

Attachment 3
TABLE 2B
Leaching-Based Basic Comparison Levels (LBCLs) for Organics

| Parameter of Interest | Chemical ⁵ | Kd Distribution coefficient (L/kg) with foc=0.002 (L/kg) | H' Henry's Law constant (unitless) | RBGC ¹ (mg/L) | NDEP Worker BCL (mg/kg) | LBCL (DAF=1) (mg/kg) | Generic LBCL ^{2,3,4} (DAF=1) (mg/kg) | LBCL (DAF=20) (mg/kg) | Generic LBCL ^{2,3,4} (DAF=20) (mg/kg) |
|-----------------------------------|---------------------------------|--|------------------------------------|--------------------------|-------------------------|----------------------|---|-----------------------|--|
| Organic Acids | Benzenesulfonic acid | -- | -- | 1.8E+01 | 1.0E+05 | NE | NE | NE | NE |
| | Diethyl phosphorodithioic acid | -- | 1.5E-02 | 2.9E+00 | 9.1E+04 | NE | NE | NE | NE |
| | Dimethyl phosphorodithioic acid | -- | 8.6E-03 | 3.7E+00 | 1.0E+05 | NE | NE | NE | NE |
| | Phthalic acid | -- | -- | 3.7E+01 | 1.0E+05 | NE | NE | NE | NE |
| Organophosphate Pesticides | Stirphos | -- | -- | 2.8E-03 | -- | NE | NE | NE | NE |
| Organochlorine Pesticides | 4,4'-DDD | 2.0E+03 | 1.6E-04 | 2.8E-04 | 1.1E+01 | 8.0E-01 | NC | 1.6E+01 | NC |
| | 4,4'-DDE | 8.9E+03 | 8.6E-04 | 2.0E-04 | 7.8E+00 | 3.0E+00 | NC | 6.0E+01 | NC |
| | 4,4'-DDT | 5.3E+03 | 3.3E-04 | 2.0E-04 | 7.8E+00 | 2.0E+00 | NC | 4.0E+01 | NC |
| | Aldrin | 4.9E+03 | 7.0E-03 | 4.0E-06 | 1.1E-01 | 2.0E-02 | NC | 4.0E-01 | NC |
| | Alpha-BHC | 2.5E+00 | 4.4E-04 | 1.1E-05 | 4.0E-01 | 3.0E-05 | NC | 6.0E-04 | NC |
| | Beta-BHC | 2.5E+00 | 3.1E-05 | 3.7E-05 | 1.4E+00 | 1.0E-04 | NC | 2.0E-03 | NC |
| | Dieldrin | 4.3E+01 | 6.2E-04 | 4.2E-06 | 1.2E-01 | 2.0E-04 | NC | 4.0E-03 | NC |
| | Endrin | 2.5E+01 | 3.1E-04 | 2.0E-03 | 2.1E+02 | 5.0E-02 | NC | 1.0E+00 | NC |
| | Gamma-BHC (Lindane) | 2.1E+00 | 5.7E-04 | 2.0E-04 | 1.9E+00 | 5.0E-04 | NC | 1.0E-02 | NC |
| | Heptachlor Epoxide | 1.7E+02 | 3.9E-04 | 2.0E-04 | 2.1E-01 | 3.0E-02 | NC | 6.0E-01 | NC |
| Methoxychlor | 2.0E+02 | 6.5E-04 | 4.0E-02 | 3.4E+03 | 8.0E+00 | NC | 1.6E+02 | NC | |
