ILLINOIS POLLUTION CONTROL BOARD
September 6, 2001

IN THE MATTER OF:	)	
	)	
PROPOSED AMENDMENTS TO TIERED	)	R00-19(C)
APPROACH TO CORRECTIVE ACTION	)	(Rulemaking – Land)
OBJECTIVES (TACO) (MTBE): 35 ILL.	)	
ADM. CODE 742	)	

Proposed Rule. First Notice.

OPINION AND ORDER OF THE BOARD (by E.Z. Kezelis, N.J. Melas, R.C. Flemal):

On May 15, 2000, the Illinois Environmental Protection Agency (Agency) filed a proposal to amend 35 Ill. Adm. Code 742 of the Board's land regulations, commonly referred to as the Tiered Approach to Corrective Action Objectives (TACO) rules. The Board accepted this matter for hearing on May 18, 2000. On July 27, 2000, the Board moved the Agency's proposed rulemaking to first notice. In doing so, the Board divided the proposal into two subdockets, A and B.[1] This Subdocket C was opened by the Board on June 7, 2001, for the purpose of addressing the proposed cleanup standards for methyl tertiary-butyl ether (MTBE) that were originally contained in Subdocket B. It is these proposed MTBE cleanup standards, that the Board is adopting today for first notice.

The cleanup standards for MTBE were originally proposed at first notice as part of the Board's first-notice opinion and order in R00-19(B). See Proposed Amendments to Tiered Approach to Corrective Action Objectives (TACO): 35 Ill. Adm. Code 742, R00-19(B) (July 27, 2000). By creating a separate Subdocket C for the MTBE amendments, the Board intends to coordinate this rulemaking with another pending Agency proposal that would add groundwater quality standards for MTBE. *See generally* Proposed MTBE Groundwater Quality Standards Amendments: 35 Ill. Adm. Code 620, R01-14.

By today's action, and pursuant to the Administrative Procedures Act (5 ILCS 100/1-1 *et seq.* (2000)), the Board proposes new cleanup standards for MTBE. The proposed amendments will be published in the *Illinois Register*, whereupon a 45-day public comment period will begin. During the public comment period, any interested persons may file public comments with the Board pertaining to this proposal.

PROCEDURAL HISTORY

[1] The Subdocket A amendments were adopted on December 21, 2000 (Proposed Amendments to Tiered Approach to Corrective Action Objectives (TACO): 35 Ill. Adm. Code 742, R00-19(A)), and the Subdocket B amendments were adopted on July 26, 2001 (Proposed Amendments to Tiered Approach to Corrective Action Objectives (TACO): 35 Ill. Adm. Code 742, R00-19(B)).

PROCEDURAL HISTORY

While public hearings have not yet been held in this Subdocket specifically, three public hearings were held in Subdockets A and B. At the time of the public hearings, the proposed MTBE cleanup standards were part of Subdocket B. The first and third hearings were held in Chicago on August 25,2000 and September 21,2000. The second hearing was held in Springfield on September 11,2000.

At the August 25,2000 hearing, the Agency presented testimony from a number of witnesses. Douglas Clay, Manager of the Leaking Underground Storage Tank Section of the Agency's Bureau of Land, Thomas Hornshaw, Senior Public Service Administrator and Manager of the Toxicity Assessment Unit, Office of Chemical Safety, and Richard Cobb, Manager of the Groundwater Section of the Agency's Bureau of Water, testified regarding the proposed addition of MTBE cleanup standards. During the September 11, 2000 hearing, Mr. Clay and Mr. Cobb both testified regarding the proposed MTBE standards on behalf of the Agency, and David Sykuta testified on behalf of the Illinois Petroleum Council. The Agency also submitted the following two exhibits at hearing:

Exhibit No.	Exhibit Name
Agency Exh. 1	Group exhibit consisting of prefiled Testimony of Agency witnesses
Agency Exh. 2	"Basis for Proposing a Preventive Notice and Response Level for MTBE In 35 Ill. **Adm.** Code 620"[2]

The Board hereby incorporates by reference those exhibits, transcripts, and public comments from Subdockets A and B into this Subdocket C proceeding.

PROPOSED MTBE STANDARDS

The Agency stated that it was proposing to add cleanup standards for MTBE as a result of increasing national concern over the growing number of community water supplies that test positive for MTBE contamination. Stat. of Reas. at 2-3. In his testimony, Mr. Clay reiterated that the "proposal arose as a result of increased national health concerns." Agency Exh. 1 (Clay) at 1.

The proposed cleanup standards and chemical and physical parameters for MTBE are found in the appendices to Part 742 as follows: Appendix A, Table A (soil saturation limits); Appendix A, Table E (similar-acting noncarcinogenic chemicals); Appendix B, Table A (soil remediation objectives for residential properties); Appendix B, Table B (soil remediation

[2] For purposes of this opinion and order, references to "Agency Exh. 1" will specify the name of the witness providing the quoted testimony, such as, "Agency Exh. 1 (Clay) at ___." The Agency's Statement of Reasons is referred to as "Stat. of Reas. at ___."

objectives for industrial/commercial properties); Appendix B, Table E (groundwater remediation objective for groundwater component of groundwater ingestion route); Appendix B, Table F (values used to calculate the Tier 1 soil remediation objective for the soil component of groundwater ingestion route); and Appendix C, Table E (default physical and chemical parameters).

As background information, Mr. Clay testified as follows:

> MTBE is a volatile, organic chemical. Since the late 1970's, MTBE has been used as an octane enhancer in gasoline. Because it promotes more complete burning of gasoline, thereby reducing carbon monoxide and ozone levels, it is commonly used as a gasoline additive in localities with air quality concerns. In the Clean Air Act of 1990 ("CAA"), Congress mandated the use of reformulated gasoline ("RFG") in areas of the country with the worst ozone or smog problems. RFG must meet certain technical specifications set forth in the CAA, including a specific oxygen content. Ethanol and MTBE are the primary oxygenates used to meet the oxygen content requirement. MTBE is used in about 84% of RFG supplies. Prior to December 1997, 32 areas in a total of 18 states were participating in the RFG program. During this same period, RFG accounted for about 30% of gasoline nationwide. Agency Exh. 1 (Clay) at 2-3.

Mr. Clay also testified that MTBE is now being detected in increasing quantities in the environment. Agency Exh. 1 (Clay) at 3. Mr. Clay testified that, as of August 2000, 26 of 1,200 community water supplies in Illinois tested positive for MTBE contamination. *Id.* Four of the 26 community water supplies had to discontinue use of groundwater wells as a result of the MTBE contamination. *Id.;* Tr. (8/25/00) at 79. He testified that MTBE is "a big issue . . . [and has] been a big issue for a number of years." Tr. (8/25/00) at 117.

According to Mr. Clay, MTBE contamination is problematic because MTBE disperses rapidly and degrades slowly. Agency Exh. 1 (Clay) at 4. Furthermore, once in groundwater, MTBE is difficult to clean up. Tr. (8/25/00) at 119.

While most of the MTBE-contaminated drinking water in Illinois is not thought to pose a threat to human health, Mr. Clay noted that the United States Environmental Protection Agency (USEPA) is continuing to evaluate the potential risks to human health from MTBE. Tr. (8/25/00) at 119. Mr. Clay explained that, "[o]ne of the main concerns is determining what is the cancer-causing potential of MTBE," noting that there is evidence "that MTBE caused cancer in laboratory rats." *Id.*

In addition to the potential risk to human health, Mr. Clay also testified that consumers of drinking water are able to detect MTBE through taste and smell at concentrations of as little as 20 to 40 parts per billion (ppb). Agency Exh. 1 (Clay) at 4. Mr. Clay commented that MTBE is described as tasting and smelling like turpentine. *Id.* However, since MTBE has not

previously been a contaminant for which sampling is required, there is little data on the actual presence or extent of MTBE contamination in Illinois. *Id.*

In support of the proposed MTBE cleanup standards, Mr. Clay testified about a "Blue Ribbon Panel" (panel) appointed by former United States Environmental Protection Agency (USEPA) Administrator Carol Browner. Specifically, Mr. Clay noted that the panel concluded that "MTBE is more likely to contaminate groundwater and surface water than the other components of gasoline [and] [o]nce MTBE is in groundwater, its physical and chemical properties make it very difficult to remediate." Agency Exh. 1 (Clay) at 5, citing generally Clay Exh. 27.[3]

Dr. Hornshaw provided testimony regarding the "toxicological bases for the proposed remediation objectives." Agency Exh. 1 (Hornshaw) at 2. In support of the proposed standards, Dr. Hornshaw noted the "increased incidence of diarrhea and increased level of cholesterol in the blood of laboratory rats for the soil and groundwater ingestion pathways and liver and kidney effects for the inhalation pathway." *Id.*

Dr. Hornshaw stated that in response to detection of MTBE in a community water supply, the Agency developed a "toxicity criterion value for the ingestion pathways for noncarcinogens [reference dose] . . . for use in . . . a proposed Health Advisory for MtBE [sic]." Agency Exh. 1 (Hornshaw) at 2. Dr. Hornshaw explained, however, that the Agency did not address the potential carcinogenic effects of MTBE in the Health Advisory. Tr. (8/25/00) at 122. He testified that when the Health Advisory was originally drafted in 1993, the information was not sufficient for USEPA or, accordingly, the Agency, to make a determination as to whether MTBE poses a cancer risk for humans. *Id.* at 122-23. Since 1993, however, USEPA has been reviewing new information that "suggests that maybe cancer is [a] relevant [end] point for humans based on animal data, but that decision has not been made at the federal level, and [the Agency is] not prepared to make that decision as an agency right now." *Id.* at 123. As a result, the Agency relied on a "noncancer end point" in making its proposals to the Board for MTBE cleanup standards. *Id.*

The numbers proposed by the Agency are based on an action level of 20 ppb, a groundwater standard of 70 ppb, and inclusion of MTBE as an indicator contaminant for gasoline. Agency Exh. 1 (Clay) at 5. According to Mr. Clay, the 20 ppb is based on taste and odor threshold, while the 70 ppb is a health-based number. *Id.* Dr. Hornshaw further states that the reference dose for calculating the cleanup objectives was taken from USEPA's Integrated Risk Information System (IRIS)[4] and that the physical/chemical parameters were taken from USEPA databases known as "CHEMFATE" and "CHEMDAT8." Tr. (8/25/00) at 123. While the Agency has provided the Board with information supporting the proposed standards, the record is lacking a detailed explanation of the calculations employed by the

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[3] Exhibits attached to Mr. Clay's prefiled testimony are referred to as "Clay Exh. __."

