Beryllium Health & Safety Committee
Analytical Subcommittee
Meeting Minutes, October 20, 2004

Please provide any corrections to Geoff Braybrooke.

Participants (15):
Mike Brisson (Chair) – Savannah River Site
Melecita Archuleta (Vice-Chair) – Sandia National Lab (NM)
Elton Hewitt – Hanford
Geoffrey Braybrooke, US Army CHPPM
Rohit Shah – Livermore National Lab
James Johnson – Livermore National Lab
Rick Copeland – Pantex
Joseph Samuels - Hanford
Ross Breese – Atomic Weapons Establishment (UK)
Charles Davis - Envirostat/Battelle, Nevada Test Site
Dan Jensen – Bechtel Nevada, Nevada Test Site
Gary Whitney – Los Alamos National Lab
Gavin Erickson – Hanford
David Weitzman – HQ DOE
Anoop Agarwal – Berylliant Inc.

(If you participated but your name is not shown, please let Geoff Braybrooke know.)

Introductory
Mike Brisson asked for nominations for vice-chair. Melecita Archuleta volunteered and was accepted by consensus. Geoffrey Braybrooke volunteered to serve as secretary and was accepted by consensus.

Be Oxide Standards Update
The SRM issue is important, but money is not available to develop one. The question is what the subcommittee can do in the meantime that would help. Livermore is trying to replicate an earlier experiment a previous project in which soil was spiked by beryllium oxide and lithium metaborate fusion was used to make it soluble. Livermore is using lead at present, but is expecting some frequently-analyzed beryllium oxide in order to make up an intermediate standard. This should be adequate for wipes. Los Alamos and Y-12 are working on a suspension solution that may be suitable for filters.

Mike Brisson noted the need for labs to coordinate their efforts. The goal is to support PAT and a digestion protocol. Will the beryllium in the suspension solution be adequately characterized? Brush-Wellman probably can't help answer this, because they send all their low-level samples to Datachem. The AIHA PAT program determines target levels from statistical analysis of the results from reference labs, rather than from a nominal spiking level. This may help their acceptance of these materials. Mike recommended that a group within the subcommittee flesh out the current efforts and find out whether AIHA will accept these materials. He requested that Jim Johnson determine the status of Livermore's suspension and consult with Y-12 on what they are doing. Livermore should start by verifying the consistency of its current emulsion. Mike requested a conference call with Livermore, Los Alamos, and Y-12 during the week of November 1. (this is scheduled for 11/2 at noon Eastern time)

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Action Items Update

Sampling

- S-01 (wet sampling vs. dry sampling): This item has been referred to the Technical Standards Subcommittee. The Analytical Subcommittee will support a standard method for each, by recommending an ASTM method but allowing a lab to use an alternative method if they can demonstrate and document that it meets the performance requirements of the ASTM method.

- S-08 (wipe study): No funding has been identified. Method validation issues - Wide variability in collection efficiency has been noted for both wet and dry wipe methods. Gary Whitney reported that he is aware of experiments that indicate up to a 30-fold difference in collection efficiency based on the pressure applied by the sampler. No research money is currently available. Sites are making decisions now based on wipe results, and cannot await the outcome of research projects in any case. It was agreed that, pending research funding, subcommittee members could support method development by conducting a series of small experiments.

  A dry wipe method has not been defined, but is required, among other things, to support confidence in real-time monitoring instruments. The existing ASTM D6966 wet wipe method is a Standard Practice rather than a Standard Method, and therefore would not have required validation before ASTM adopted it. Geoff Braybrooke recalled that the ASTM Lead in Buildings Subcommittee had discussed collection efficiency using the lead dust wipe method that D6966 was developed from. He will ask Kevin Ashley what information is available. The subcommittee developed a list of topics for experimentation:

  - Wipe medium
  - Surface type – smooth; porous; rough
  - Pressure
  - Collection efficiency
  - Variability in existing wipe methods
  - Precision
  - Number of passes required

  Jim Johnson plans to collect 6 to 8 successive wet or dry wipe samples at a given location on stock metal surfaces, using Whatman 41 smear tabs with and without distilled water. Gary Whitney will also be able to experiment.

