

Lead Model Comparison

| Direct contact Soil Lead Numeric Value | Current Value mg/kg | New Modeled Value Target Pb_b = 10 µg/dL | New Modeled Value Target Pb_b = 5 µg/dL |
|---|--------------------------------|---|--|
| Residential | 500 (UBK) | 420 (IEUBK) | 153 (IEUBK) |
| Non-residential | 1,000 (SEGH) | 2,517 (ALM) | 1,050 (ALM) |

Pb_b = Blood lead level

Current Values

The current residential soil direct contact numeric value for lead was calculated using EPA’s 1990 version of the Uptake Biokinetic (UBK) model with a target child blood lead level of 10 µg/dL. The default UBK model input parameters used to calculate this value are listed in Table 7 of Chapter 250.

The current non-residential soil direct contact numeric value for lead was calculated using the Society for Environmental Geochemistry and Health (SEGH) model from 1991 with a target adult blood lead level of 20 µg/dL. The default SEGH model input parameters used to calculate this value are listed in Table 7 of Chapter 250.

Proposed Values

EPA’s lead guidance website states, *“Recent scientific evidence has demonstrated adverse health effects at blood lead concentrations below 10 µg/dL down to 5 µg/dL, and possibly below. OSRTI is developing a new soil lead policy to address this new information.”* Thus, the Department has calculated residential and non-residential soil direct contact numeric values using the most up-to-date EPA models at both target blood lead levels to demonstrate the difference between the two.

EPA’s Integrated Exposure Uptake Biokinetic (IEUBK) model (2010) was used to calculate the residential soil direct contact numeric values. The IEUBK model is similar to the 1990 UBK model in that its purpose is to predict an acceptable soil concentration given a target child blood lead level. The IEUBK model was run using the most current default values set by EPA with target blood lead levels of 10 µg/dL and 5 µg/dL.

EPA’s Adult Lead Methodology (ALM) (2003) was used to calculate the non-residential soil direct contact numeric value. The SEGH model’s target receptor is an adult while the ALM’s target receptor is the potential fetus of a female adult worker. The ALM was also run using the most current default values set by EPA and target blood lead levels of 10 µg/dL and 5 µg/dL.

EPA’s guidance for the ALM cautions that the values calculated using this new model are high and may not be protective of all receptors, i.e. a school or playground that borders a non-residential property. This is not necessarily in-line with the purpose of the statewide health standard which should be protective across the entire state.