[4] **IRIS** is USEPA's computer-based summary of the health risks, appropriate daily exposures, and evaluations of cancer risks for over 600 chemicals. Tr. (8/25/00) at 157.

Agency in reaching the proposed numbers. The Board specifically requests supplementation in this regard from the Agency during this first-notice period.

Dr. Hornshaw testified that he is aware of other states (California and New York) where the potential carcinogenicity of MTBE has prompted adoption of standards that are less than those proposed for Illinois. Tr. (8/25/00) at 123-24.

On behalf of the Illinois Petroleum Council (Petroleum Council), Mr. Sykuta testified that he agrees that MTBE is a problem and that the Petroleum Council is working closely with the Agency to develop a protocol for dealing with it. Tr. (9/11/00) at 111. The Petroleum Council supports the 70 ppb cleanup standard for MTBE. *Id.* at 112. The Petroleum Council, however, is concerned that the 20 ppb action level will somehow become the cleanup standard and they are not prepared for that. *Id.* at 113.

He urged the Board to consider a couple of factors when proposing an MTBE standard, First, he asked the Board to remember the importance of keeping the leaking underground storage tank (LUST) program financially viable. Tr. (9/11/00) at 114. Second, he reminded the Board that the inclusion of MTBE in gasoline was required by law and to "penalize people for obeying the law as it existed at that time," would be unfair. *Id.*

Mr. Cobb testified in response to the Petroleum Council's testimony. Specifically, he addressed the preventative response or "action" level of 20 ppb. Mr. Cobb testified that there are four reasons why the 20 ppb preventative response level is appropriate: (1) it meets the taste and odor threshold set by USEPA for MTBE; (2) a preventative response level is required by Section 8 of the Illinois Groundwater Protection Act (415 ILCS 55/8 (2000)); (3) there is existing regulatory authority and precedent in the Board's existing groundwater quality standards; and **(4)** there is no history of applying the preventative response level to LUST projects as a cleanup objective. Tr. (9/11/00) at 123.

Regarding the proposed default physical and chemical parameters for MTBE found in 35 Ill. Adm. Code 742.Appendix C, Table E, Dr. Hornshaw testified that the proposed value for the MTBE first-order degradation constant (λ) of 0.00193/day was derived from a "preferred" source (Philip H. Howard, Handbook of Environmental Fate and Exposure Data for Organic Chemicals, (Lewis Pub. 1989)). The Agency, however, suggested that the Board consider setting the λ value at 0/day. The Agency stated that it was uneasy about the proposed value since reports from sites in Illinois and other sites across the nation indicate MTBE is very difficult to remove using biological degradation treatment technologies. Exh. 1 (Hornshaw) at 3. In this regard, the Petroleum Council noted that there is insufficient data at present to propose a degradation constant for MTBE that could be universally applied to all groundwater models. The Petroleum Council supports a default MTBE degradation rate of "0/day." The Petroleum Council also requested language in the rule to allow the use of a site specific degradation constant where appropriate. PC 4, ROO-19B.

As suggested by the Agency, the Board considered what the most appropriate value would be for an MTBE first-order degradation constant and reviewed Volume 4 of the Agency's preferred reference Handbook of Environmental Fate and Exposure Data for Organic Chemicals by P.H. Howard. The 1993 printing states, "No data concerning the biodegradation of MTBE in environmental media were located." In addition, the Board also reviewed the studies identified by the Petroleum Council regarding an MTBE first-order degradation constant.[5] Our review, in combination with the Agency's and the Petroleum Council's comments, indicates that there is insufficient data to assign a first-order degradation constant to MTBE on a State-wide basis.

The Board will revise the First Order Degradation Constant for MTBE as "No Data" in Part 742.Appendix C, Table E. By doing so, the rules at Part 742.Appendix C, Table C will allow the use of a default value of 0/day. In addition, Section 742.810(a)(1) allows the use of first order degradation rate determined by using site-specific data. This approach is intended to address both the Agency's and the Petroleum Council's concerns.

MTBE GROUNDWATER QUALITY STANDARD

As noted previously, the Board deliberately established this Subdocket C so as to coordinate the proposal and adoption of groundwater quality standards for MTBE. Specifically, the Board has today proposed for first notice a groundwater quality standard of 70 ppb. ***See*** Proposed MTBE Groundwater Quality Standards Amendments: -35 Ill. Adm. Code 620, R01-14 (Sept. 6, 2001). Because of the closely related nature of the evidence submitted in the groundwater proceeding, the Board hereby incorporates the hearing transcripts and evidence from R01-14 into this proceeding.

DISCUSSION

The Board has concluded that the MTBE TACO standards should be consistent with the groundwater quality standards. Accordingly, the Board adopts for first notice the TACO standards for MTBE as originally proposed by the Agency in March 2000. These standards are based on a non-carcinogenic endpoint for MTBE.

In considering the information submitted in the course of ROl-14, the Board examined a study performed by the California Environmental Protection Agency entitled, "Public Health Goals for Methyl-Tertiary Butyl Ether (MTBE) in Drinking Water" (PHG Report). ***See*** Exh. 13 (R01-14). The PHG Report concluded that there is evidence of the carcinogenicity of MTBE. Based on the PHG Report, the California Department of Public Health adopted a drinking water standard of 13 ppb for MTBE. ***See*** Proposed MTBE Groundwater Quality Standards Amendments: 35 Ill. Adm. Code 620, R01-14 (Sept. 6, 2001), for additional discussion of the PHG Report.

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[5] See PC 4 for a list of the studies identified by the Petroleum Council.

While the Board recognizes that there is evidence suggesting the possible carcinogenicity of MTBE, the Board, in adopting standards for 35 Ill. Adm. Code 742, cannot consider MTBE to be a carcinogen unless the contaminant meets the definition of a "carcinogen" found at Section 58.2 of the Act (415 ILCS 5/58.2 (2000)) and again at 35 Ill. Adm. Code 742.200. Section 58.2 of the Act defines "carcinogen" as follows:

> "Carcinogen" means a contaminant that is classified as a Category A1 or A2 Carcinogen by the American Conference of Governmental Industrial Hygienists; or a Category 1 or 2A/2B Carcinogen by the World Health Organizations International Agency for Research on Cancer; or a "Human Carcinogen" or "Anticipated Human Carcinogen" by the United States Department of Health and Human Service National Toxicological Program; or a Category A or B1/B2 Carcinogen by the United States Environmental Protection Agency in Integrated Risk Information System or a Final Rule issued in a Federal Register notice by the USEPA as of the effective date of this amendatory Act of 1995. 415 ILCS 5/58.2 (2000).

Because, as of this date, none of the entities specified above have declared MTBE to be a human carcinogen pursuant to Section 58.2 of the Act, the Board concludes that it is legally unable to use a carcinogenic based endpoint for calculating the TACO cleanup standards for this first notice and will, instead, proceed to first notice with the remediation objectives proposed by the Agency. The Board invites public comment on this conclusion and the Board's interpretation of the constraining effect of Section 58.2 of the Act.

The Board notes that each of the agencies referenced in Section 58.2 of the Act is currently examining the issue of MTBE and whether it should be classified as a carcinogen. The Board will be monitoring the progress of these agencies closely, as will, of course, the Agency, and will consider amendments to the TACO rules to reflect any future adjustments in the classification of MTBE.

Finally, although the Board does not declare that MTBE is **a** carcinogen, the Board nevertheless concludes that the TACO cleanup standards proposed herein are scientifically sound and are protective of human health and the environment. The Board encourages public comment in this regard and plans to schedule public hearings in the near future for the purpose of receiving additional comment and testimony regarding the proposed standards,

ORDER

The Board directs the Clerk to cause the filing of the following with the Secretary of State for first-notice publication in the *Illinois Register*.

TITLE 35: ENVIRONMENTAL PROTECTION
SUBTITLE G: WASTE DISPOSAL
CHAPTER I: POLLUTION CONTROL BOARD
SUBCHAPTER f RISK BASED CLEANUP OBJECTIVES
PART **742**
TIERED APPROACH TO CORRECTIVE ACTION OBJECTIVES

SUBPART A: INTRODUCTION

SUBPARTB: GENERAL

SUBPART C: EXPOSURE ROUTE EVALUATIONS

SUBPART D: DETERMINING AREA BACKGROUND

SUBPART E: TIER 1 EVALUATION

SUBPART F: TIER 2 GENERAL EVALUATION

SUBPART G: TIER 2 SOIL EVALUATION

SUBPART H: TIER 2 GROUNDWATER EVALUATION

SUBPART I: TIER 3 EVALUATION

SUBPART J: INSTITUTIONAL CONTROLS

SUBPART K: ENGINEERED BARRIERS

TABLE D RBCA Parameters
TABLE E Default Physical and Chemical Parameters
TABLE F Methods for Determining Physical Soil Parameters
TABLE G Error Function (erf)
TABLE H Q/C Values By Source Area
TABLE I K_{oc} Values for Ionizing Organics as a Function of pH (cm^3/g or L/kg or cm^3_{water}/g_{soil})
TABLE J Values to be Substituted for k_d or k_s when Evaluating Inorganics as a Function of pH (cm^3/g or L/kg or cm^3_{water}/g_{soil})
TABLE K Parameter Estimates for Calculating Water-Filled Soil Porosity (θ_w)

AUTHORITY: Implementing Sections 22.4, 22.12, Title XVI, and Title XVII and authorized by Sections 27 and 58.5 of the Environmental Protection Act [415 ILCS 5/22.4, 22.12, 27, and 58.5 and Title XVI and Title XVII].

