Appendix B

Documentation for Toxicological Surrogates

TABLE B-1 TOXICOLOGICAL SURROGATES APPLIED FOR BCLS

Chemical	CAS #	Surrogate	Surrogate CAS Number	Oral RfD (mg/kg-day)
Acenaphthalene	208-96-8	pyrene	129-00-0	3.0×10^{-2} (IRIS)
Benzo[g,h,i]perylene	191-24-2	pyrene	129-00-0	3.0×10^{-2} (IRIS)
Phenanthrene	85-01-8	pyrene	129-00-0	3.0×10^{-2} (IRIS)
Diethyl phosphorodithioate (DEPT)	298-06-6	diisopropyl methylphosphonate (DIMP)	1445-75-6	8.0×10^{-2} (Integral, 2006; NDEP, 2007)
Dimethyl phosphorodithioate (DMPT)	756-80-9	isopropyl methylphosphonate (IMPA)	1832-54-8	1.0×10^{-1} (Integral, 2006; NDEP, 2007)
m-Phthalic acid	121-91-5	phthalic anhydride	85-44-9	2.0×10^{0} (IRIS)
o-Phthalic acid	88-99-3	phthalic anhydride	85-44-9	2.0×10^{0} (IRIS)
p-Chlorobenzene sulfonic acid (pCBSA)	98-66-8	NA (RfD based on pCBSA study)	NA	1.0×10^{0} (derived by Integral, 2007)
Benzene sulfonic acid (BSA)	98-11-3	p-toluenesulfonic acid (pTSA)	104-15-4	5.0×10^{-1} (derived by Integral, 2007)

Integral Consulting, Inc., 2006. Development of Human Health Toxicological Criteria for DMPT and DEPT, October 31. http://ndep.nv.gov/bmi/docs/061031%20surrogate_toxicity_report_20061031_final_integral.pdf

Integral Consulting, Inc., 2007. Toxicological Profiles for Three Organic Acids, November 16, 2007 (p. 3-3). http://ndep.nv.gov/bmi/docs/071116-organicacidprofiles.pdf

TABLE B-1 TOXICOLOGICAL SURROGATES APPLIED FOR BCLS

NDEP, 2007. NDEP concurrence regarding the derivation of toxicological surrogates for DEPT and DMPT, February 12. http://ndep.nv.gov/bmi/docs/070212_dmpt_dept.pdf

Note: all surrogate derivations can be found at http://ndep.nv.gov/bmi/technical.htm under "Toxicology".

Table B-2.
Surrogate Inhalation Toxicity Criteria for Volatile Organic Compounds
NDEP Basic Comparison Levels

