

From: Snyder, Amy
To: Maloney, Moira
Cc: Barr, Cynthia; Chapman, Greg; Warner, Katherine; Watson, Bruce
Subject: FW: follow-up questions West Valley Air Modeling
Date: Thursday, December 9, 2021 1:28:00 PM
Attachments:

Hi Moira,

To prepare for the upcoming call with NRC, please see the Follow-up Questions on AERMOD Modeling for DOE West Valley that we plan to ask during the call:

- 1. Explain how the AERMOD simulations are run to consider cumulative impacts of multiple activities.** For example, schedule activities in WVDP-607 Appendix A appear to either overlap in time or cumulatively contribute to concentrations or dose. Some activities on the same row appear to start and stop at different times. For example, WVDP-607 Appendix A lists rows of schedule activities with demolition, debris piles and loading release rates listed on the same row, although debris piles and loading may be associated with a different demolition activity compared to the activity listed on the same row (e.g., debris piles can remain up to 48 hours after demolition and loading occurring after the demolition activity that created the pile). Deposition could be accumulate over time leading to cumulative impacts.
- 2. Particle size can have a significant influence on environmental transport and biosphere calculations (see Table 1 sensitivity analysis results).** The relevance of the MacMillan study for demolition activities at the WVDP site should be discussed to provide support for the assumed values, or a sensitivity analysis should be conducted to illustrate the reasonableness of the assumed particle sizes. A comparison of demolition activities and controls (e.g., types of fixatives) in the MacMillan study versus the WVDP planned demolition activities would also help to provide support for assumptions regarding particle size in the AERMOD simulations for various types of demolition activities. The NRC staff would note that literature cited in the MacMillan study for hot cutting activities support smaller submicron particle diameters, which calls into question the use of a single set of particle sizes for all WVDP demolition and dismantlement activities. Please explain how uncertainty in the particle size distributions is considered during biosphere and air transport modeling.
 - a. What is was the basis for the particle size density of 1.0?
 - b. What is the basis for using the largest particle size for each bin?
 - c. Was there any effort to study the impact of particle size of the AERMOD calculations?
 - d. How is the approach used expected to be realistic or conservative (e.g., larger particle sizes lead to higher concentrations closer to the source but a smaller overall footprint; smaller particle sizes would lead to greater offsite impacts)?
 - e. Were all activities evaluated for deposition or just the two schedule activities reported in WVDP-607 (XC-2 west and CPC east wall)? How were the schedule activities selected to be bounding and how does running two schedule activities take into consideration cumulative impacts from multiple activities? For example, the two schedule activities didn't appear to have the highest release rates or DAC.
 - f. The file provided to NRC seemed to be for a different schedule activity than what was reported in WVDP-607 (i.e., the file appeared to have release rates consistent with XC-2 south versus XC-2 west wall reported in WVDP-607).
 - g. What controls are in place to ensure that extreme weather conditions are avoided that could lead to offsite releases or transport of materials offsite?
 - h. Provide a basis for 8 hour averaging times (higher averaging periods such as 24 hours for deposition would lead to higher deposition rates; again speak to cumulative impacts from deposition)
 - i. Was any effort made to study non-default Method 2 for particle deposition and any impact it has on the results?

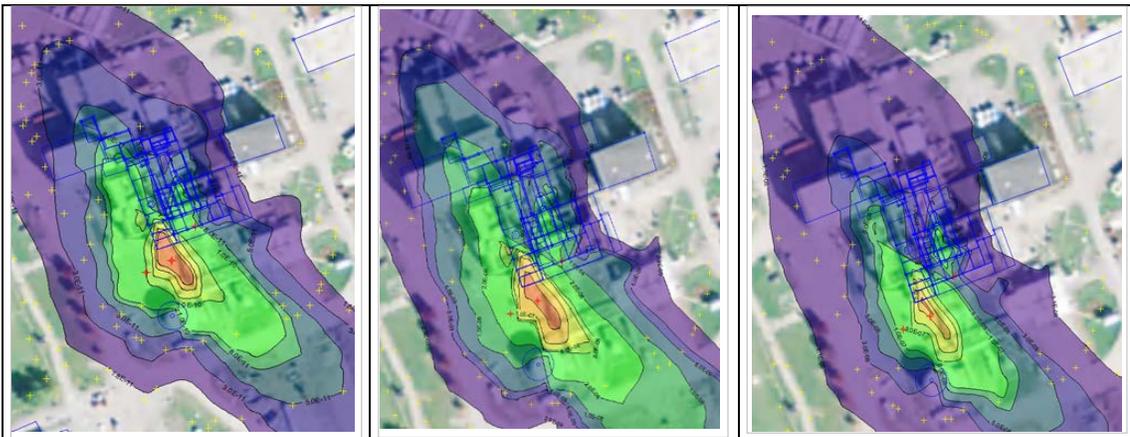


Table 2 Sensitivity analysis on particle size with maximum concentration reported for 95th percentile 8 hour average (left, small particle size 1 um, 2E-09 g/m²; middle, base case distribution, 3E-07 g/m²; and right, large particle size 50 um, 1E-06 g/ m²)
Note: Legend colors are different in each figure (based on max/min values) but there are order of magnitude differences in maximum concentrations between simulations.

3. How does AERMOD treat calms or missing data. How much of the data fell into this category?
4. Explain how building wake effects are considered. In the AERMOD files that were sent to NRC for review, it appears only one building was considered in the input file (36 entries for each compass direction). Are the individual component(s) removed after demolition of the component(s) and the single set of parameters for the single building structure recalculated for the modified structure each run?
5. What are the implication of the following warning message?

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***** WARNING MESSAGES *****
ME W187 596 MEOPEN: ADJ U* Option for Stable Low
Winds used in AERMET
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Thank you.

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