SOURCE: Adopted in R97-12(A) at 21 Ill. Reg. 7942, effective July 1, 1997; amended in R97-12(B) at 21 Ill. Reg. 16391, effective December 8, 1997; amended in R97-12(C) at 22 Ill. Reg. 10847, effective June 8,1998; amended in R00-19(A) at 25 111. Reg. 651, effective January **6,** 2001; amended in R00-19(B) at 25 Ill. Reg. 10374, effective August 15,2001; amended in R00-19(C) at 25 Ill. Reg. , effective _____

NOTE: Capitalization indicates statutory language.

Section 742.APPENDIX **A:** General

Section 742.TABLE **A:** Soil Saturation Limits (C_{sat}) for Chemicals Whose Melting Point is Less than 30° C

CAS No.	Chemical Name	C_{sat} (mg/kg)
67-64-1	Acetone	100,000
71-43-2	Benzene	870
111-44-4	Bis(2-chloroethyl)ether	3,300
117-81-7	Bis(2-ethylhexyl)phthalate	31,000
75-27-4	Bromodichloromethane (Dichlorobromomethane)	3.000
75-25-2	Bromoform	1,900
71-36-3	Butanol	10,000
85-68-7	Butyl benzyl phthalate	930
75-15-0	Carbon disulfide	720
56-23-5	Carbon tetrachloride	1,100
108-90-7	Chlorobenzene (Monochlorobenzene)	680
124-48-1	Chlorodibromomethane (Dibromochloromethane)	1.300
67-66-3	Chloroform	2,900

96-12-8	1,2-Dibromo-3-chloropropane	1,400
84-74-2	Di-n-butyl phthalate	2,300
95-50-1	1,2-Dichlorobenzene (o-Dichlorobenzene)	560
75-34-3	1,I-Dichloroethane	1,700
107-06-2	1,2-Dichloroethane (Ethylene dichloride)	1,800
75-35-4	1.1-Dichloroethvlene	1,500
156-59-2	cis-1,2-Dichloroethylene	1,200
156-60-5	*trans*-1,2-Dichloroethylene	3,100
78-87-5	1,2-Dichloropropane	1,100
542-75-6	1,3-Dichloropropene (1,3-Dichloropropylene, *cis* + *trans*)	1,400
84-66-2	Diethyl phthalate	2,000
117-84-0	Di-n-octyl phthalate	10,000
100-41-4	Ethylbenzene	400
77-47-4	Hexachlorocyciopentadiene	2,200
78-59-1	Isophorone	4,600
74-83-9	Methyl bromide (Bromomethane)	3,200
75-09-2	Methylene chloride (Dichloromethane)	2,400
98-95-3	Nitrobenzene	1,000
100-42-5	Styrene	1,500
127-18-4	Tetrachloroethylene (Perchloroethylene)	240
108-88-3	Toluene	650
120-82-1	1,2,4-Trichlorobenzene	3,200
71-55-6	1,1,1-Trichloroethane	1,200
79-00-5	1,1,2-Trichloroethane	1,800
79-01-6	Trichloroethylene	1,300
108-05-4	Vinyl acetate	2,700
75-01-4	Vinyl chloride	1,200
108-38-3	m-Xylene	420

95-47-6	o-Xylene	410
106-42-3	p-Xylene	460
1330-20-7	Xylenes (total)	320
	Ionizable Organics	
95-57-8	2-Chlorophenol	53,000

(Source: Amended at 25 Ill. Reg. _____, effective _____)

Section 742. APPENDIX A: General

Section 742. TABLE E: Similar-Acting Noncarcinogenic Chemicals

~~Kidney~~
~~Acetone~~
~~Cadmium (Ingestion only)~~
~~Chlorobenzene~~
~~Dalapon~~
~~1,1 Dichloroethane~~
~~Di n-octyl phthalate (Ingestion only)~~
~~Endosulfan~~
~~Ethylbenzene~~
~~Fluoranthene~~
~~Nitrobenzene~~
~~Pyrene~~
~~Toluene (Ingestion only)~~
~~2,4,5 Tricholorphenol~~
~~Vinyl Acetate (Ingestion only)~~

~~Liver~~
~~Acenaphthene~~
~~Acetone (Ingestion only)~~
~~Butylbenzyl phthalate (Ingestion only)~~
~~Chlorobenzene (Ingestion only)~~
~~1,1 Dichloroethylene (Ingestion only)~~
~~Di n-octyl phthalate (Ingestion only)~~
~~Endrin~~
~~Ethylbenzene~~
~~Fluoranthene~~
~~Nitrobenzene~~
~~Picloram~~
~~Styrene (Ingestion only)~~
~~2,4,5 TP (Silvex)~~
~~Toluene (Ingestion only)~~
~~1,2,4 Trichlorobenzene (Inhalation only)~~
~~2,4,5 Trichlorophenol~~

~~Central Nervous System~~
~~Butanol (Ingestion only)~~
~~Cyanide (amenable)~~
~~2,4 Dimethylphenol~~
~~Endrin~~
~~Manganese~~
~~2 Methylphenol~~
~~Mercury (Inhalation only)~~
~~Styrene (Inhalation only)~~
~~Toluene (Inhalation only)~~
~~Xylenes (Ingestion only)~~

~~Circulatory System~~
~~Antimony~~
~~Barium (Ingestion only)~~
~~2,4 D~~
~~cis 1,2 Dichloroethylene (Ingestion only)~~
~~Nitrobenzene~~
~~trans 1,2 Dichloroethylene (Ingestion only)~~
~~2,4 Dimethylphenol~~
~~Fluoranthene~~
~~Fluorene~~
~~Styrene (Ingestion only)~~
~~Zinc~~

~~Gastrointestinal System~~
~~Beryllium (Ingestion only)~~
~~Endothall~~
~~Hexachlorocyclopentadiene (Ingestion only)~~
~~Methyl bromide (Ingestion only)~~

~~Reproductive System~~
~~Barium (Inhalation only)~~
~~Boron (Ingestion only)~~
~~Carbon disulfide~~
~~2-Chlorophenol (Ingestion only)~~
~~1,2 Dibromo-3-Chloropropane (Inhalation only)~~
~~Dinoseb~~
~~Ethylbenzene (Inhalation only)~~
~~Methoxychlor~~
~~Phenol~~

~~Cholinesterase Inhibition~~
~~Aldicarb~~
~~Carbofuran~~

~~Decreased Body Weight Gains and Circulatory System Effects~~
~~Atrazine~~
~~Simazine~~

~~Adrenal Gland~~
~~Nitrobenzene~~
~~1,2,4-Trichlorobenzene (ingestion only)~~

~~Respiratory System~~
~~1,2-Dichloropropane (Inhalation only)~~
~~1,3-Dichloropropylene (Inhalation only)~~
~~Hexachlorocyclopentadiene (Inhalation only)~~
~~Methyl bromide (Inhalation only)~~
~~Naphthalene (Inhalation only)~~
~~Toluene (Inhalation only)~~
~~Vinyl acetate (Inhalation only)~~

~~Immune System~~
~~2,4-Dichlorophenol~~
~~p-Chloroaniline~~
~~Mercury (Ingestion only)~~

Adrenal Gland
Nitrobenzene
1,2,4-Trichlorobenzene (Ingestion only)

Kidney
Acetone (Ingestion only)
Cadmium (Ingestion only)
Chlorobenzene
Dalapon
1,1-Dichloroethane
Di-n-octyl phthalate (Ingestion only)
Endosulfan
Ethylbenzene
Fluoranthene
Methyl tert-butyl ether (Inhalation only)
Nitrobenzene
Pyrene
Toluene (Ingestion only)
2,4,5-Trichlorophenol
Vinyl acetate (Inpestion only)

Liver
Acenaphthene
Acetone (Ingestion only)
Butylbenzyl phthalate (Ingestion only)
Chlorobenzene (Ingestion only)
1,1-Dichloroethylene (Ingestion only)
Di-n-octyl phthalate (Ingestion only)
Endrin
Ethylbenzene
Fluoranthene
Methyl tert-butyl ether (Inhalation only)
Nitrobenzene
Picloram
Styrene (Ingestion only)
2,4,5-TP (Silvex)
Toluene (Ingestion only)
1,2,4-Trichlorobenzene (Inhalation only)
2,4,5-Trichlorophenol

Central Nervous System
Butanol (Inhalation only)
Cyanide (amenable)
2,4-Demethylphenol
Endrin
Manganese
2,Methylphenol
Mercury (Inhalation only)
Styrene (Inhalation only)
Toluene (Inhalation only)
Xylenes (Ingestion only)

Circulatory System
Antimony
Barium. (Ingestion only)
2,4-D
cis-1,2-Dichloroethylene (Ingestion only)
Nitrobenzene
trans-1,2-Dichloroethylene (Ingestion only)
2,4-Dimethylphenol
Fluoranthene
Fluorene
Styrene (Ingestion only)
Zinc

Gastrointestinal System
Beryllium (Ingestion only)
Endothall
Hexachlorocyclopentadiene (Ingestion only)
Methyl bromide (Ingestion only)
Methyl tert-butyl ether (Ingestion only)

