Practitioner’s Guide to Beryllium Hazards Management

Considering DOE, OSHA, and European Commission Paradigms

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DOE and DOE Contractors Industrial Hygiene Meeting at AIHCE 2017
June 5, 2017

SRNL-MS-2017-00110-S
Disclaimers

• The contents of this presentation do not necessarily reflect the views of DOE, OSHA, SRNL, other DOE sites, or other federal agencies. The presenter does not speak for any federal agency or entity.

• Mention of commercial products or companies does not imply endorsement or criticism.

• Nothing in this presentation is intended, nor should it be construed, to represent restraint of trade.

• I am not an industrial hygienist so I might not speak the lingo perfectly.

• IMPORTANT: The guide being described herein is still being drafted. Suggestions on what should be included are welcome.

Have No Fear...
The Industrial Hygienist Is Here
Presentation Outline

• What prompted the idea for such a guide
• Purpose and Scope
• Proposed Contents
• Status and Projected Completion Time Line
What Prompted Development of This Guide

- August 2015: OSHA published proposed beryllium rule
- Revision to 10 CFR 850 was in progress but not yet promulgated
- November 2015: BHSC Board considered need for updated guidance
  - Potential increase of interest from non-DOE parties that would fall under OSHA rule
  - Continuing need within DOE community for guidance in certain areas
  - Activity in Europe (mainly Germany) toward more stringent OEL's
  - BHSC Subcommittees tasked with developing such guidance in their areas of expertise
- December 2015: BHSC Sampling and Analysis Subcommittee began
  - Other BHSC subcommittees have become involved more recently
- Need for this guidance is being borne out by events since then
Where We Were One Year Ago (at this meeting)

- OSHA Proposed Rule was promulgated (80 FR 47566, August 7, 2015)
  - Applied to general industry but not shipyards or construction
- DOE NOPR (to revise 10 CFR 850) had just been promulgated
- No outward indication of activity in the European Union

<table>
<thead>
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<th>Agency</th>
<th>Proposed PEL (µg/m³)</th>
<th>Proposed AL (µg/m³)</th>
<th>Proposed STEL (µg/m³)</th>
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Where We Are Today

- OSHA Final Rule took effect (after delays) on May 20, 2017
  - Applies to general industry, shipyards and construction
  - Under litigation
- Final rule to revise 10 CFR 850 not yet promulgated
- EC committees have proposed 8-hour Binding OEL and (non-binding) Biological Guidance Value
  - Working Party of Chemicals (WPC) report still in draft form

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<tr>
<th>Agency</th>
<th>PEL (µg/m³)</th>
<th>AL (µg/m³)</th>
<th>STEL (µg/m³)</th>
<th>Size-Selective Fraction</th>
<th>BGV (µg/L)</th>
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<td>DOE (NOPR)</td>
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<td>N/A</td>
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<td>EC (draft WPC report)</td>
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<td>N/A</td>
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<td>Inhalable</td>
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Practitioner’s Guide – Purpose and Scope

• Provide background information on Be disease history
• Provide guidance that can be used by field practitioners
  – Industrial hygienists and allied fields
  – Intended to be DOE “useful” but not DOE “centric” – guidance can be useful under variety of regulatory schemes (e.g., OSHA, Canada, European Union)
• Provide tools to recognize and assess beryllium exposures
  – Guidance on how to select the right tool(s) for a given situation
• Guide is being written based on the current regulatory situation
  – A revised edition may be required once DOE final rule is promulgated and/or European Union proposal is finalized

(From HAMMER Training. For illustrative purposes only – not necessarily a Recommendation)
1. Introduction and Purpose
2. History of Beryllium Disease
3. Current and Proposed Control Levels
4. Conduct of Sampling
5. Conduct of Laboratory Analysis
6. Data Evaluation
7. Hierarchy of Controls
8. Release of Equipment
9. Training and Qualification
10. Risk Communication
11. Medical Surveillance
12. Recordkeeping
13. Where to go for help

(Final chapter structure may be different but is expected to contain these elements.)
• History of beryllium utilization and exposure limits (up to the 2009 ACGIH TLV®)
• Purpose, scope, goals for the guide
  – Not intended solely for practitioners within DOE, or under OSHA final rule
  – Intended to have broader applicability, including outside the U.S., while recognizing differences in various regulatory regimes
• Use of the term “berylliosis”
• Acute disease (mainly prior to the PEL of 2.0 µg/m³)
• Chronic disease

High resolution computed tomography scan
Source: Cleveland Clinic
Practitioner’s Guide – Chapter 3, Current and Proposed Control Levels

- OSHA (final rule effective 20 May 2017)
- DOE (current 10 CFR 850 and NOPR)
- European Union
- Other jurisdictions

(OELs and action levels from around the world)
• Exposure assessment strategy and risk assessment
• Steps in creating a sampling strategy
• Types of Sampling Methods
• Sampling and Analysis Plans
  – Statistical Sampling Considerations
• Data Quality Objectives
  – Qualitative versus Quantitative
• Sampling to Produce Initial Characterization Plan
• Sampling Following an Event or Excursion
• Sampling to Confirm Effectiveness of Decontamination
• Sampling for Decommissioning or Remedial Action
• Sample Planning Checklist
• Laboratory Selection
  – Includes discussion of relationship of air drawn through a filter to mass collected and laboratory detection/reporting limits

• Analytical Method Requirements

• How the Laboratory Reports Results

• Communications

• Resources for More Information

(1CP-MS installed at SRNL radiological lab)
Practitioner’s Guide – Chapters 6-10

- 6 – Data Evaluation
- 7 – Hierarchy of Controls
  - What they are and how to apply them in the beryllium world
- 8 – Release of Equipment and Other Items
- 9 – Training and Qualification
  - Beryllium awareness training; beryllium worker training; job/equipment specific training
- 10 – Risk Communication
Practitioner’s Guide – Chapters 11-13

• **11 – Medical Surveillance and Exposure Restrictions**
  – Potential Health Effects from Be Exposure
  – Informed Consent
  – Medical Surveillance for Be-Exposed Workers
  – Exposure Restriction
  – Preplacement considerations
  – Education

• **12 – Recordkeeping**

• **13 – Where to go for help**
# Current List of Contributors

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Path Forward

- We would like to complete this prior to the BHSC symposium (13-15 Nov 2017)
- Remaining tasks:
  - Complete initial drafts of remaining chapters
  - Internal writing group and SME reviews
  - Revise for editorial consistency
- When complete, will be posted on BHSC public-access web site
  - [https://bhsc.llnl.gov](https://bhsc.llnl.gov)
Questions?

Contact Information:
• My email: mike.brisson@srs.gov
• Beryllium Health and Safety Committee: https://bhsc.llnl.gov

THANKS FOR YOUR ATTENTION!