

Several discrepancies have been noted in comparing the RBCA Tool Kit against values published in the ASTM Tier 1 RBSL Tables. The known discrepancies that we are aware of are generally related to errors or omissions in the ASTM calculations or Standard (PS-104-98) and have, for the most part, been attributed to one of the following issues:

1) While the equations in the ASTM standard correctly impose a mass balance constraint on the surface soil volatilization factor (VF_{ss}), the ASTM standard incorrectly fails to account for mass balance constraints for volatilization from subsurface soils (VF_{samb} and VF_{sesp}). These mass balance constraints are incorporated into the RBCA Tool Kit to prevent the gross overprediction of sustained volatilization rates. Please see equations CM-3b and CM-4b on page B-3, and the associated text on pages B-5 and B-6 of the RBCA Tool Kit manual.

2) The ASTM calculations for the air pathways use Inhalation Reference Doses and Slope Factors which were derived, assuming a 20 m³/day air inhalation rate, from Inhalation Reference Concentrations and Unit Risk Factors published in IRIS, HEAST, etc. However, the ASTM default indoor air inhalation rate is 15 m³/day. Therefore, the correct Inhalation Reference Doses and Slope Factors would be different for indoor vs. outdoor inhalation. The RBCA Tool Kit (correctly) uses the actual Inhalation Reference Concentrations and Unit Risk Factors, as recommended by the US EPA, and as presented in the equations for Air Exposure on Table A.2 (page A-12/13) of the RBCA Tool Kit Manual.