| SVOCs | 1,4-Dioxane | 3.4E-02 | 2.0E+02 | 6.1E-03 | 1.7E+02 | NE | 1.1E-01 | NE | 2.1E+00 |
| | Acenaphthene | 9.8E+00 | 6.4E-03 | 2.2E+00 | 6.8E+04 | 2.9E+01 | NC | 5.8E+02 | NC |
| | Acenaphthylene | 3.0E+00 | 4.7E-03 | 1.1E+00 | 1.5E+02 | NE | 3.5E+00 | NE | 7.0E+01 |
| | Anthracene | 4.7E+01 | 2.7E-03 | 1.1E+01 | 1.0E+05 | 5.9E+02 | NC | 1.2E+04 | NC |
| | Benz(a)anthracene | 8.0E+02 | 1.4E-04 | 9.2E-05 | 2.3E+00 | 8.0E-02 | NC | 1.6E+00 | NC |
| | Benzo(a)pyrene | 2.0E+03 | 4.6E-05 | 2.0E-04 | 2.3E-01 | 4.0E-01 | NC | 8.0E+00 | NC |
| | Benzo(b)fluoranthene | 2.5E+03 | 4.6E-03 | 9.2E-05 | 2.3E+00 | 2.0E-01 | NC | 4.0E+00 | NC |
| | Benzo(g,h,i)perylene | -- | -- | 1.1E+00 | 3.4E+04 | NE | NE | NE | NE |
| | Benzo(k)fluoranthene | 2.5E+03 | 3.4E-05 | 9.2E-04 | 2.3E+01 | 2.0E+00 | NC | 4.0E+01 | NC |
| | bis(2-Ethylhexyl)phthalate | 3.0E+04 | 4.2E-06 | 6.0E-03 | 1.4E+02 | 1.8E+02 | NC | 3.6E+03 | NC |
| | Butyl benzyl phthalate | 2.8E+01 | 7.9E-05 | 7.3E+00 | 2.4E+02 | 8.1E+02 | NC | 1.6E+04 | NC |
| | Chrysene | 8.0E+02 | 3.9E-03 | 9.2E-03 | 2.3E+02 | 8.0E+00 | NC | 1.6E+02 | NC |
| | Dibenz(a,h)anthracene | 7.6E+03 | 6.0E-07 | 9.2E-06 | 2.3E-01 | 8.0E-02 | NC | 1.6E+00 | NC |
| | Diethyl phthalate | 5.8E-01 | 1.9E-05 | 2.9E+01 | 1.0E+05 | NE | 2.3E+01 | NE | 4.5E+02 |
| | Dimethyl phthalate | -- | -- | 3.7E+02 | 1.0E+05 | NE | NE | NE | NE |
| | Di-N-Butyl phthalate | 6.8E+01 | 3.9E-08 | 3.7E+00 | 6.8E+04 | 2.7E+02 | NC | 5.4E+03 | NC |
| | Fluoranthene | 2.1E+02 | 6.6E-04 | 1.5E+00 | 2.4E+04 | 2.1E+02 | NC | 4.2E+03 | NC |
| | Fluorene | 1.6E+01 | 3.2E-03 | 1.5E+00 | 4.5E+04 | 2.8E+01 | NC | 5.6E+02 | NC |
| | Hexachlorobenzene | 1.1E+02 | 5.4E-02 | 1.0E-03 | 1.2E+00 | 1.0E-01 | NC | 2.0E+00 | NC |
| | Indeno(1,2,3-cd)pyrene | 6.9E+03 | 6.6E-05 | 9.2E-05 | 2.3E+00 | 7.0E-01 | NC | 1.4E+01 | NC |
| Naphthalene-SVOC | 2.4E+00 | 2.0E-02 | 4.3E-03 | 5.2E+00 | 4.0E+00 | NC | 8.0E+01 | NC | |
| Phenanthrene | 7.4E+00 | 9.4E-04 | 1.1E+00 | 2.5E+01 | NE | 8.3E+00 | NE | 1.7E+02 | |