Chemical Constituents	CAS	Why On List?	Chemical Surrogate	Surrogate CAS	Surrogate RfC (mg/m^3)	Surrogate Criterion Source
Acetophenone	98-86-2	BCLs	Isopropylbenzene (Cumene)	98-82-8	4.00E-01	USEPA, 2010a
Benzaldehyde	100-52-7	BCLs	Isopropylbenzene (Cumene)	98-82-8	4.00E-01	USEPA, 2010a
Bromodichloromethane	75-27-4	BCLs	Dichloromethane	75-09-2	1.00E+00	ATSDR, 2010
n-Butylbenzene	104-51-8	BCLs	Isopropylbenzene (Cumene)	98-82-8	4.00E-01	USEPA, 2010a
sec-Butylbenzene	135-98-8	BCLs	Isopropylbenzene (Cumene)	98-82-8	4.00E-01	USEPA, 2010a
tert-Butylbenzene	98-06-6	BCLs	Isopropylbenzene (Cumene)	98-82-8	4.00E-01	USEPA, 2010a
1-Chlorobutane	109-69-3	BCLs	Ethyl chloride	75-00-3	1.00E+01	USEPA, 2010a
beta-Chloronaphthalene	91-58-7	BCLs	beta-Chloronaphthalene	91-58-7	1.00E-03	RIVM (TERA 2010)
2-Chlorophenol	95-57-8	BCLs	Chlorobenzene	108-90-7	5.00E-02	PPRTV (USEPA, 2010b)
o-Chlorotoluene	95-49-8	BCLs	Chlorobenzene	108-90-7	5.00E-02	PPRTV (USEPA, 2010b)
1,2-Dichloroethylene (cis)	156-59-2	BCLs	trans-1,2-Dichloroethylene	156-60-5	6.00E-02	PPRTV (USEPA, 2010b)
1,3-Dichloropropane	142-28-9	BCLs	1,2-Dichloropropane	78-87-5	4.00E-03	USEPA, 2010a
N-N-Dimethylaniline	121-69-7	BCLs	Aniline	62-53-3	1.00E-03	USEPA, 2010a
Ethyl acetate	141-78-6	BCLs	Methyl methacrylate	80-62-6	7.00E-01	USEPA, 2010a
Ethyl ether	60-29-7	BCLs	Methyl tert-Butyl Ether (MTBE)	1634-04-4	3.00E+00	USEPA, 2010a
Ethyl methacrylate	97-63-2	BCLs	Methyl methacrylate	80-62-6	7.00E-01	USEPA, 2010a
Furan	110-00-9	BCLs	Tetrahydrofuran	109-99-9	3.50E-02	RIVM (TERA 2010)
Isobutanol	78-83-1	BCLs	sec-Butyl Alcohol	78-92-2	3.00E+01	PPRTV (USEPA, 2010b)
Methyl acetate	79-20-9	BCLs	Methyl methacrylate	80-62-6	7.00E-01	USEPA, 2010a
Methyl acrylate	96-33-3	BCLs	Methyl methacrylate	80-62-6	7.00E-01	USEPA, 2010a
Methylene bromide	74-95-3	BCLs	Methylene bromide	74-95-3	4.00E-03	USEPA, 2010a
Methyl styrene (alpha)	98-83-9	BCLs	Styrene	100-42-5	1.00E+00	USEPA, 2010a
Polynuclear Aromatic Hydrocarbons	--	--	--	--	--	--
Acenaphthene	83-32-9	BCLs	Naphthalene	91-20-3	3.00E-03	USEPA, 2010a
Acenaphthylene	208-96-8	BCLs	Naphthalene	91-20-3	3.00E-03	USEPA, 2010a
Anthracene	120-12-7	BCLs	Naphthalene	91-20-3	3.00E-03	USEPA, 2010a
Fluorene	86-73-7	BCLs	Naphthalene	91-20-3	3.00E-03	USEPA, 2010a
Phenanthrene	85-01-8	BCLs	Naphthalene	91-20-3	3.00E-03	USEPA, 2010a
Pyrene	129-00-0	BCLs	Naphthalene	91-20-3	3.00E-03	USEPA, 2010a
n-Propylbenzene	103-65-1	BCLs	Isopropylbenzene (Cumene)	98-82-8	4.00E-01	USEPA, 2010a
Pyridine	110-86-1	BCLs	Trichloracetic acid	76-03-9	1.20E-01	TERA 2010
1,1,2-Trichloropropane	598-77-6	BCLs	1,2,3-Trichloropropane	96-18-4	3.00E-04	USEPA, 2010a
1,3-Dichlorobenzene	541-73-1	TO-15	1,2-Dichlorobenzene	95-50-1	2.00E-01	HEAST
4-Isopropyltoluene	99-87-6	TO-15	Isopropylbenzene (Cumene)	98-82-8	4.00E-01	USEPA, 2010a
Methyl Iodide	74-88-4	TO-15	USEPA HEC	74-88-4	1.70E-01	USEPA, 2006
1,3,5-Trimethyl Benzene	108-67-8	TO-15	1,2,4-Trimethylbenzene	95-63-6	7.00E-03	PPRTV (USEPA, 2010b)
para-Ethyltoluene	622-96-8	TO-15	Isopropylbenzene (Cumene)	98-82-8	4.00E-01	USEPA, 2010a
Isobutylbenzene	538-93-2	TO-15	Isopropylbenzene (Cumene)	98-82-8	4.00E-01	USEPA, 2010a
Isopropyl Alcohol	67-63-0	TO-15	sec-Butyl Alcohol	78-92-2	3.00E+01	PPRTV (USEPA, 2010b)
tert-Butyl Alcohol	75-65-0	TO-15	sec-Butyl Alcohol	78-92-2	3.00E+01	PPRTV (USEPA, 2010b)
1-Butanol	71-36-3	TO-15	sec-Butyl Alcohol	78-92-2	3.00E+01	PPRTV (USEPA, 2010b)
Propyl Alcohol	71-23-8	TO-15	sec-Butyl Alcohol	78-92-2	3.00E+01	PPRTV (USEPA, 2010b)

USEPA 2010a. Integrated Risk Information System. http://www.epa.gov/ncea/iris/index.html
USEPA 2010b. Regional Screening Table. http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/index.htm
RIVM; National Institute of Public Health and the Environment, the Netherlands as compiled by TERA 2010. http://www.tera.org/ITER/index.html