

Montana Tech Library

## Digital Commons @ Montana Tech

---

Silver Bow Creek/Butte Area Superfund Site

Montana Superfund

---

Fall 11-30-2023

### Medical Monitoring Working Group Meeting Minutes

Mike McAnulty

Follow this and additional works at: [https://digitalcommons.mtech.edu/superfund\\_silverbowbutte](https://digitalcommons.mtech.edu/superfund_silverbowbutte)



Part of the [Environmental Health and Protection Commons](#), [Environmental Indicators and Impact Assessment Commons](#), and the [Environmental Monitoring Commons](#)

---

# Atlantic Richfield Company

## Mike Mc Anulty

Liability Manager

317 Anaconda Road

Butte MT 59701

Direct (406) 782-9964

Fax (406) 782-9980

November 30, 2023

Nikia Greene  
Remedial Project Manager  
US EPA – Montana Office  
Baucus Federal Building  
10 West 15th Street, Suite 3200  
Helena, Montana 59626

Erin Agee  
Senior Assistant Regional Counsel  
US EPA Region 8 Office of Regional Counsel  
CERCLA Enforcement Section  
1595 Wynkoop Street  
Denver, CO 80202  
Mail Code: 8ORC-C

Daryl Reed  
DEQ Project Officer  
P.O. Box 200901  
Helena, Montana 59620-0901

Jonathan Morgan, Esq.  
DEQ, Legal Counsel  
P.O. Box 200901  
Helena, Montana 59620-0901

**RE: Medical Monitoring Working Group Meeting Minutes**

Agency Representatives:

I am writing to you on behalf of Atlantic Richfield Company and Butte-Silver Bow to submit the minutes from the Medical Monitoring Working Group meeting held on October 24, 2023. The minutes document the agenda and discussion highlights from this meeting which focused on planning for the Phase 3 health study. The meeting minutes may be downloaded at the following link:

<https://pioneertechnicalservices.sharepoint.com/:f/s/submitted/Em8GogbKmyJJpFEmlqOHbAABva sdXHa10rTubqNlbse16A>.

If you have any questions or comments, please call me at (907) 355-3914.

Sincerely,



---

Mike Mc Anulty  
Liability Manager  
Remediation Management Services Company  
An affiliate of **Atlantic Richfield Company**



---

Eric Hassler, Director  
Department of Reclamation  
and Environmental Services  
Butte-Silver Bow



A bp affiliated company

Confidential

# Atlantic Richfield Company

## Mike Mc Anulty

Liability Manager

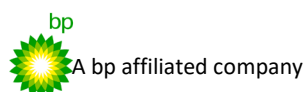
317 Anaconda Road

Butte MT 59701

Direct (406) 782-9964

Fax (406) 782-9980

Cc: Chris Greco / Atlantic Richfield – email  
Josh Bryson / Atlantic Richfield – email  
Loren Burmeister / Atlantic Richfield – email  
Dave Griffis / Atlantic Richfield – email  
Jean Martin / Atlantic Richfield – email  
Irene Montero / Atlantic Richfield – email  
Tim Hilmo / Atlantic Richfield – email  
David A. Gratson / Environmental Standards – email  
Carolina Balliew / EPA – email  
Mave Gasaway / DGS – email  
Adam Cohen / DGS – email  
Brienne McClafferty / Holland & Hart – email  
David Shanight / CDM – email  
Curt Coover / CDM – email  
James Freeman / DOJ – email  
Amy Steinmetz / DEQ – email  
Dave Bowers / DEQ – email  
Katie Garcin-Forba / DEQ – email  
Jim Ford / NRDP – email  
Pat Cunneen / NRDP – email  
Katherine Hausrath / NRDP – email  
Doug Martin / NRDP – email  
Ted Duaine / MBMG – email  
Gary Icopini / MBMG – email  
Becky Summerville / MR – email  
John DeJong / UP – email  
Robert Bylsma / UP – email  
John Gilmour / Kelley Drye – email  
Leo Berry / BNSF – email  
Robert Lowry / BNSF – email  
Brooke Kuhl / BNSF – email  
Lauren Knickrehm / BNSF – email  
Doug Brannan / Kennedy Jenks – email  
Matthew Mavrinac / RARUS – email  
Harrison Roughton / RARUS – email  
Brad Gordon / RARUS – email  
Mark Neary / BSB – email  
Eric Hassler / BSB – email  
Julia Crain / BSB – email  
Brandon Warner / BSB – email  
Abigail Peltomaa / BSB – email  
Eileen Joyce / BSB – email