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|-----------------------|-------------------------|--|------------------------------------|--------------------------|-------------------------|----------------------|---|-----------------------|--|
| | Pyrene | 1.4E+02 | 4.5E-04 | 1.1E+00 | 3.4E+04 | 2.1E+02 | NC | 4.2E+03 | NC |
| VOCs | 1,1,1-Trichloroethane | 2.7E-01 | 7.1E-01 | 2.0E-01 | 1.4E+03 | 1.0E-01 | NC | 2.0E+00 | NC |
| | 1,1-Dichloroethane | 1.1E-01 | 2.3E-01 | 1.2E-02 | 7.3E+00 | 1.0E+00 | NC | 2.0E+01 | NC |
| | 1,1-Dichloroethene | 1.3E-01 | 1.1E+00 | 7.0E-03 | 4.3E+02 | 3.0E-03 | NC | 6.0E-02 | NC |
| | 1,2,3-Trichloropropane | 1.0E-01 | 1.1E+00 | 3.4E-05 | 1.6E+00 | NE | 1.3E-05 | NE | 2.7E-04 |
| | 1,2,4-Trichlorobenzene | 3.3E+00 | 5.8E-02 | 7.0E-02 | 2.4E+02 | 3.0E-01 | NC | 6.0E+00 | NC |
| | 1,2,4-Trimethylbenzene | 7.4E+00 | 2.3E-01 | 5.1E-02 | 2.0E+02 | NE | 3.9E-01 | NE | 7.8E+00 |
| | 1,2-Dichlorobenzene | 7.6E-01 | 7.8E-02 | 6.0E-01 | 3.7E+02 | 9.0E-01 | NC | 1.8E+01 | NC |
| | 1,2-Dichloroethane | 7.6E-02 | 4.0E-02 | 5.0E-03 | 7.7E-01 | 1.0E-03 | NC | 2.0E-02 | NC |
| | 1,3,5-Trimethylbenzene | 1.6E+00 | 3.2E-01 | 5.9E-01 | 7.0E+01 | NE | 1.1E+00 | NE | 2.2E+01 |
| | 1,3-Dichlorobenzene | 7.6E-01 | 7.8E-02 | 1.1E-01 | 3.7E+02 | NE | 1.1E-01 | NE | 2.1E+00 |
| | 1,4-Dichlorobenzene | 1.2E+00 | 1.0E-01 | 7.5E-02 | 4.7E+00 | 1.0E-01 | NC | 2.0E+00 | NC |
| | 2-Butanone | 9.0E-03 | 1.1E-03 | 2.1E+01 | 3.4E+04 | NE | 4.4E+00 | NE | 8.9E+01 |
| | 2-Chlorotoluene | 3.2E-01 | 1.4E-01 | 7.3E-01 | 5.1E+02 | NE | 3.9E-01 | NE | 7.8E+00 |
| | 4-Methyl-2-pentanone | 2.7E-01 | 5.7E-03 | 2.9E+00 | 1.7E+04 | NE | 1.4E+00 | NE | 2.7E+01 |
| | Acetone | 1.2E-03 | 1.6E-03 | 3.3E+01 | 1.0E+05 | 8.0E-01 | NC | 1.6E+01 | NC |
| | Benzene | 1.2E-01 | 2.3E-01 | 5.0E-03 | 1.4E+00 | 2.0E-03 | NC | 4.0E-02 | NC |
| | Bromodichloromethane | 2.0E-01 | 6.6E-02 | 1.1E-03 | 5.1E+01 | 3.0E-02 | NC | 6.0E-01 | NC |
| | Bromoform | 1.7E-01 | 2.2E-02 | 8.5E-03 | 2.4E+02 | 4.0E-02 | NC | 8.0E-01 | NC |
| | Carbon tetrachloride | 3.0E-01 | 1.2E+00 | 5.0E-03 | 5.3E-01 | 3.0E-03 | NC | 6.0E-02 | NC |
| | Chlorobenzene | 4.5E-01 | 1.5E-01 | 1.0E-01 | 4.6E+02 | 7.0E-02 | NC | 1.4E+00 | NC |
| | Chloroethane | 2.9E-02 | 4.5E-01 | 2.3E-02 | 1.1E+03 | NE | 6.2E-03 | NE | 1.2E-01 |
| | Chloroform | 1.1E-01 | 1.5E-01 | 1.6E-03 | 5.2E-01 | 3.0E-02 | NC | 6.0E-01 | NC |
| | Chloromethane | 7.0E-02 | 9.8E-01 | 8.1E-02 | 2.7E+00 | NE | 2.9E-02 | NE | 5.8E-01 |
| | cis-1,2-Dichloroethene | 7.1E-02 | 1.7E-01 | 7.0E-02 | 1.2E+03 | 2.0E-02 | NC | 4.0E-01 | NC |
| | Dibromochloromethane | 1.3E-01 | 3.5E-02 | 7.0E-04 | 2.1E+00 | 2.0E-02 | NC | 4.0E-01 | NC |
| | Dichlorodifluoromethane | 1.2E-01 | 4.1E+00 | 5.8E+00 | 3.1E+02 | NE | 3.9E+00 | NE | 7.8E+01 |
| | Ethylbenzene | 4.1E-01 | 3.2E-01 | 7.0E-01 | 6.7E+00 | 7.0E-01 | NC | 1.4E+01 | NC |
| | Hexachlorobutadiene | 1.1E+02 | 3.3E-01 | 8.6E-04 | 2.5E+01 | 1.0E-01 | NC | 2.0E+00 | NC |
| | Isopropylbenzene | 4.4E-01 | 4.9E+01 | 3.4E+00 | 5.4E+02 | NE | 1.7E+01 | NE | 3.4E+02 |
| | Methylene chloride | 2.0E-02 | 9.0E-02 | 5.0E-03 | 2.1E+01 | 1.0E-03 | NC | 2.0E-02 | NC |
| | Naphthalene-VOC | 2.4E+00 | 2.0E-02 | 4.3E-03 | 5.2E+00 | 4.0E+00 | NC | 8.0E+01 | NC |
| | N-Butylbenzene | 5.7E+00 | 5.4E-01 | 3.7E-01 | 2.4E+02 | NE | 2.2E+00 | NE | 4.3E+01 |
| | N-Propylbenzene | 5.7E+00 | 5.4E-01 | 3.7E-01 | 2.4E+02 | NE | 2.2E+00 | NE | 4.3E+01 |
| o-Xylene | 4.8E-01 | 2.1E-01 | 4.3E+01 | 2.8E+02 | 9.0E+00 | NC | 1.8E+02 | NC | |
| sec-Butylbenzene | 4.3E+00 | 7.7E-01 | 3.7E-01 | 2.2E+02 | NE | 1.7E+00 | NE | 3.3E+01 | |
| Styrene | 1.8E+00 | 1.1E-01 | 1.0E-01 | 1.7E+03 | 2.0E-01 | NC | 4.0E+00 | NC | |
| tert-Butylbenzene | 4.3E+00 | 5.2E-01 | 3.7E-01 | 3.9E+02 | NE | 1.7E+00 | NE | 3.3E+01 | |
| Tetrachloroethene | 5.3E-01 | 7.5E-01 | 5.0E-03 | 1.7E+00 | 3.0E-03 | NC | 6.0E-02 | NC | |

