

and, qualitatively by discussing a "likely overestimation of risk" in uncertainty analysis. This appears to be a better approach to ensure the protection of public health, especially, due to the additional uncertainty of skin and respiratory tract exposures during inhalation (vs. oral exposures).

We are in disagreement with the use of an inhalation slope factor of 1.6 per mg/kg/day based on the NRC recommended oral slope factor (vs. EPA recommended value of 297.5 per mg/kg/day or Inhalation Unit Risk of 0.085 per ug/m<sup>3</sup>; and the Army proposed geometric value of 14 per mg/kg/day for inhalation slope factor or Inhalation Unit Risk of  $4.1 \times 10^{-3}$  per ug/m<sup>3</sup>). In fact, the Army proposed the use of the inhalation slope factor of 297.5 per mg/kg/day for the combustion risk assessment at the Pueblo Chemical Demilitarization Facility. State/federal agencies are obligated to use the EPA IRIS cancer slope factor values for risk assessment purposes.

(b) Use of inappropriate methodology for the cancer risk assessment

CDC's methodology for the evaluation of the cancer risk at the GPL is inconsistent with the EPA guidelines for combustion risk assessment because: (1) it does not account for multiple exposure pathways (e.g., dermal and ingestion exposures); (2) it does not account for risks to children; (3) it does not account for lifetime exposures of 30 years; and (4) it does not provide the discussion of uncertainties associated with the various assumptions. Some of these concerns are briefly discussed below.

- CDC's use of the exposure duration of 3 years to calculate cancer risk is inappropriate because of the following:
  - (i) Based on the experience at other combustion facilities, it would be more realistic to use the exposure duration of at least 10 years for the central tendency exposure (CTE) scenario (based on the site-specific conditions; however, as already noted above, it is necessary to use the assumption of lifetime exposure (30 years) for the reasonable maximum exposure (RME) scenario. Moreover, we disagree with CDC's assumption that a continuous release for 3 years at the GPL value is unlikely. In fact, the emphasis on a continuous release is irrelevant for the cancer risk assessment and it is more important to focus on the cumulative exposure during the operational life of combustion facilities (3 or 10 years). For example, discontinuous episodic releases due to upset conditions or other accidental activities may result in cumulative exposures of significantly greater magnitude than the continuous release at the GPL of 0.00002 mg/m<sup>3</sup> for 3 years. Consideration of the episodic exposures due to accidental catastrophic releases in addition to a continuous release in a potential exposure scenario is necessary.
  - (ii) Traditionally, cancer risk for the general population is calculated based on the RME assumption of the exposure duration of 30 years; for example, risks associated with the exposure duration of 30 years, GPL of 0.00002 mg/m<sup>3</sup>, and EPA's Inhalation Unit risk of 0.085 per ug/m<sup>3</sup> and the Army CHPPM proposed geometric mean of 0.0041 per ug/m<sup>3</sup> are  $7 \times 10^{-4}$  and  $3.4 \times 10^{-5}$ , respectively (US Army CHPPM, 2000; Table 24). These risks are above EPA's and/or CDPHE's acceptable cancer risk level.
  - (iii) It may be beneficial to consider some other potential exposure scenarios for the purpose of calculating the cumulative dose during the operational life of a facility. For example, catastrophic releases as a result of terrorist acts, operation upset conditions, or other accidents from sulfur mustard stockpiles.