- S-17 (ASTM microvacuum method): Gary Whitney is working on a proposal. He noted that there is wide variability in the vacuum levels provided by personal sampling pumps. He is considering a slotted collection head that would mount on a crevice tool that would maintain a standard height above the sampled

surface to prevent the cutoff of air flow. Existing dust mite antigen filters may work as prefilters, but may impose too high a pressure drop on the pump.

- S-18 (skin sampling method): In the absence of exposure limits or understanding of exposure pathways, this item was tabled.

Digestion

- D-02/D-03 (Shipping and receiving BeO materials) – No current problems were reported.

- D-09 (standard digestion method) – On hold pending resolution of the BeO SRM issue.

Analysis/Accreditation

Future Needs

- F-08 (criteria for Be field analyzers): Remains on hold for funding.

Cross-Cutting

- C-09 (BeFinder beta testing): Dan Jensen of Nevada Test Site expressed interest in participating in the BeFinder round robin and asked if it was too late to join. Anoop Agrawal asked him to get contact information to him.

New Business

Future meetings

Mike Brisson would like the subcommittee to meet twice a year. Some members have recommended that the next meeting be held in conjunction with the ASTM April meetings in Reno. This will be discussed during the next conference call.

Draft implementation guidance – The draft of October 15, 2004 was distributed.

There was a discussion concerning lab reporting limits (RLs) that exceed the limit of quantitation (LOQ). The draft guidance assumes that this normal practice will be followed. The draft guidance calls for RLs to be no greater than 0.1 ug/100 cm2 or 0.1 ug/m3, and preferably no greater than 0.02 in each case. Some labs' LOQs currently exceed 0.02.

Arguments against using an elevated RL in place of the LOQ were:

- This practice means the loss of good data points between the LOQ and the RL, as well as the statistical power they add.

- Beryllium data sets may justify a special treatment of the RL/LOQ issue because they tend to contain so many low results.

- Workers might not understand and might be misled by results reported as "Non-detect" that were actually good data rejected due to an administratively-

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determined RL, and it might give the perception of an attempt to cover up exposures. It would be better to explain to the workers that the LOQ will vary.

Arguments in favor of an elevated RL were:

- If the RL is much less than the exposure limit and not magnitudes above the LOQ, there isn't a problem.

- The issue of "Non-detect" results is a communications problem. Results can be reported as "Less than RL" while explaining that this doesn't mean there is no exposure.

- It allows the lab to use a constant value for RL even though the LOQ may be different each time it is determined. A fixed RL provides more confidence than an LOQ that may have been determined some time previously. To avoid this, LOQ might have to be determined every day and possibly on multiple instruments which would give multiple LOQs.

Discussion points were:

- EPA requires the RL to be at least 2 times the LOQ. However, EPA is under court order to revise its definition of Method Detection Limit (MDL). Its first proposal drew many negative comments. EPA is aware that its original definition of MDL does not meet Currie's (spelling?) definition of LOQ.

- If wipe results are treated using statistical methods as a data set rather than individually, it might be better to quantify all of the data regardless of the confidence limits for each datum. It was noted that most wipe samples are collected 1 or 2 at a time on small parts.

- The "R" statistical software uses the LOQ that is entered

- Labs do not track the proportion of results that fall between the LOQ and the RL. Some present thought that this was uncommon.

- Given the variability of wipe sample results, it was questioned whether this issue is significant. However, this is not under the labs' control.

- The proposed RL could be lowered, but not below 0.02. There was consensus that 0.05 should be adopted as a maximum.

It was agreed that the maximum RL should be lowered to 0.05, and that members should draft educational statements to help sites explain results reported as "less than RL".

The meeting adjourned at 3:30 PM Pacific time.

Next conference call: November 9, at 12 Noon Eastern time.