Confidential

# Atlantic Richfield Company

## Mike Mc Anulty

Liability Manager

317 Anaconda Road

Butte MT 59701

Direct (406) 782-9964

Fax (406) 782-9980

Sean Peterson/BSB – email  
Josh Vincent / WET – email  
Scott Bradshaw / W&C – email  
Emily Stoick / W&C – email  
Pat Sampson / Pioneer – email  
Andy Dare / Pioneer – email  
Karen Helfrich / Pioneer – email  
Randa Colling / Pioneer – email  
Rich Keeland / Aspect – email  
Andy White / Aspect – email  
Ian Magruder/ CTEC – email  
Joe Griffin / CTEC – email  
CTEC of Butte – email  
Scott Juskiewicz / Montana Tech – email

File: MiningSharePoint@bp.com – email  
BPSOU SharePoint – upload

**Meeting:** Butte Medical Monitoring Working Group Meeting

**Date/Time:** October 24, 3:30 pm Mountain

**Location:** Atlantic Richfield's Butte office (the Kelley) and Virtual (Teams)

**Attendees:**

- **USEPA** (via Teams) - Dr. Charlie Partridge, Nikia Greene
- **USEPA Technical Consultant** (via Teams) – Lynn Woodbury (CDM Smith)
- **BSBHD** – Kayla Harvey (Environmental Nurse) (via Teams); Eric Hassler, Brandon Warner, Abby Peltomaa (RMAP)
- **BSB Environmental Database Consultant** – David Dobrinen (Woodard & Curran)
- **MDEQ** (via Teams) – Daryl Reed
- **AR Technical Consultants** – Dr. Rosalind Schoof, Amanda Bailey (Ramboll)
- **MDPHHS** – Dawn Nelson (State Toxicologist) (via Teams), Abbie Phillip
- **ATSDR** (via Teams) – Dr. Michelle Zeager (Office of Community Health Hazard Assessment)
- **BSB Board of Health** – Dr. Seth Cornell
- **CTEC Representatives** – Dr. Bill Macgregor, Joe Griffin

**Minutes drafted by:** Amanda Bailey (Ramboll)

**Agenda**

- Introductions
- Updates Since Last Meeting
  - WIC and Occupational Monitoring (BSBHD)
- MDPHHS Update – ATSDR community meeting on arsenic concerns
- Summary of EBLL case evaluations – 2003 - present
- Phase 3 Study Plan
  - Environmental Data – soil lead and arsenic heat maps and process / interpretation overview
  - Blood Lead Data - treatment of multiple results
  - Draft Study Plan – discussion/comments
- Other business, next steps, plan for next meeting

**Introductions**

- Welcome to new Working Group member, Dr. Michelle Zeager (ATSDR Office of Community Health Hazard Assessment)
- Not discussed but note also that Julia Crain has moved to a new position within BSB and thus will no longer participate in the Working Group

**WIC and Occupational Monitoring Update**

- Due to staffing limitations, WIC has mainly been conducting phone calls to notify patients due for blood lead testing; plan to resume in-person soon
- In 2023, 156 capillary tests have been completed for children aged ≤5 years
  - 33 of the 156 capillary test results have been ≥3.5 µg/dL, ranging from 3.5 to 12.9 µg/dL

- About 15 venous samples have been collected from children aged  $\leq 5$  years or their siblings (recent issues running reports have complicated data summaries)
  - Most venous samples were collected in response to an elevated capillary test result
  - Some were collected in place of a capillary sample; if a child's sibling had an elevated blood lead level, then a venous sample was collected straightaway instead of first doing a capillary screening
  - Number confirmed elevated out of the 15 venous results will be shared when current issues running reports are resolved
- BSBHD will follow up with RMAP, Ramboll staff as needed after meeting tomorrow (10/25) to discuss data privacy protection

#### **ATSDR community meeting on arsenic concerns**

- ATSDR is preparing a formal summary from the Sept. 26 community meeting on arsenic concerns, which will undergo a formal review process
  - Review expected to be complete by mid-November at the earliest
  - Until that time, no details can be shared

