

Release-Based Subcommittee 9 Cumulative Risk and Risk-Based Alternative Approaches Response to DEEP Comments

The following document presents responses to comments made by the Department of Energy and Environmental Protection (DEEP) in their 6 April 2023 “Feedback on Subcommittee 9 and 10 Concept Papers”. The Subcommittee appreciates DEEP’s and the Working Group’s efforts on this topic and are offering the following responses to clarify certain positions presented in the Concept Paper.

1. Cumulative Risk Pathways

- a. **DEEP Comment:** *“the subcommittee suggests that the short form approach to cumulative risk be limited only to evaluating the risks posed by direct exposure to soil impacted by a release.”*
- b. **Response:** The subcommittee recommends that the cumulative risk approach incorporate all potential human health risk pathways from environmental contamination, inclusive of the risks posed by direct exposure to soil as well as exposure to contaminants via soil vapor and indoor air media. The only pathway the subcommittee did not recommend including is exposure to drinking water – which is protected by the Maximum Contaminant Levels (MCL). In the concept paper the subcommittee states that “this cumulative risk approach would apply to the summation of risk from all potential exposure pathways able to be evaluated under a cumulative risk process, including exposure via soil and soil vapor/indoor air media.” (P.5 ¶11 Subcommittee 9 Concept Paper)

2. Definition of a Site

- a. The subcommittee proposed a definition of release sites to be “locations where contamination resulting from a release has come to be located”. The subcommittee proposed the preceding definition because:
 - i. Releases can extend onto multiple parcels; and
 - ii. Multiple releases can occur/be present on the same parcel.

The subcommittee acknowledges that property uses can only be restricted on a parcel by parcel basis which may result in different evaluations of risk when a release impacts multiple parcels.

Release-Based Subcommittee 9

Cumulative Risk and Risk-Based Alternative Approaches

Response to DEEP Comments

3. Cumulative Risk Standard:

- a. **DEEP Comment:** *“The Department agrees that, when considering the cumulative risk from direct exposure to soil impacted by a release that contains multiple carcinogens, a cleanup standard ensuring that cumulative excess lifetime cancer risk does not exceed 1×10^{-5} is appropriate, provided that no individual carcinogen exceeds an excess lifetime cancer risk of 1×10^{-6} . Such an analysis must necessarily include an evaluation of all exposure risk pathways.”*
- b. **Response:** In the Concept Paper the subcommittee “recommends establishing a cumulative ELCR of 1×10^{-5} for exposure to multiple carcinogens, an ELCR of 1×10^{-6} for exposure to an individual carcinogen, and a cumulative HI of 1 (allowing for summation of non-cancer risk by target organ) within the RSRs to support a cumulative risk approach.” (P.4 ¶17 Subcommittee 9 Concept Paper). The subcommittee’s recommendation is not related to the development of numeric criteria/clean-up standards. Instead, these values are recommended as cumulative risk thresholds for potential risk to which cumulative risks, calculated using the equations and exposure parameters under appropriate exposure scenarios, are to be compared. The subcommittee recommends that the cumulative risks to human health by environmental contamination consider all potentially complete exposure pathways and not be limited to the direct exposure to soil pathway.

The exposure scenarios recommended by the subcommittee, and supporting equations and exposure parameters, are found in Appendix C of the Concept Paper.

4. Additional Exposure Scenarios

- a. DEEP believes that following exposure scenarios merit further consideration:
 - i. Property Managed Residential Use (access to soil is highly controlled) [see concept paper p. 2]
 - ii. Passive Recreation [see concept paper pp. 2,6]
 - iii. Trespasser Scenario [concept paper p. 6]
- b. **Response:** The subcommittee noted that the DEEP did not include the Construction Worker or Utility Worker Scenarios in its list of the exposure scenarios meriting further consideration. The Subcommittee recommends the DEEP reconsider excluding these exposure scenarios, as the ability to use these exposure scenarios under a cumulative risk assessment approach would allow for the evaluation of sites under the lens of both current and future uses.

Release-Based Subcommittee 9
Cumulative Risk and Risk-Based Alternative Approaches
Response to DEEP Comments

The Subcommittee recommends the use of equations and exposure parameters for the Construction Worker and Utility Worker exposure scenarios that were developed by the USEPA, provided as Appendix C-4 and Appendix C-5 of the Concept paper, respectively. Each of these exposure scenarios assume an exposure duration of 1 year (50 weeks) at a given site containing contamination, which is a conservative duration for a general construction contractor (ie. not a remediation or other specialized environmental contractor). Further, the inclusion of these exposure scenarios as a recommendation for the concept paper were developed with concurrence with the staff support from the Department of Health.