Immune System
2,4-Dichlorophenol
p-Chloroaniline
Mercury (Ingestion only)

Reproductive System
Barium (Inhalation only)
Boron (Ingestion only)
Carbon disulfide
2-Chlorophenol (Ingestion only)
1,2 Dibromo-3-Chloropropane (Inhalation only)
Dinoseb
Ethylbenzene (Inhalation only)
Methoxychlor
Phenol

Respiratory System
1,2-Dichloropropane (Inhalation only)
1,3-Dichloropropylene (Inhalation only)
Hexachlorocyclopentadiene (Inahalation only)
Methyl bromide (Inhalation only)
Naphthalene (Inhalation only)
Toluene (Inhalation only)
Vinyl acetate (Inhalation only)

Cholinesterase Inhibition
Aldicarb
Carbofuran

Decreased Body Weight Gains and Circulatory System Effects
Atrazine
Simazine

(Source: Amended at 25 Ill. Reg. _____, effective _____)

Section 742.APPENDIX B: Tier 1 Tables and Illustrations

Section 742.TABLE A: Tier 1 Soil Remediation Objectives[a] for Residential Properties

		Exposure Route-Specific Values for Soils		Soil Component of the Groundwater Ingestion Exposure Route Values		
CAS No.	Chemical Name	Ingestion (mg/kg)	Inhalation (mg/kg)	Class I (mg/kg)	Class II (mg/kg)	ADL (mg/kg)
83-32-9	Acenaphthene	4,700[b]	---[c]	570[b]	2,900	*
67-64-1	Acetone	7,800[b]	100,000[d]	16[b]	16	*
15972-60-8	Alachlor°	8[e]	---[c]	0.04	0.2	NA
116-06-3	Aldicarb°	78[b]	---[c]	0.013	0.07	NA
309-00-2	Aldrin	0.04"	3[e]	0.5"	2.5	0.94
120-12-7	Anthracene	23,000[b]	---[c]	12,000[b]	59,000	*
1912-24-9	Atrazine°	2700[b]	---[c]	*0.066*	0.33	**NA**
71-43-2	Benzene	12"	0.8"	0.03	0.17	*
56-55-3	Benzo(*a*)anthracene	0.9[e]	---[c]	2	8	*
205-99-2	Benzo(*b*)fluoranthene	0.9"	---[c]	5	25	*

		Exposure Route-Specific Values for Soils		Soil Component of the Groundwater Ingestion Exposure **Route** Values		
CAS No.	Chemical Name	Ingestion (mg/kg)	Inhalation (mg/kg)	Class I (mg/kg)	Class II (mg/kg)	ADL (mg/kg)
207-08-9	Benzo(*k*)fluroanthene	9"	---[c]	49	250	*
50-32-8	Benzo(*a*)pyrene	0.09[e,f]	---[c]	8	82	*
111-44-4	Bis(2-chloroethyl)ether	0.6'	0.2[e,f]	0.0004[e,f]	0.0004	0.66
117-81-7	Bis(2-ethylhexyl)phthalate	46"	31,000[d]	3,600	31,000[d]	*
75-27-4	Bromodichloromethane (Dichlorobromomethane)	10[e]	3,000[d]	0.6	0.6	*
75-25-2	Bromoform	81"	53[e]	0.8	0.8	*
71-36-3	Butanol	7,800[b]	10,000[d]	17[b]	17	**NA**
85-68-7	Butyl benzyl phthalate	16,000[b]	930[d]	930[d]	930[d]	*
86-74-8	Carbazole	32[e]	---[c]	0.6[e]	2.8	NA
1563-66-2	Carbofuran"	390[b]	---[c]	0.22	1.1	**NA**
75-15-0	Carbon disulfide	7,800[b]	720[d]	32[b]	160	*

		Exposure Route-Specific Values for Soils		Soil Component of the Groundwater Ingestion Exposure Route **Values**		
CAS No.	Chemical Name	Ingestion (mg/kg)	Inhalation (mg/kg)	Class I (mg/kg)	Class II (mg/kg)	ADL (mg/kg)
56-23-5	Carbon tetrachloride	5[e]	0.3[e]	0.07	0.33	*
57-74-9	Chlordane	1.8[e]	72[e]	10	48	*
106-47-8	4-Chtoroaniline (*p*-Chloroaniline)	310[b]	---[c]	0.7[b]	0.7	*
108-90-7	Chlorobenzene (Monochlorobenzene)	1,600[b]	130[b]	1	6.5	*
124-481	Chlorodibromomethane (Dibromochloromethane)	1,600[b]	1,300[d]	0.4	0.4	*
67-66-3	Chloroform	100"	0.3"	0.6	2.9	*
218-01-9	Chrysene	88"	---[c]	160	800	*
94-75-7	2,4-D[g]	780[b]	---[c]	1.5	7.7	*
75-99-0	Dalapon[o]	2,300[b]	---[c]	0.85	8.5	*
72-54-8	DDD	3"	---[c]	16[e]	80	*
72-55-9	DDE	2[e]	---[c]	54"	270	*

		Exposure Route-Specific Values **for** Soils		**Soil** Component of the Groundwater Ingestion Exposure Route Values		
CAS No.	Chemical Name	Ingestion (mg/kg)	Inhalation (mg/kg)	Class I (mg/kg)	Class II (mg/kg)	ADL (mg/kg)
50-29-3	DDT	2[e]	---[g]	32[e]	160	*
53-70-3	Dibenzo(*a,h*)anthracene	0.09[e,f]	---[c]	2	7.6	*
96-12-8	1,2-Dibromo-3-chloropropane	0.46[e]	11[b]	0.002	0.002	*
106-93-4	1,2-Dibromoethane (Ethylene dibromide)	0.0075"	0.17"	0.0004	0.004	0.005
84-74-2	Di-n-butyl phthalate	7,800[b]	2,300[d]	2,300[d]	2,300[d]	*
95-50-1	1,2-Dichlorobenzene (*o* - Dichlorobenzene)	7,000[b]	560[d]	17	43	*
106-46-7	1,4-Dichlorobenzene (*p* - Dichlorobenzene)	-[c]	11,000[b]	2	11	*
91-94-1	3,3'-Dichlorobenzidine	1[e]	---[c]	0.007[e,f]	0.033	1.3
75-34-3	1,l-Dichloroethane	7,800[b]	1,300[b]	23[b]	110	*

		Exposure Route-Specific Values for Soils		**Soil** Component of the Groundwater Ingestion Exposure Route Values		
CAS No.	Chemical Name	Ingestion (mg/kg)	Inhalation (mg/kg)	Class I (mg/kg)	Class II (mg/kg)	ADL (mg/kg)
107-06-2	1,2-Dichloroethane (Ethylene dichloride)	7"	0.4[e]	0.02	0.1	*
75-35-4	1,1-Dichloroethylene	700[b]	1,500[d]	0.06	0.3	*
156-59-2	***cis*-1,2-Dichloroethylene**	780[b]	1,200[d]	0.4	1.1	*
156-60-5	*trans*-1,2-Dichloroethylene	1,600[b]	3,100[d]	0.7	3.4	*
78-87-5	**1,2-Dichloropropane**	9"	15[b]	0.03	0.15	*
542-75-6	1,3-Dichloropropene (1,3-Dichloropropylene, ***cis*** + ***trans)***	6.4[e]	1.1[e]	0.004[e]	0.02	0.005
60-57-1	Dieldrin"	0.04[e]	1[e]	0.004"	0.02	0.603
84-66-2	Diethyl phthalate	63,000[b]	2,000[d]	470[b]	470	*
105-67-9	2,4-Dimethylphenol	1,600[b]	---[c]	9[b]	9	*
121-14-2	2,4-Dinitrotoluene	0.9[e]	---[c]	0.0008[e,f]	0.0008	0.250

		Exposure Route-Specific Values for Soils		**Soil** Component of the Groundwater Ingestion Exposure Route Values		
CAS No.	Chemical Name	Ingestion (mg/kg)	Inhalation (mg/kg)	Class **I** (mg/kg)	**Class** II (mg/kg)	**ADL** (mg/kg)
606-20-2	2,6-Dinitrotoluene	0.9[f]	---[c]	0.0007[e,f]	0.0007	0.260
117-84-0	Di-*n*-octyl phthalate	1,600[b]	10,000[d]	10,000[d]	10,000[d]	*
115-29-7	Endosulfan[o]	470[b]	---[c]	18[b]	90	*
145-73-3	Endothall[o]	1,600[b]	---[c]	0.4	0.4	**NA**
72-20-8	Endrin	23[b]	---[c]	1	5	*
100-41-4	Ethylbenzene	7,800[b]	400[d]	13	19	*
206-44-0	Fluoranthene	3,100[b]	---[c]	4,300[b]	21,000	*
86-73-7	Fluorene	3,100[b]	---[c]	560[b]	2,800	*
76-44-8	Heptachlor	0.1[f]	0.1[n]	23	110	0.871
1024-57-3	Heptachlor epoxide	0.07[e]	5[e]	0.7	3.3	1.005
118-74-1	Hexachlorobenzene	0.4[n]	1[n]	2	11	*
319-84-6	Alpha-HCH (alpha-BHC)	0.1[e]	0.8[n]	0.0005[e,f]	**0.003**	0.0074