#### **Overview and Summary of EBLL Case Evaluations**

- A questionnaire is completed by the Environmental Health Nurse, followed by a separate RMAP questionnaire, to gather information about behaviors and potential exposure sources
- Home assessments include:
  - Soil and attic dust sampling
  - Testing for lead-based paint (LBP)
  - Indoor dust is always sampled during assessments in response to an elevated blood lead level (EBLL), but cannot always be sampled due to volume/sampling method limitations
  - If initial assessment doesn't reveal a potential lead exposure source, then other potential sources (e.g., toys, dishes, etc.) are investigated
  - Remediation of identified sources as guided by program protocols (more details below)
- No follow-up is done after the assessment/remediation, but follow-up blood lead testing is completed in response to an EBLL
- A pathway must exist in order for attic remediation to be completed, even in cases of EBLLs
  - However, a pathway is not necessarily indicative of potential child (or adult) exposure
  - Pathways can include a planned remodel, use of an attic for storage accessed only once a year, a leaking roof or cracked ceiling, etc.
  - Indoor dust data are also not available for every home where an attic cleanup is done, so often can't be used to assess exposure potential from attic dust
  - Attic pathways are now more easily identified, tracked, and understood due to new sampling form, photo documentation, etc.
- A pathway does not need to exist for an attic to be sampled – this is always done
  - Sampling is done up front to avoid revisits and to be protective of any remediation that is completed
- LBP remediation is also completed as necessary to protect a remediated yard
- The program is currently operating under the latest agency-approved version of the Medical Monitoring Program Plan (MMPP), dated 2016

- MMPP needs review and updating for consistency with the RMAP Plan and Quality Assurance Project Plan (QAPP) documents currently undergoing agency review
- EPA anticipates providing comments on the RMAP Plan and QAPP by the end of next week
- Once those documents are finalized, the MMPP will be updated and will then be provided to interested Working Group members
- Ramboll extracted and reviewed Biomonitoring and Educational/Community Outreach sections of annual Construction Completion Reports (CCRs) for 2003 – 2019
  - Dates reviewed correspond to health study periods, beginning with Phase 1; 2019 was the last year before venous confirmation sampling and other in-person services were suspended due to COVID and 2022 report is not yet final
- CCRs summarized separately based on the blood lead reference value used to identify EBLLs
  - 2003 - 2012: 10 µg/dL (reported as >9.9 µg/dL in CCRs)
  - 2013 to 2019: 5 µg/dL
- CCRs identify potential lead exposure sources found during confirmed EBLL case evaluations
  - Important to note that the presence of a condition, such as lead in yard soil above the action level, does not necessarily correspond to the cause of an EBLL
  - Often more than one condition identified at the home of a child with an EBLL
  - Conversely, there was also often no potential exposure source identified at the home of a child with an EBLL
- LBP identified most frequently, both alone and in combination with other sources
- Attic dust (lead > action level) next most frequent, but pathway not necessarily present (unknown)
- Soil and indoor dust with lead > action level, and additional sources (batteries, silverware, ammunition, linoleum flooring), less frequently identified
- Dr. Cornell noted that with so few confirmed EBLLs, caution should be used when extrapolating information about potential exposure sources to the broader population
  - Increased venous confirmation sampling should improve reliability
- Potential interpretation issues:
  - LBP addressed differently depending on condition; condition not noted in summaries but can be inferred based on treatment
  - Attic dust exposure pathways not noted in summaries, but can be inferred based on treatment because cleanup is only done if a pathway exists
  - Some EBLL cases not tracked (e.g., assessment scheduled for next calendar year)
- Additional information not applicable to CCRs can be shared with Working Group to inform health study report
  - BSB spreadsheet may be used to identify how many EBLL case evaluations correspond to health study area

### **Draft Phase 3 Health Study Plan**

#### **Environmental Data – Heat Maps**

- Overview
  - Mean concentrations in surface soil (0 to 2 inches, sometimes 0 to 6 inches) at residential properties and vacant lots

- June 1995 map represents pre-remediation status (remediation activities started in July 1995), assuming that all pre-remediation soil samples collected up to the present represent soil in place in June 1995
- October 2010, November 2017, and August 2023 maps represent post-remediation status as of the end of remediation activities completed during the Phase 1, Phase 2, and Phase 3 (to date) health study periods, respectively
- Post-remediation status shows mean concentrations for each property, calculated using a concentration of 50 mg/kg to replace lead concentrations above (or within 5% of) 1,200 mg/kg, or arsenic concentrations above (or within 5% of) 250 mg/kg, removed by remediation activities completed prior to the figure date
- Replacement soil criteria for lead and arsenic are 100 mg/kg and 97 mg/kg, respectively; 50 mg/kg used as replacement concentration because it is less than these criteria, and based on some data for cover soils
- Residential surface soil heat maps reflect RMAP work only
- Updates to heat maps presented at this meeting:
  - Changes to scale and color scheme to make different concentration categories show up better
  - Video versions showing changes by year from 1995 – 2023 (will be shared separately from slides due to file size)
  - Arsenic maps added (previously presented only for lead)
  - Accompanied by bar graphs showing average concentrations by neighborhood and time period; note average lead concentrations remain below action level, arsenic concentrations well below action level, even prior to any remediation
- Mean concentrations are by property as a whole, not by quadrant, but concentration replacement is by quadrant consistent with soil replacement when an action level is exceeded
- Currently, only surface soil concentrations above or within 5% of an action level trigger concentration replacement (e.g., Pb >1,140 mg/kg replaced with 50 mg/kg post-remediation), but if an action level is exceeded in a deeper sample, soil is removed from all sampled depths and replaced
  - When sampling requirement changed from surface-only to all depths, rate of action level exceedances increased from ~25% to ~42%
  - This results in overestimation of average surface soil concentrations because additional remediation triggered by deeper sample results is not accounted for
  - David is working on a way to account for these additional cleanups in surface soil heat maps
- Most yard cleanups triggered by lead, <1% of arsenic residential soil concentrations have been above (or within 5% of) the action level, but arsenic concentration changes may also result from lead-based cleanups
  - This is accounted for on arsenic heat maps by replacing arsenic concentrations with 50 mg/kg if the surface soil sample had either an arsenic concentration >237.5 mg/kg or a lead concentration >1,140 mg/kg
- Studies showing importance of neighborhood exposures drove recent sampling focus on schools and parks
  - Cleanup efforts benefit community members beyond residents of a remediated property
  - Heat maps could help focus cleanup efforts on communities where concentrations are higher on average



