Beryllium Health and Safety Updates for 2019

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DOE Industrial Hygiene Meeting, Minneapolis, MN
May 20, 2019
SRNL-MS-2019-00101
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<table>
<thead>
<tr>
<th>Topic</th>
<th>Update/New</th>
</tr>
</thead>
<tbody>
<tr>
<td>NNSA Safety Advisory</td>
<td>Update</td>
</tr>
<tr>
<td>ACGIH® TLV-SL</td>
<td>Update</td>
</tr>
<tr>
<td>BHSC Practitioner’s Guide</td>
<td>Update</td>
</tr>
<tr>
<td>Accreditation of Field-Portable Beryllium Instrumentation</td>
<td>NEW</td>
</tr>
<tr>
<td>ASTM Updates (metal ratios standard, fall conference)</td>
<td>NEW</td>
</tr>
<tr>
<td>Real-Time Monitoring</td>
<td>Update</td>
</tr>
<tr>
<td>European Union Be Regulatory Proposal</td>
<td>Update</td>
</tr>
</tbody>
</table>
NNSA Safety Advisory - Background

- Issued by NA-51 on April 10, 2018
- Concern: surface levels of Be contamination above “release criteria” (0.2 µg/100 cm²) on items being transferred, stored, or used
- Background:
  - Mar 2018: SNL/NM receives multiple components with Be contamination above 0.2 µg/100 cm²
  - Some were bagged and labeled as Be hazard and some were not
  - Seal Beach NWS also notified they may have received contaminated components
- Corrective actions taken at Pantex, SNL/NM, and LANL
- Actions recommended to improve Be contamination control:
  - Identify if they have similar sources of legacy Be contamination
  - Assure their inventory of Be locations, operations, and activities is complete and properly identified, posted, and periodically sampled
  - Assess transfer of Be-containing items and equipment (shipment, receipt, and storage)
  - Disseminate information to employees who ship, receive, and handle Be-contaminated items and equipment
• Actions taken by Pantex:
  – Hosted Navy in June 2018 to discuss the event
  – Implementing a Be sampling program at Seal Beach
  – Implemented more robust component sampling program (three levels of sampling based on risk of contamination)

• Lessons Learned at Pantex:
  – Overreliance on process knowledge
  – Inadequate extent of condition
  – Sampling based on assumed population size that varied and might not be representative

• Lessons Learned at LANL:
  – Extensive sampling revealed contamination in internal portions of some items
  – Labeling practices vary from facility to facility; vigilance is required if process knowledge indicates potential for contamination
• Lessons Learned at Sandia:
  – Contamination controls:
    • *Sample-clean-sample approach*: assume items contaminated, then clean, then cleaning verification samples
    • *Use basic contamination controls* (e.g., nitrile gloves, housekeeping) to protect workers
    • *Hardware sampling results are tracked through inventory management system*
  – Management and communication:
    • *Fully integrate ES&H within programs being supported*
    • *When a problem is identified, engage with program management immediately and communicate frequently*
    • *When multiple sites may be affected, use a single point of contact at each site to improve communications*

Updates from JOWOG presentation developed by Thorban Weaver and presented by Ken Meyer (both at Pantex)
ACGIH® TLV-SL: Update

- ACGIH® has adopted a new quantity known as Threshold Limit Value – Surface Limit (TLV-SL) in its Annual Report for 2018
  - Defined as “the concentration on workplace equipment and facility surfaces that is not likely to result in adverse effects following direct or indirect contact”
  - TLV-SL’s being proposed for two chemicals in 2018 NIC
  - Intent is to supplement airborne TLVs for those with Skin, DSEN, and RSEN notations
  - TLV-SL values have been established for:
    - Methyltetrahydrophthalic anhydride isomers (0.7 mg/100 cm²)
    - O-Phthalaldehyde (25 μg/100 cm²)
  - Beryllium has a Skin notation so one can reasonably expect a TLV-SL to be proposed for Be in the future
  - AIHA Dermal Project Team has had dialogue with ASTM Committee D22.04 (Workplace Air Quality) – more on that shortly
BHSC Practitioner’s Guide: Update

- Developed by Beryllium Health and Safety Committee (BHSC, a non-profit org.)
- Electronic version now available through Amazon.com
- Print version expected in the future
- Intended to provide guidance for international application
  - OSHA (US)
  - DOE (US)
  - European Union
- For more information, visit https://berylliumhealthandsafetycommittee.com/
Accreditation of Field-Portable Beryllium Instrumentation - NEW

• Efforts to establish either a registry program or an accreditation program go back to 2010
  – 2010 proposal: registry program similar to AAR but with affiliation to an accredited laboratory
  – Several drivers pushed toward an accreditation-based solution instead of a registry program – most notably, ISO 17025:2017

• MOU signed earlier this year between BHSC and AIHA Laboratory Accreditation Programs, LLC
  – Leverage expertise within BHSC to work with Analytical Accreditation Board to develop appropriate policy document(s) to support field portable/mobile lab entries
  – Although beryllium is the impetus, the intent is greater than just beryllium
ASTM Updates - NEW

• Metal ratios guide (based on Hanford/NNSS studies)
  – Concept: use metals in background soils, but not expected to be in facilities, to provide consistent prediction of natural beryllium
    • This can then be used to subtract natural Be found in dust within facilities from total Be as measured in that dust
  – Standard guide on how to apply this concept has been drafted and is under consideration by ASTM Subcommittee D18.01
    • Charles Davis, EnviroStat, and Scott Seydel, Hanford developed first draft
    • Mike Brisson assisting with ASTM standards process

• ASTM Fall Conference
  – Measurement of Trace Metals and Metalloids at Workplaces, October 24-25, 2019, Houston, TX
  – About 20 presentations including at least one on beryllium
Real-Time Instrumentation: Update

• Multi-year R&D project proposal for NNSA and/or AU funding
• Phase 1: Feasibility study
  – Evaluate available technologies for what is best to pursue
• Phase 2: Develop device for measuring Be in air samples
• Phase 3: Develop device for measuring Be on surfaces
  – Handheld LIBS analyzers are on the market now
  – Would need to be optimized for measuring Be at trace levels needed

(www.bruker.com – example only, not an endorsement)
European Union Be Regulation: Update (no longer a proposal)

• New directive published May 8, 2019
• Includes new requirements for Cd, Be, arsenic acid and salts, formaldehyde, 4,4'-Methylene-bis(2-chloroaniline)
• Provisions:
  – Takes effect on 20th day after publication in EU Journal
  – Member states have two years to implement into their laws/regulations
  – Air limit of 0.6 µg/m³ for seven years, then 0.2 µg/m³ after that – inhalable fraction
  – No STEL or surface limits
  – No biological guidance value (originally a BGV of 0.04 µg/L in urine was proposed)
  – Dermal and respiratory sensitization notations
Questions or Comments?

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