		Exposure Route-Specific Values for Soils		**Soil** Component **of** the Groundwater Ingestion Exposure Route Values		
CAS No.	Chemical Name	Ingestion (mg/kg)	Inhalation (mg/kg)	Class **I** (mg/kg)	Class II (mg/kg)	ADL (mg/kg)
58-89-9	Gamma-HCH (Lindane)"	0.5"	---[c]	0.009	0.047	*
77-47-4	Hexachlorocyclopentadiene	550[b]	10[b]	400	2,200[d]	*
67-72-1	Hexachloroethane	78[b]	---[c]	0.5[b]	2.6	*
193-39-5	Indeno(1,2,3-*c,d*)pyrene	0.9[e]	---[c]	14	69	*
78-59-1	Isophorone	15,600[b]	4,600[d]	8[b]	8	*
72-43-5	Methoxychlor[o]	390[b]	---[c]	160	780	*
74-83-9	Methyl bromide (Bromomethane)	110[b]	10[b]	0.2[b]	1.2	*
1634-04-4	Methyl tert-butyl ether	780[b]	8,800[d]	0.32	0.32	*
75-09-2	Methylene chloride (Dichloromethane)	85[e]	13[e]	0.02"	0.2	*
95-48-7	2-Methylphenol (*o* - Cresol)	3,900[b]	---[c]		15	*
91-20-3	Naphthalene	1,600[b]	170'	12b	18	*
98-95-3	Nitrobenzene	39b	92[b]	0.1[b,f]	0.1	0.26

		Exposure Route-Specific Values for Soils		**Soil** Component of the Groundwater Ingestion Exposure Route **Values**		
CAS No.	Chemical Name	Ingestion (mg/kg)	Inhalation (mg/kg)	Class I (mg/kg)	Class II (mg/kg)	ADL (mg/kg)
86-30-6	N-Nitrosodiphenylamine	130[e]	---[c]	1[f]	5.6	*
621-64-7	*N*-Nitrosodi-*n*-propylamine	0.09[e,f]	---[c]	0.00005[e,f]	0.00005	0.0018
108-95-2	Phenol	47,000[b]	---[c]	100[b]	100	*
1918-02-1	Picloram[o]	5,500[b]	---[c]	2	20	NA
1336-36-3	Polychlorinated biphenyls (PCBs)[n]	1[h]	---[c,h]	---[h]	---[h]	*
129-00-0	Pyrene	2,300[b]	---[c]	4,200[b]	21,000	*
122-34-9	Simazine[o]	390[b]	---[c]	0.04	0.37	**NA**
100-42-5	Styrene	16,000[b]	1,500[d]	4	18	*
127-18-4	Tetrachloroethylene (Perchloroethylene)	12[e]	11[e]	0.06	0.3	*
108-88-3	Toluene	16,000[b]	650[d]	12	29	*

		Exposure Route-Specific Values for Soils		Soil Component of the Groundwater Ingestion Exposure Route Values		
CAS No.	Chemical Name	Ingestion (mg/kg)	Inhalation (mg/kg)	Class I (mg/kg)	Class II (mg/kg)	ADL (mg/kg)
8001-35-2	Toxaphene[n]	0.6[e]	89[e]	31	150	*
120-82-1	1,2,4-Trichlorobenzene	780[b]	3,200[b]	5	53	*
71-55-6	1,1,1-Trichloroethane	---[c]	1,200[d]	2	9.6	*
79-00-5	1,1,2-Trichloroethane	310[b]	1,800[d]	0.02	0.3	*
79-01-6	Trichloroethylene	58[e]	5[e]	0.06	0.3	*
108-05-4	Vinyl acetate	78,000[b]	1,000[b]	170[b]	170	*
75-01-4	Vinyl chloride	0.46[e]	0.28[e]	0.01[f]	0.07	*
108-38-3	m-Xylene	160,000[b]	420[d]	210	210	*
95-47-6	o-Xylene	160,000[b]	410[d]	190	190	*
106-42-3	p-Xylene	160,000[b]	460[d]	200	200	*

		Exposure Route-Specific Values for Soils		Soil Component of the Groundwater Ingestion Exposure Route Values		
CAS No.	Chemical Name	Ingestion (mg/kg)	Inhalation (mg/kg)	Class I (mg/kg)	**Class** II (mg/kg)	**ADL** (mg/kg)
1330-20-7	Xylenes (total)	160,000[b]	320[d]	150	150	*
	Ionizable Organics					
65-85-0	Benzoic **Acid**	310,000[b]	---[c]	400[b,i]	400'	*
95-57-8	2-Chlorophenol	390[b]	53,000[d]	4bi	4'	*
120-83-2	2,4-Dichlorophenol	230[b]	---[c]	1[b,i]	1'	*
51-28-5	2,4-Dinitrophenol	160[b]	---[c]	0.2[b,f]	0.2	3.3
88-85-7	Dinoseb"	78[b]	---[c]	0.34[b,i]	3.4'	*
87-86-5	Pentachlorophenol	3[e,j]	---[c]	0.03[f,i]	0.14'	*
93-72-1	2,4,5-TP (*Silvex*)	630[b]	---[c]	11[i]	55'	*
95-95-4	2,4,5-Trichlorophenol	7,800[b]	---[c]	270[b,i]	1,400'	*
88-06-2	2,4,6 Trichlorophenol	58'	200"	0.2[e,f,i]	0.77'	0.66

CAS No.	Chemical Name	Exposure Route-specific Values for Soils		Soil Component of the Groundwater Ingestion Exposure Route Values		
		Ingestion (mg/kg)	Inhalation (mg/kg)	Class I (mg/L)	Class II (mg/L)	ADL (mg/kg)
	Inorganics					
7440-36-0	Antimony	31[b]	---[c]	0.006''	0.024''	*
7440-38-2	Arsenic'.''	t	750''	0.05''	0.2''	*
7440-39-3	Barium	5,500[b]	690,000[b]	2.0''	2.0''	*
7440-41-7	Beryllium	160[b]	1,300''	0.004[m]	0.5[m]	*
7440-42-8	Boron	7,000[b]	---[g]	2.0''	2.0''	*
7440-43-9	Cadmium'.''	78[b,]	1,800''	0.005[m]	0.05''	*
16887-00-6	Chloride	---[c]	---[c]	200''	200''	*
7440-47-3	Chromium, total	230[b]	270''	0.1[m]	1.0[m]	*
16065-83-1	Chromium, ion, trivalent	120,000[b]	---[c]	---[g]	---[g]	*
18540-29-9	Chromium, ion, hexavalent	230[b]	270'	---	---	*
7440-48-4		4,700[b]	---[c]	1.0[m]	1.0[m]	*

		Exposure Route-specific Values for Soils		Soil Component of the Groundwater Ingestion Exposure Route Values		
CAS No.	Chemical Name	Ingestion (mg/kg)	Inhalation (mg/kg)	Class I (mg/L)	Class II (mg/L)	ADL (mg/kg)
7440-50-8	Copper"	2,900[b]	---[c]	0.65"	0.65"	*
57-12-5	Cyanide (amenable)	1,600[b]	---[c]	0.2[q,m]	0.6[q,m]	*
7782-41-4	Fluoride	4,700[b]	---[c]	4.0"	4.0"	*
15438-31-0	Iron	-[--c]	---[c]	5.0"	5.0"	*
7439-92-1	Lead	400[k]	---[c]	0.0075[m]	0.1"	*
7439-96-5	Manganese	3,700[b]	69,000[b]	0.15"	10.0[m]	*
7439-97-6	Mercury[l,n,s]	23[b]	10[b]	0.002"	0.01"	*
7440-02-0	Nickel'	1,600[b]	13,000[e]	0.1"	2.0"	*
14797-55-8	Nitrate as N[p]	130,000[b]	---[c]	10.04	100[q]	*
7782-49-2	Selenium[l,n]	390[b]	---[c]	0.05"	0.05"	*

		Exposure Route-specific Values for Soils		Soil Component of the Groundwater Ingestion Exposure Route Values		
CAS No.	Chemical Name	Ingestion (mg/kg)	Inhalation (mg/kg)	Class I (mg/L)	Class II (mg/L)	ADL (mg/kg)
7440-22-4	**Silver**	390[b]	---[c]	*0.05''*	---	*
14808-79-8	Sulfate	---[c]	---[c]	400''	400''	*
7440-28-0	Thallium	6.3[b,u]	---[c]	0.002[m]	0.02''	*
7440-62-2	Vanadium	550[b]	---[c]	0.049''	0.1''	*
7440-66-6	Zinc'	23,000[b]	---[c]	5.0''	10''	*

"*" indicates that the ADL is less than or equal to the specified rernediation objective.
NA means not available; no PQL **or** EQL available in USEPA analytical methods.