- Heat maps with overlay of housing data and other indices of EBLL drivers could also be helpful to inform community outreach efforts, focusing in areas with more risk factors
- Area with highest concentrations on arsenic heat maps (neighborhoods 1 and 4) corresponds to historical railroad corridor where herbicides are thought to be the primary source of arsenic
  - Railroad corridor and adjacent homes were addressed as a time-critical removal area (TCRA); most TCRA's were completed by around 1998, with others (including in Walkerville) done later
- Discussed potential heat maps for attic dust
  - Pathway information could be included going forward, but is only available for past assessments via cleanup records
  - Dr. Cornell suggested that pathways may occur in the future even if not currently present
  - Arsenic is prevalent throughout the study area, driven more by date than by location
  - Attic dust heat maps could be helpful for public education, date-driven changes important to show
  - Arsenic and lead are typically linked in attic dust, rarely just arsenic is elevated; indicates arsenic not being missed due to RMAP focus on lead

#### Live Demonstration of Heat Map Construction and Interpretation

- First run report of all soil data and remediation dates for each residential/vacant property
- Each point on a map represents a unique set of coordinates – all data associated with those coordinates are used
- After remediation date, lead concentrations >1,140 mg/kg (above or within 5% of 1,200 mg/kg action level) replaced with 50 mg/kg
  - Soil cleanup is done by quadrant, so only concentrations in the quadrant(s) cleaned up are replaced after the cleanup date
- Average concentrations across each property as of a given date are then calculated by the program as the map for (up to) that date is created
- Kriging is a modeling technique used to interpolate between areas with data (i.e., fill in data gaps) to create a spatially continuous heat map
  - For these maps, the model fit is checked and compared over time to get a good year-to-year comparison
- For those able to stay later, reviewed data for non-residential property types (commercial, unreclaimed/insufficiently reclaimed, schools/parks), some issues, and how those affect heat maps
  - Uneven data distribution across neighborhoods, very few or no samples from one or more non-residential property types in some areas
  - Low concentrations and limited remediation needed at schools and parks affects averages shown on heat maps
  - May want to use symbols on combined heat maps to show locations and frequency of sampling from different property types
  - Commercial properties may warrant different treatment based on use (e.g., mobile home residence park versus office park)
  - Combined property type heat maps look very different from residential/vacant only maps for the same timeframes
  - Bottom line: heat map construction and details are important to understand for correct interpretation and communication to the community

- Due to limited meeting time, separate calls to discuss heat maps and use of additional data (from non-residential properties) will be scheduled for those interested, to progress specific issues prior to next quarterly meeting
  - Other topics may also be discussed on separate calls including handling of multiple blood lead results (see below) and EBLR summary reports/data transmittal

#### Treatment of Multiple Blood Lead Test Results

- Need to define process for selection of a single result to include in trend analyses
- CDC guidelines provide a starting point but are limited to multiple results collected the same day
- Additional recommendations outlined in draft Phase 3 Health Study Plan circulated to Working Group members October 12, 2023, including placeholders for timeframes to be informed by additional research on blood lead clearance rates
- Feedback requested; separate call to discuss this topic will be scheduled for those interested

#### Draft Phase 3 Study Plan Comments

- Feedback requested by November 30, 2023; updated draft to be circulated before Q1 2024 Working Group meeting

#### **Other Business**

- Proposed February 27, 2024 for next (Q1 2024) Working Group meeting; alternative options include February 6 or March 5
- Please let Amanda or Roz know if February 27 does NOT work for you