



Highlights
STWG Teleconference 11-04
Wednesday, September 14, 2011, 2:00 p.m. EDT

Participants

Maureen Alai, LLNL NARAC
Denny Armstrong, URS SMS/Aiken
Wayne Davis, URS SMS/SRS
Dave Freshwater, NA-41
Cliff Glantz, PNNL
Courtney Haggard, URS SMS/OR
Steve Homann, LLNL NARAC
Mike O'Keeffe, NNSS

Bill Possidente, NNSS
Jim Powers, NA-41
Josh Price, URS SMS/OR
Chuck Rives, Pantex
Melissa Thornton, URS SMS/OR
Susan Vossburg, SNL
Michele Wolfgram, ORNL

Roll Call

Michele Wolfgram conducted the roll call, and 15 working group members participated in the teleconference.

Administrative Matters

Michele mentioned that the EMI SIG 2012 Annual Meeting will be held in downtown Seattle, Washington, May 14–17, 2012, at the Marriott Renaissance Hotel.

She discussed adding a link to the HSS Safety Bulletin 2011-02 to the Source Term information page on the STWG Website. The group concurred for posting:
(http://www.hss.doe.gov/SESA/corporatesafety/safety_bulletins/SB_2011-02.pdf).

Old Business

STWG-AI-09-03 (Activity Continuing): Respirable vs. Non-respirable Source Terms (Wayne Davis)

Wayne Davis completed the recommendation paper discussing the use of non-respirable source terms to ensure that non-respirable dose impacts (e.g., ground shine) are being considered. The paper incorporates discussions regarding deposition velocities between DOE/HS-31 and the Defense Nuclear Facilities Safety Board (DNFSB). The main concern is with respect to releases of gamma-emitting radionuclides, where the dose is dependent on the combination of deposition velocity and respirable fraction. In these cases, what was previously thought to be

conservative (i.e., using a smaller deposition velocity) may not actually provide the most restrictive results. The report is under final review by STWG members. Michele requests reviewers to submit comments to her or Wayne by October 15, 2011, allowing the STWG to post a final version of this report before the next teleconference on November 9, 2011.

STWG-AI-09-05 (Activity Continuing): Dose Equivalent Curies (Michele Wolfgram)

Michele is drafting a position paper on the use of Dose Equivalent Curies. Distribution of an initial draft is targeted before the next STWG teleconference.

STWG-AI-11-01 (Activity Continuing): HotSpot Deposition Velocity

HotSpot uses a non-respirable deposition velocity of 8 cm/sec that apparently needs some justification. Michele thanked Chuck for emailing the safety bulletin link on deposition velocity to the group to facilitate the discussion

Prior to the meeting, Michele sent out a project proposal about the HotSpot non-respirable deposition velocity matter, which is shown below.

Project Title: HotSpot and EPIcode Deposition Velocity.

Statement of Need: On May 27, 2011 a memorandum was sent from the Chief Health, Safety and Security Officer, Office of Health, Safety and Security (HSS) issuing Safety Bulletin 2011-02. This Safety Bulletin specifies the deposition velocity to be used (or methodology to obtain deposition velocity) for Documented Safety Analysis (DSA) accident analysis. While Emergency Management analysis is not required to employ all of the same inputs as those used in DSA accident analysis, it is generally expected that many of the dispersion parameters will be at least consistent between the two analyses. The HotSpot and EPIcode models are widely used in the Emergency Management community to calculate consequences to downwind receptors; however, the HSS Safety Bulletin specifically addresses the MELCOR Accident Consequence Code System Version 2 (MACCS2). Even though these are all Gaussian dispersion modeling codes, their input parameters are slightly different and implementation of the default values given in the Safety Bulletin may not directly translate to input values required for HotSpot and EPIcode.

Objective: The purpose of this project is to examine a range of input parameters under different scenario types (e.g., elevated/lofted plumes) to provide a comparison of values that could be used in HotSpot and EPIcode to maintain consistency with the suggested default deposition velocity values provided in HSS Safety Bulletin 2011-02.

Notes: This project will not in any way contradict or attempt to negate the conclusions of the HSS Safety Bulletin. Rather, the objective of the project is to present information to the end user to assist in choosing the most appropriate values based on the event being analyzed. Additional input factors may be examined to ensure that the overall results are acceptable and in line with the recommendations.

Contact information: Michele Wolfgram, ORNL/UT-Battelle, wolfgramml@ornl.gov

Denny Armstrong suggested that this activity appears more appropriate for the Hazards Assessment Subcommittee (HASC) rather than the STWG, similar to the recent plume rise issue. Cliff Glantz suggested that it may actually be most appropriate for the Consequence Assessment Modeling Working Group (CAMWG). There is significant overlap among the participants in the CAMWG, STWG, and HASC. The Working Group generally agreed that this should be a joint activity conducted by the STWG, CAMWG, and HASC. Michele will tweak the proposal based on group suggestions and solicit volunteers from the CAMWG and HASC members.

Cliff Glantz suggested Jeremy Rishel, Wayne Davis, and Carl Mazzola as likely participants. Steve Homann, Michele Wolfgram, Melissa Thornton, Josh Price, Courtney Haggard, and Denny Armstrong also volunteered to participate in addressing this issue. The goal of this group is to provide information to the DOE community on appropriate choices for applying deposition velocities parameters in models such as HotSpot and EPICode.

Wayne Davis read an excerpt from a letter by DNFSB on the deposition velocity issue. DNFSB reported that Documented Safety Analyses (DSAs) and Emergency Preparedness Hazards Assessments (EPHAs) use different dispersion parameters including deposition velocity. Two questions were raised:

- (1) Do we need to use the same assumptions for different safety-related applications?
- (2) Can we justify that it is satisfactory to use less-conservative values for EPHAs than for DSAs?

Wayne Davis will send the DNFSB letter to Michele, who will pass it on to the STWG. It was suggested that STWG might want to investigate both the respirable and non-respirable deposition velocity. Steve Homann reported that both HotSpot and EPICode allow users to input separate respirable and non-respirable deposition velocities. For example, the default deposition velocity for respirable particles is 0.3 cm/sec and the default for non-respirable particles is 8 cm/s (based on a 40 μ Activity Median Aerodynamic Diameter (AMAD) particle). Wayne asked a question about resuspension factors and Steve provided some feedback.

New Business

Steve Homann asked about the appropriateness of using urban diffusion factors when generating 95% X/Q values. It might be appropriate to use urban factors in an industrial area. At the Savannah River Site (SRS), turbulent mixing is characterized using direct measurements of turbulence (i.e., sigma-theta, sigma-phi), rather than the Delta T method. If direct measurements of turbulence are made, it may not be appropriate to add in a surface roughness correction factor as direct measurements should already account for the impact of surface roughness.



SCAPA Source Term Working Group (STWG)

The DNFSB wants SRS to use Briggs open-country, instead of Pasquill-Gifford stability parameters, in its safety analyses. They consider the Briggs approach more appropriate for use at SRS than the original Pasquill-Gifford approach.

If providing technical guidance on these issues is found to be outside the scope of the STWG, CAMWG could consider it. Fortunately, the chair of the CAMWG, Jeremy Rishel, is already involved in the Briggs vs. Pasquill-Gifford stability issue. If this issue is relevant to DOE sites—in addition to SRS—Wayne Davis suggests that the CAMWG consider tackling it.

Next STWG Meeting

The next STWG teleconference is scheduled for **November 9, 2011, at 2:00 p.m. EST.**

The meeting adjourned at 2:33 p.m. EDT. Michele thanked the participants for their input.