Chemical Name and Soil Remediation Objective Notations

[a] Soil remediation objectives based on human health criteria only.
[b] Calculated values correspond to a target hazard quotient of 1.
[c] No toxicity criteria available for the route of exposure.
[d] Soil saturation concentration ($C_{[sat]}$) = the concentration at which the absorptive limits of the soil particles, the solubility limits of the available soil moisture, and saturation of soil pore air have been reached. Above the soil saturation concentration, the assumptions regarding vapor transport to air and/or dissolved phase transport to groundwater (for chemicals which are liquid at ambient soil temperatures) have been violated, and alternative modeling approaches are required.
[e] Calculated values correspond to a cancer risk level of 1 in 1,000,000.
[f] Level is at or below Contract Laboratory Program required quantitation limit for Regular Analytical Services **(RAS).**
[g] Chemieal-specific properties are such that this route is not of concern at any soil contaminant concentration.
[h] 40 CFR 761 contains applicability requirements and methodologies for the development of PCB remediation objectives. Requests for approval of a Tier 3 evaluation must address the applicability of 40 CFR 761.
[i] Soil remediation objective for pH of 6.8. If soil pH is other than 6.8, refer to Appendix B, Tables C and D **of** this Part.
[j] Ingestion soil remediation objective adjusted by a factor of 0.5 to account for dermal route.
[k] A preliminary remediation goal of 400 mg/kg has been set for lead based on ***Revised Interim*** Soil ***Lead*** *Guidance* ***for*** *CERCLA* ***Sites and*** *RCRA* ***Corrective Action Facilities,*** OSWER Directive #9355.4-12.
[l] Potential for soil-plant-human exposure.
[m] The person conducting the remediation has the option to use: 1) TCLP or SPLP test results to compare with the remediation objectives listed in this Table; or 2) the total amount of contaminant in the soil sample results to compare with pH specific remediation objectives listed in Appendix **B,** Table C or D of this Part. (See Section 742.510.) If the person conducting the remediation wishes to calculate soil remediation objectives based on background concentrations, this should be done in accordance with Subpart D of this Part.
[n] The Agency reserves the right to evaluate the potential for remaining contaminant concentrations to pose significant threats to crops, livestock, or wildlife.
[o] For agrichemical facilities, remediation objectives for surficial soils which are based on field application rates may be more appropriate for currently registered pesticides. Consult the Agency for further information.
[p] For agrichemical facilities, soil remediation objectives based on site-specific background concentrations of Nitrate as N may be more appropriate. Such determinations shall be conducted in accordance with the procedures set forth in Subparts D and I of this Part.
[q] The TCLP extraction must be done using water at a pH of 7.0.
[r] Value based on dietary Reference Dose.
[s] Value for Ingestion based on Reference Dose for Mercuric chloride (CAS No. 7487-94-7); value for Inhalation based on Reference Concentration for elemental Mercury (CAS No. 7439-97-6).
[t] For the ingestion route for arsenic, see 742.Appendix A, Table G.
[u] Value based on Reference Dose for Thallium sulfate (CAS No. 7446-18-6).

(Source: Amended at 25 Ill. Reg. _____, effective _____)

Section 742. APPENDIX B: Tier 1 Tables and Illustrations

Section 742. Table B: Tier 1 Soil Remediation Objectives[a] for Industrial/Commercial Properties

		Exposure Route-Specific Values for **Soils**				**Soil** Component **of** the Groundwater Ingestion Exposure Route Values		
		Industrial-Commercial						
CAS No.	Chemical Name	Ingestion (mg/kg)	Inhalation (mg/kg)	[illegible] (mg/kg)	[illegible] (mg/kg)	Class I (mg/kg)	ClassII (mg/kg)	ADL (mg/kg)
83-32-9	Acenaphthene	120,000[b]	-----[c]	120,000[b]	-----[c]	570[b]	2,900	*
67-64-1	Acetone	200,000[b]	100,000[d]	200,000[b]	100,000[d]	16[b]	16	*
15972-60-8	Alachlor[o]	72[e]	-----[c]	1,600[e]	-----[c]	0.04	0.2	NA
116-06-3	Aldicarb[o]	2,000[b]	-----[c]	200[b]	-----[c]	0.013	0.07	NA
309-00-2	Aldrin	0.3"	6.6"	6.1[b]	9.3"	0.5[e]	2.5	0.94
120-12-7	Anthracene	610,000[b]	-----[c]	610,000[b]	-----[c]	2,000[b]	59,000	*
1912-24-9	Atrazine[o]	72,000[b]	-----[c]	7,100[b]	-----[c]	0.066	0.33	NA
71-43-2	Benzene	100"	1.6[e]	2,300"	2.2	0.03	0.17	*

		Exposure Route-Specific Values for Soils				Soil Component of the Groundwater Ingestion Exposure Route Values		
		Industrial-Commercial		Construction Worker				
CAS No.	Chemical Name	Ingestion (mg/kg)	Inhalation (mg/kg)	Ingestion (mg/kg)	Inhalation (mg/kg)	Class I (mg/kg)	Class II (mg/kg)	ADL (mg/kg)
56-55-3	Benzo(*a*)anthracene	8[f]	-----[c]	170[e]	-----[c]	2	8	*
205-99-2	Benzo(*b*)fluoranthene	8[e]	-----[c]	170[e]	-----[c]	5	25	*
207-08-9	Benzo(*k*)fluroanthene	78[f]	-----[c]	1,700[e]	-----[c]	49	250	*
50-32-8	Benzo(*a*)pyrene	0.8[f]	-----[c]	17[f]	-----[c]			*
111-44-4	Bis(2-chloroethyl)ether	5[f]	0.47[f]	75[f]	0.66[e]			*0.66*
117-81-7	Bis(2-ethylhexyl)phthalate	410[f]	31,000[d]	4,100[b]	31,000[d]			*
75-27-4	Bromodichloromethane (Dichlorobromomethane)	92[e]	3,000[d]	2,000[f]	3,000[d]			*
75-25-2	Bromoform	720[f]	100[e]	16,000[f]	140[e]			*
71-36-3	Butanol	200,000[b]	10,000[d]	200,000[b]	10,000[d]			NA
85-68-7	Butyl benzyl phthalate	410,000[b]	930[d]	410,000[b]	930[d]	930[d]	930[d]	*
86-74-8	Carbazole	290[f]	-----[c]			1.6[f]	2.8	NA

		Exposure Route-Specific Values for Soils				Soil Component of the Groundwater ingestion Exposure Route Values		
		Industrial-Commercial		Construction Worker				
CAS No.	Chemical Name	Ingestion (mg/kg)	Inhalation (mg/kg)	Ingestion (mg/kg)	Inhalation (mg/kg)	Class I (mg/kg)	Class II (mg/kg)	ADL (mg/kg)
1563-66-2	Carbofuran[o]	10,000[b]	-----[c]	1,mo[b]	-----[c]	0.22	1.1	NA
75-15-0	Carbon disulfide	200,000[b]	720[d]	20,000[b]	9.0[b]	32[b]	160	*
56-23-5	Carbon tetrachloride	44"	0.64"	410[b]	0.90"	0.07	0.33	*
57-74-9	Chlordane	1.6'	140[e]	100[b]	22b	10	48	*
106-47-8	4 - Chloroaniline (*p*-Chloroaniline)	8,200[b]	-----[c]	820[b]	-----[c]	0.7[b]	0.7	*
108-90-7	Chlorobenzene (Monochlorobenzene)	41,000[b]	210[b]	4,100[b]	1.3[b]	1	6.5	*
124-48-1	Chlorodibromomethane (Dibromochloromethane)	41,000[b]	1,300[d]	41,000[b]	1,300[d]	0.4	0.4	*
67-66-3	Chloroform	940"	0.54"	2,000[b]	0.76'	0.6	2.9	*
218-01-9	Chrysene	780[e]	-----[c]	17,000[e]	-----[e]	160	800	*
94-75-7	2,4-D[o]	20,000[b]	-----[c]	2,000[b]	-----[c]	1.5	7.7	*

		Exposure Route-Specific Values for Soils				**Soil** Component of **the** Groundwater Ingestion Exposure **Route** Values		
		Industrial-Commercial						
CAS No.	Chemical Name	Ingestion (mg/kg)	Inhalation (mg/kg)	(mg/kg)	(mg/kg)	Class I (mg/kg)	Class II (mg/kg)	ADL (mg/kg)
75-99-0	Dalapon[o]	61,000[b]	-----[c]	6,100[b]	-----[c]	0.85	8.5	*
72-54-8	DDD	24"	-----[c]	520"	-----[c]	16"	80	*
72-55-9	DDE	17[e]	-----[e]	370"	-----[c]	54[e]	270	
50-29-3	DDT	17"	1,500"	100[b]	2,100"	32"	160	*
53-70-3	Dibenzo(*a,h*)anthracene	0.8[e]	-----[c]	17[e]	[e]	2	7.6	*
96-12-8	1,2-Dibromo-3-chloropropane	4"	17[b]	89[e]	0.11[b]	0.002	0.002	*
106-93-4	1,2-Dibromoethane (Ethylene dibromide)	0.07"	0.32"			0.0004	0.004	0.005
84-74-2	Di-*n*-butyl phthalate	200,000[b]	2,300[d]	200,000[b]	2,300[d]	2,300[d]	2,300[d]	*
95-50-1	1,2-Dichlorobenzene (*o* - Dichlorobenzene)	180,000[b]	560[d]			17	43	*
106-46-7	1,4-Dichlorobenzene (*p* - Dichlorobenzene)	-----[c]	17,000[b]	-----[c]	340[b]	2	11	*

		Exposure Route-Specific Values for Soils				Soil Component of the Groundwater Ingestion Exposure Route Values		
		Industrial-Commercial						
CAS No.	Chemical Name	Ingestion (mg/kg)	Inhalation (mg/kg)	(mg/kg)	(mg/kg)	Class I (mg/kg)	Class II (mg/kg)	ADL (mg/kg)
91-94-1	3,3'-Dichlorobenzidine	13"	------[c]			0.007[e,f]	0.033	1.3
75-34-3	1,1-Dichloroethane	200,000'	1,700[d]			23[b]	110	*
107-06-2	1,2-Dichloroethane (Ethylene dichloride)	63"	0.70"			0.02	0.1	*
75-35-4	1,1-Dichloroethylene	18,000'	1,500[d]	1,800[b]	300[v]	*0.06*	0.3	*
156-59-2	*cis*-1,2-Dichloroethylene	20,000'	1,200[d]	20,000[b]	1,200[d]	0.4	1.1	*
156-60-5	*Trans*-1,2-Dichloroethylene	41,000[b]	3,100[d]	41,000[b]	3,100[d]	0.7	3.4	*
78-87-5	1,2-Dichloropropane	84"	23[b]	1,800"	0.50[b]	0.03	0.15	*
542-75-6	1,3-Dichloropropene (1,3-Dichloropropylene, *cis* + *trans*)	57[e]	2.1[e]		0.39[b]			
60-57-1	Dieldrin"	0.4"	2.2"					
84-66-2	Diethyl phthalate	1,000,000[b]	2,000[d]			470'	470	*

