohibition or such invalidity, without invalidating the remainder of such provision or the remaining provisions hereof.

f. Entire Agreement. This Agree embodies the entire agreement of Owner and BSB with respect to the subject matter hereof, and no prior oral or written representation shall serve to modify or amend this Agreement. This Agreement may not be modified, except by written agreement signed and duly authorized by Owner and BSB.

IN WITNESS WHREOF, Owner and BSB have executed this Agreement effective as of the first date written above.

OWNER:

_____ Date_____

Title: Owner

BUTTE-SILVER BOW:

_____ Date_____

Title: Environmental Health Specialist

EXHIBIT 1 TO RESIDENTIAL ACCESS AGREEMENT

DESCRIPTION OF PROPERTY

That certain real property as more fully described in the attached deed dated

_____.

Recorded at Roll _____, Card _____ in the records of Silver Bow County, Montana.

EXHIBIT 2 TO RESIDENTIAL ACCESS AGREEMENT

WORK PLAN

EXHIBIT 3 TO RESIDENTIAL ACCESS AGREEMENT

SAMPLE REQUEST

I, the undersigned, am the owner, his/her legal representative, or otherwise control the Property described herein. I have granted access to BSB and their representatives, to enter the Property and to take samples of environmental media from the Property.

I hereby request BSB provide to me a report of the results of that sampling.

Signature of person making request (if made on behalf of another person or company, please identify that party also):

_____ Date_____

Signature

Print Name: _____

The following is the address at which the requesting party may be contacted and/or the sample portion delivered:

_____

_____

_____

Phone_____

EXHIBIT 4 TO RESIDENTIAL ACCESS AGREEMENT

COVENANTS

A. CREATION OF CONVENANTS. The following covenants shall burden the Property (described as Exhibit A) and are intended to be covenants of the Property Owner and the Property Owner's successors in interest, assigns, and transferees:

1. No Mining. There shall be no exploration for or mining, milling, processing, drilling, or any other method of development and/or production of any veins, loads, or mineral deposits (including, without limitation, hard rock minerals, sand, gravel, clay or other similar naturally occurring substances) on the Property. All other uses of the Property shall be permitted in accordance with and in a manner consistent with the requirements of applicable laws.

2. Future Development. The Property Owner shall secure written approval and requisite permits from BSB prior to allowing any development of any kind on the Property, including, without limitation, ground water well drilling or any action that will alter, disturb or otherwise interfere with the Work (described in Exhibit B) performed on the Property. BSB shall approve the proposed development if the Property Owner provides acceptable assurances that the proposed development will be undertaken in accordance with the requirements of all applicable laws including, without limitation, the requirements of the Butte-Silver Bow Reclaimed Areas Guidebook and any applicable ground water control area.

3. Maintenance. In order to protect and preserve the Work performed on the Property, the Property Owner will keep the Property in good repair, normal wear and tear expected, and will notify BSB of any problems that may arise with the Work. Owner further agrees to provide access to the Property at reasonable times in the future to verify compliance with this Covenant.

4. Sale, Lease, or Other Conveyance. The Property Owner will disclose the nature of the Work performed on the Property and the terms of these Covenants to any future purchaser, lessee or other occupant of the Property. If the Property Owner sells, leases, or otherwise conveys any portion of his/her right, title or interest in any portion of the Property, the Covenants set forth herein shall be included in or attached to the deed, lease or other conveyance documents. The Property Owner shall also notify BSB of any sale, lease, or other conveyance of the Property.

5. Obligation to Comply with Residential Access Agreement. The terms and conditions of that certain Residential Access Agreement dated _____ shall be binding upon the Property Owners, successors, and assigns and all future purchasers, lessees, or other occupants of the Property.

B. BENEFITED PROPERTIES - BENEFITS. The Benefited Properties shall include all properties adjacent to or contiguous with the Property. The benefits from the Covenants include: (i) the reduction or minimization of potential risk associated with environmental conditions on, or, under, near, or associated with the Property, and (ii) the maintenance, use, and potential development of the Property in such a manner to allow economic benefits to accrue to the Benefited Properties.

C. ENFORCEMENT RIGHTS - COVENANTS. BSB, EPA, MDEQ, and each of the Owners (as the same may appear from time to time) of the Benefited Properties shall have the right, but not the obligation, to enforce the Covenants. Each Covenant shall be enforceable, in perpetuity, to the fullest extent permitted by Montana law. All remedies available, at law, or in equity, shall be available for the enforcement of the Covenants. The selection of remedies shall be within the sole discretion of the party entitled to enforce the Covenants. The prevailing party in any action to enforce the Covenants shall be entitled to reasonable attorney's fees and costs incurred in such action.

EXHIBIT 5 TO RESIDENTIAL ACCESS AGREEMENT

NOTICE OF COVENANTS

The following property owner(s) hereby agree to have the "Covenants" attached and denoted as Exhibit 'A' imposed upon their property and to run with the land.

Legal description: _____

IN WITNESS WHEREOF, _____ has executed this notice at Butte, Montana on the _____ day of _____.

_____
NAME OF PROPERTY OWNER (S)

STATE OF MONTANA)
: ss
County of Butte-Silver Bow)

On this _____ day of _____, 200____, before me,

_____, a Notary Public for the State of Montana,
Notary

personally appeared _____, and is personally known to me or
Property Owner (s)

thru government-issued identification, the person(s) described in and whose name(s) is/are subscribed to the within instrument, and acknowledged to me that he/she/they executed the same.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my notarial seal the day and year in this certificate above written.

_____
SIGNATURE OF NOTARY PUBLIC

SEAL

_____
PRINT NAME OF NOTARY PUBLIC

FOR THE STATE OF _____

RESIDING AT _____

MY COMMISSION EXPIRES _____

EXHIBIT 6 TO RESIDENTIAL ACCESS AGREEMENT

STATEMENT OF COMPLETION

Owner hereby acknowledges, by signing this Statement of Completion, that work performed by BSB Residential Metals Program was conducted as stated in the Work Plan (Exhibit 2) and completed to the satisfaction of the Owner.

We, the undersigned, agree to the terms of this agreement.

SIGNED: _____
Owner

DATE: _____

SIGNED: _____
BSB Representative

DATE: _____