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|-----------------------|------------------------|--|------------------------------------|--------------------------|-------------------------|----------------------|---|-----------------------|--|
| | Toluene | 2.8E-01 | 2.7E-01 | 1.0E+00 | 5.2E+02 | 6.0E-01 | NC | 1.2E+01 | NC |
| | Trichloroethene | 1.9E-01 | 4.2E-01 | 5.0E-03 | 3.4E+00 | 3.0E-03 | NC | 6.0E-02 | NC |
| | Trichlorofluoromethane | 3.2E-01 | 4.0E+00 | 9.9E+00 | 1.3E+03 | NE | 8.6E+00 | NE | 1.7E+02 |
| | Vinyl Chloride | 3.7E-02 | 1.1E+00 | 2.0E-03 | 8.6E-01 | 7.0E-04 | NC | 1.4E-02 | NC |

Notes

- Hierarchy of values used for adjusted RBGCs as follows: 1) Primary Federal (USEPA) MCL, 2) NDEP tap water basic comparison levels (NDEP, 2009 BCLs), and 3) Secondary USEPA MCLs (NDEP meeting minutes for February 12 and 17, 2010).
All MCLs from <http://www.epa.gov/safewater/consumer/pdf/mcl.pdf> and are primary MCLs unless otherwise noted.
- Leaching-based, basic comparison levels (LBCLs) are calculated as follows: $LBCL = RBGC * DAF * (K_d + (\theta_w + \theta_a * H') / \rho_b)$
- Generic leaching-based basic comparison levels are calculated for chemicals for which NDEP did not establish LBCLs, using literature values for chemical properties and NDEP default values for soil properties (water-filled porosity, $\theta_w=0.3$; air-filled porosity, $\theta_a=0.13$; and dry bulk density, $\rho_b=1.5$ kg/L).
- Adjusted LBCLs are calculated for chemicals in **bold** type using modified hierarchy of values for RBGCs for leaching evaluation, as discussed with NDEP (NDEP meeting minutes for February 12, and 17, 2010).
- Chemicals without a RBGC and chemicals with no Site detects are not shown in this table.

SYMBOLS

K_d (L_w/kg_s) = soil-water partition coefficient
 θ_w (L_w/L_T) = water-filled porosity
 ρ_b (kg_s/L_T) = dry bulk density (default value from USEPA, 1996; page 36)
 θ_a (L_a/L_T) = air-filled porosity (default value from USEPA, 1996; page 36)
 H' (L_w/L_a) = dimensionless Henry's constant
 DAF = dilution-attenuation factor
 LBCL = Leaching-based comparison level
 RBGC = Risk-based groundwater concentrations; values in **bold** type used to calculate adjusted LBCLs.
 NC = Value not calculated because NDEP provides an LBCL.
 NE = Value not established

UNITS

kg = kilograms
 mg = milligrams
 L_w = liters of water
 L_a = liters of air
 L_T = liters of total bulk soil (soil air, soil water, and soil)