		Exposure Route-Specific Values for Soils				Soil Component of the Groundwater Ingestion Exposure Route Values		
		Industrial-Commercial		Construction Worker				
CAS No.	Chemical Name	Ingestion (mg/kg)	Inhalation (mg/kg)	Ingestion (mg/kg)	Inhalation (mg/kg)	Class I (mg/kg)	Class II (mg/kg)	ADL (mg/kg)
105-67-9	2,4-Dimethylphenol	41,000[b]	-----[c]	41,000[b]	-----[c]	9[b]	9	*
121-14-2	2,4-Dinitrotoluene	8.4"	-----[c]	180[e]	-----[c]	0.0008[e,f]	0.0008	0.250
606-20-2	2,6-Dinitrotoluene	8.4"	-----[c]	180[e]	-----[c]	0.0007[e,f]	0.0007	0.260
117-84-0	Di-n-octyl phthalate	41,000"	10,000[d]	4,100[b]	10,000[d]	10,000[d]	10,000[d]	*
115-29-7	Endosulfan[g]	12,000[b]	-----[c]	1,200[b]	-----[c]	18[b]	90	*
145-73-3	Endothall[o]	41,000[c]	-----[c]	4,100[b]	-----[c]	0.4	0.4	NA
72-20-8	Endrin	610[b]	-----[c]	61[b]	-----[c]	1	5	*
100-41-4	Ethylbenzene	200,000[b]	400[d]	20,000[b]	58[b]	13	19	*
206-44-0	Fluoranthene	82,000[b]	-----[c]	82,000[b]	-----[c]	4,300[b]	21,000	*
86-73-7	Fluorene	82,000[b]	-----[c]	82,000[b]	-----[c]	560[b]	2,800	*
76-44-8	Heptachlor	1"	11[e]	28[e]	16[e]	23	110	*

		Exposure Route-Specific Values for Soils				Soil Component of the Groundwater Ingestion Exposure Route values		
		Industrial-Commercial		Construction Worker				
CAS No.	Chemical Name	Ingestion (mg/kg)	Inhalation (mg/kg)	Ingestion (mg/kg)	Inhalation (mg/kg)	Class I (mg/kg)	Class II (mg/kg)	ADL (mg/kg)
1024-57-3	Heptachlor epoxide	0.6[n]	9.2[e]	2.7[b]	13[n]	0.7	3.3	1.005
118-74-1	Hexachlorobenzene	4[n]	1.8[n]	78[n]	2.6[n]	2	11	*
319-84-6	*Alpha*-HCH (*alpha*-BHC)	0.9[e]	15[n]	20[e]	2.1[n]	0.0005[e,f]	0.003	0.0074
58-89-9	*Gamma*-HCH (Lindane)[n]	4[e]	-----[c]	96[n]	-----[c]	3.009	0.047	*
77-47-4	Hexachlorocyclopentadiene	14,000[b]	16[b]	14,000[b]	1.1[b]	400	2,200[d]	*
67-72-1	Hexachloroethane	2,000[b]	[c]	2,000[b]	-----[c]	0.5[b]	2.6	*
193-39-5	Indeno(1,2,3-*c,d*)pyrene	8[e]	-----[c]	170[n]	-----[c]	14	69	*
78-59-1	Isophorone	410,000[b]	4,600[n]	410,000[b]	4,600[d]	3[b]	8	*
72-43-5	Methoxychlor[n]	10,000[b]	-----[c]	1,000[b]	-----[c]	160	780	*
74-83-9	Methyl bromide (Bromomethane)	2,900[b]	15[b]	1,000[b]	3.9[b]	0.2[b]	1.2	*

		Exposure Route-Specific Values for Soils						
		Industrial-Commercial		Construction Worker				
CAS No.	Chemical Name	Ingestion (mg/kg)	Inhalation (mg/kg)	Ingestion (mg/kg)	Inhalation (mg/kg)	(mg/kg)	(mg/kg)	ADL (mg/kg)
1634-04-4	Methyl tert-butyl ether	20,000[b]	8,800[d]	2,000[b]	140[b]	___	0.32	_
75-09-2	Methylene chloride (Dichloromethane)	760[e]	24'	12,000[b]	34[e]	0.02[e]	0.2	*
95-48-7	2-Methylphenol (*o* - Cresol)	100,000[b]	-----[c]	100,000[b]	-----[c]	15[b]	15	*
86-30-6	*N*-Nitrosodiphenylamine	1,200[e]	-----[c]	25,000[e]	-----[c]	1"	5.6	*
621-64-7	*N*-Nitrosodi-*n*-propylamine	0.8"	-----[c]	18"	-----[c]	0.00005[e,f]	0.00005	0.0018
91-20-3	Naphthalene	41,000[b]	270[b]	4,100[b]	1.8[b]	12b	18	*
98-95-3	Nitrobenzene	1,000[b]	140[b]	1,000[b]	9.4[b]	0.1[b,f]	0.1	0.26
108-95-2	Phenol	1,000,000[b]	-----[c]	120,000[b]	-----[c]	100[b]	100	*
1918-02-1	Picloram[o]	140,000[b]	-----[c]	14,000[b]	-----[c]	2	20	NA
1336-36-3	Polychlorinated biphenyls (PCBs)[n]	1[h]	-----[c,h]	1[h]	-----[c,h]	-----[h]	-----[h]	*
129-00-0	Pyrene	61,000[b]	-----[c]	61,000[b]	-----[c]	4,200[b]	21,000	*

		Exposure Route-Specific Values for Soils				Soil Component of the Groundwater Ingestion Exposure Route Values		
		Industrial-Commercial		Construction Worker				
CAS No.	Chemical Name	Ingestion (mg/kg)	Inhalation (mg/kg)	Ingestion (mg/kg)	Inhalation (mg/kg)	Class I (mg/kg)	Class II (mg/kg)	ADL (mg/kg)
122-34-9	Simazine[o]	10,000[b]	-----[c]	1,mdb	[c]	0.04	0.37	NA
100-42-5	Styrene	410,000[b]	1,500[d]	41,000[b]	430'	4	18	*
127-18-4	Tetrachloroethylene (Perchloroethylene)	110"	20[e]	2,400[e]	28"	0.06	0.3	*
108-88-3	Toluene	410,000'	650[d]	410,000[b]	42[b]	12	29	*
8001-35-2	Toxaphene[n]	5.2[e]	170[e]	110[e]	240"	31	150	*
120-82-1	1,2,4-Trichlorobenzene	20,000[b]	3,200[d]	2,000[b]	920[b]	5	53	*
71-55-6	1,I,1-Trichloroethane	-----[c]	1,200[d]	-----[c]	1,200[d]	2	9.6	*
79-00-5	1,1,2-Trichloroethane	8,200[b]	1,800[d]	8,200[b]	1,800[d]	0.02	0.3	*
79-01-6	Trichloroethylene	520[e]	8.9[e]	1,200[b]	12[e]	0.06	0.3	*
108-05-4	Vinyl acetate	1,000,000[b]	1,600[b]	200,000[b]	10'	170[b]	170	*

		Exposure Route-Specific Values for Soils				**Soil** Component **of** the Groundwater Ingestion Exposure Route Values		
		Industrial-Commercial		Construction Worker				
CAS No.	Chemical Name	Ingestion (mg/kg)	Inhalation (mg/kg)	Ingestion (mg/kg)	Inhalation (mg/kg)	Class I (mg/kg)	Class II (mg/kg)	ADL (mg/kg)
75-01-4	Vinyl chloride	7.9"	1.1"	170'	1.1[b]	0.01[f]	0.07	*
108-38-3	m-Xylene	1,000,000	420[d]	410,000[b]	420'	210	210	*
95-47-6	o-Xylene	1,000,000	410'	410,000[b]	410[d]	190	190	*
106-42-3	p-Xylene	1,000,000	460[d]	410,000[b]	460[d]	200	200	*
1330-20-7	Xylenes (total)	1,000,000[b]	320[d]	410,000[b]	320[d]	150	150	*
	Ionizable Organics							
65-85-0	Benzoic Acid	1,000,000[b]	-----[c]	820,000[b]	-----[c]	400[b,i]	400'	*
95-57-8	2-Chlorophenol	10,000[b]	53,000[d]	10,000[b]	53,000[d]	4[b,i]	20[i]	*
120-83-2	2,4-Dichlorophenol	6,100[b]	-----[c]	610[b]	-----[c]	1[b,i]	1'	*
51-28-5	2,4-Dinitrophenol	4,100[b]	-----[c]	410[b]	-----[c]	0.2[b,f,i]	0.2[i]	3.3
88-85-7	Dinoseb[o]	2,000[b]	-----[c]	200[b]	-----[c]	0.34[b,i]	3.4'	*

		Exposure Route-Specific Values for Soils						
		Industrial-Commercial		Construction Worker				
CAS No.	Chemical Name	Ingestion (mg/kg)	Inhalation (mg/kg)	Ingestion (mg/kg)	Inhalation (mg/kg)	(mg/kg)	(mg/kg)	ADL (mg/kg)
87-86-5	Pentachlorophenol	24[e,j]	-----[c]	520[e,j]	-----[c]			
93-72-1	2,4,5-TP (Silvex)	16,000[b]	-----[c]	1,600[b]	-----[c]	11[i]	55[i]	*
95-95-4	2,4,5-Trichlorophenol	200,000[b]	-----[c]	200,000[b]	-----[c]	270[b,i]	1,400'	*
88-06-2	2,4,6- Trichlorophenol	520[e]	390[e]	I1,000[e]	540[e]	) 2[e,f,i]	**0.77'**	0.66

CAS No.	Chemical Name	Exposure Route-Specific Values for Soils				Soil Component of the Groundwater Ingestion Exposure Route Values		
		Industrial-Commercial		Construction Worker				
		Ingestion (mg/kg)	Inhalation (mg/kg)	Ingestion (mg/kg)	Inhalation (mg/kg)	Class I (mg/L)	Class II (mg/L)	ADL (mg/kg)
	Inorganics							
7440-36-0	Antimony	820[b]	-----[c]	82[b]	-----[c]	0.006'''	0.024''	*
7440-38-2	Arsenic'."	t	1,200''	61[b]	25,000''	0.05''	0.2''	*
7440-39-3	Barium	140,000[b]	910,000[b]	14,000[b]	870,000[b]	2.0''	2.0''	*
7440-41-7	Beryllium	4,100[b]	2,100'	410[b]	44,000''	0.004[m]	0.5[m]	*
7440-42-8	Boron	180,000[b]	1,000,000	18,000[b]	1,000,000	2.0''	2.0''	*
7440-43-9	Cadmium[l,n]	2,000[b,r]	2,800''	200[b,r]	59,000'	0.005''	0.05'''	*
16887-00-6	Chloride	-------[c]	-----[c]	-----[c]	-----[c]	200''	200''	*
7440-47-3	Chromium, total	6,100'	420''	4,100[b]	690[b]	0.1[m]	1.0[m]	*
16065-83-1	Chromium, ion, trivalent	1,000,000[b]	-----[c]	310,000[b]	-----[c]	-----[g]	-----[g]	*
18540-29-9	Chromium, ion, hexavalent	6,100[b]	420[e]	4,100[b]	690[b]	-----	-----	*

CAS No.	Chemical Name	Exposure Route-Specific Values for Soils				Soil Component of the Groundwater Ingestion Exposure Route Values		
		Industrial-Commercial		Construction Worker				
		Ingestion (mg/kg)	Inhalation (mg/kg)	Ingestion (mg/kg)	Inhalation (mg/kg)	Class I (mg/L)	Class II (mg/L)	ADL (mg/kg)
7440-48-4	Cobalt	120,000[b]	-----[c]	12,000[b]	-----[c]	1.0[m]	1.0[m]	*
7440-50-8	Copper"	82,000[b]	-----[c]	8,200[b]	-----[c]	0.65"	0.65[m] 0.65"	*
57-12-5	Cyanide (amenable)	41,000[b]	-----[c]	4,100[b]	-----[c]	0.2[q,m]	0.6[q,m] 0.6[q,m]	*
7782-41-4	Fluoride	120,000[b]	-----[c]	12,000[b]	-----[c]	4.0"	4.0[m]	*
15438-31-0	Iron	-----[c]	-----[c]	-----[c]	-----[c]	*5.0"*	*5.0"*	*
7439-92-1	Lead	400[k]	-----[c]					
7439-96-5	Manganese	96,000[b]	91,000[b]					
7439-97-6	Mercury[l,n,s]	610[b]	540,000[b]					
7440-02-0	Nickel'	41,000[b]	21,000"	4,100[b]	440,000"	0.1[m]	2.0[m]	*
14797-55-8	Nitrate as N[p]	1,000,000[b]	-----[c]	330,000[b]	[c]	10.0[q]	100[q]	*
7782-49-2	Selenium[l,n]	10,000[b]	-----[c]	1,000[b]	-----[c]	0.05[m]	*0.05"*	*

		Exposure Route-Specific Values for Soils				Soil Component of the Groundwater Ingestion		
CAS No.	Chemical Name	*Ingestion* (mg/kg)	*Inhalation* (mg/kg)	*Ingestion* (mg/kg)	*Inhalation* (mg/kg)	Class I (mg/L)	Class II (mg/L)	ADL (mg/kg)
7440-22-4	Silver	10,000[b]	-----[c]	1,mob	-----[c]	0.05''	-----	*
14808-79-8	Sulfate	-----[c]	-----[c]	-----[c]	-----[c]	400[m]	400''	*
7440-28-0	Thallium	160[b,u]	-----[c]	160[b,u]	-----[c]	0.002[m]	0.02''	*
7440-62-2	Vanadium	14,000[b]	-----[c]	I,400[b]	-----[c]	0.049''	0.1[m]	*
7440-66-6	Zinc'	610,000[b]	-----[c]	61,000[b]	-----[c]	5.0''	10''	*

Chemical Name and Soil Remediation Objective Notations (2nd, 5th thru 8th Columns)

[a] Soil remediation objectives based on human health criteria only.
[b] Calculated values correspond to a target hazard quotient of 1.
[c] No toxicity criteria available for this route of exposure.
[d] Soil saturation concentration ($C_{[sat]}$) = the concentration at which the absorptive limits of the soil particles, the solubility limits of the available soil moisture, and saturation of soil pore air have been reached. Above the soil saturation concentration, the assumptions regarding vapor transport to air and/or dissolved phase transport to groundwater (for chemicals which are liquid at ambient soil temperatures) have been violated, and alternative modeling approaches are required.
[e] Calculated values correspond to a cancer risk level of 1 in 1,000,000.
[f] Level is at or below Contract Laboratory Program required quantitation limit for Regular Analytical Services (RAS).
[g] Chemical-specific properties are such that this route is not of concern at any soil contaminant concentration.
[h] 40 CFR 761 contains applicability requirements and methodologies for the development of PCB remediation objectives. Requests for approval of a Tier 3 evaluation must address the applicability of 40 CFR 761.
[i] Soil remediation objective for pH of 6.8. If soil pH is other than 6.8, refer to Appendix B, Tables C and D in this Part.
[j] Ingestion soil remediation objective adjusted by a factor of 0.5 to account for dermal route.
[k] A preliminary remediation goal of 400 mg/kg has been set for lead based on ***Revised Interim Soil Lead Guidance for CERCLA Sites*** *and* ***RCRA Corrective Action Facilities,*** OSWER Directive #9355.4-12.
[l] Potential for soil-plant-human exposure.
[m] The person conducting the remediation has the option to use: (1) TCLP or SPLP test results to compare with the remediation objectives listed in this Table; or (2) the total amount of contaminant in the soil sample results to compare with pH specific remediation objectives listed in Appendix B, Table C or D of this Part. (See Section 742.510.) If the person conducting the remediation wishes to calculate soil remediation objectives based on background concentrations, this should be done in accordance with Subpart D of this Part.
[n] The Agency reserves the right to evaluate the potential for remaining contaminant concentrations to pose significant threats to crops, livestock, or wildlife.
[o] For agrichemical facilities, remediation objectives for surficial soils which are based on field application rates may be more appropriate for currently registered pesticides. Consult the Agency for further information.
[p] For agrichemical facilities, soil remediation objectives based on site-specific background concentrations of Nitrate as N may be more appropriate. Such determinations shall be conducted in accordance with the procedures set forth in Subparts D and I of this Part.
[q] The TCLP extraction must be done using water at a pH of 7.0.
[r] Value based on dietary Reference Dose.
[s] Value for Ingestion based on Reference Dose for Mercuric chloride (CAS No. 7487-94-7); value for Inhalation based on Reference Concentration for elemental Mercury (CAS No. 7439-97-6).
[t] For the ingestion route for arsenic for industrial/commercial, see 742.Appendix A, Table G.
[u] Value based on Reference Dose for Thallium sulfate (CAS No. 7446-18-6).
[v] Calculated values correspond to soil concentrations that should not result in air concentrations that exceed criteria for workplace air.

(Source: Amended at 25 Ill. Reg. _____, effective _____)

Section 742.APPENDIX B: Tier 1 Tables and Illustrations

		Groundwater Remediation Objective	
CAS No.	Chemical Name	Class I (mg/L)	Class II (mg/L)
83-32-9	Acenaphthene	0.42	2.1
67-64-1	Acetone	0.7	0.7
15972-60-8	Alachlor	0.002'	0.01'
116-06-3	Aldicarb	0.003'	0.015'
309-00-2	Aldrin	0.014[a]	0.07
120-12-7	Anthracene	2.1	10.5
1912-24-9	Atrazine	0.003'	0.015'
71-43-2	Benzene	0.005'	0.025'
56-55-3	Benzo(*a*)anthracene	0.00013[a]	0.00065
205-99-2	Benzo(*b*)fluoranthene	0.00018[a]	0.0009
207-08-9	Benzo(*k*)fluroanthene	0.00017[a]	0.00085
50-32-8	Benzo(*a*)pyrene	0.0002[a,c]	0.002'
111-44-4	Bis(2-chloroethyl)ether	0.01[a]	0.01
117-81-7	Bis(2-ethylhexyl)phthalate (Di(2-ethylhexyl)phthalate)	0.006'	0.06'
75-27-4	Bromodichloromethane (Dichlorobromomethane)	0.0002[a]	0.0002
75-25-2	Bromoform	0.001[a]	0.001
71-36-3	Butanol	0.7	0.7
85-68-7	Butyl benzyl phthalate	1.4	7.0
86-74-8	Carbazole	---	---
1563-66-2	Carbofuran	0.04'	0.2'
75-15-0	Carbon disulfide	0.7	3.5
56-23-5	Carbon tetrachloride	0.005'	0.025'
57-74-9	Chlordane	0.002[c]	0.01'

CAS No.	Chemical Name	Groundwater Remediation Objective	
		Class I (mg/L)	Class 11 (mg/L)
108-90-7	Chlorobenzene (Monochlorobenzene)	0.1[c]	0.5[c]
124-48-1	Chlorodibromomethane (Dibromochloromethane)	0.14	0.14
67-66-3	Chloroform	0.0002[a]	0.001
218-01-9	Chrysene	0.0015[a]	0.0075
94-75-7	2,4-D	0.07'	0.35'
75-99-0	Dalapon	0.2[c]	2.v
72-54-8	DDD	0.014[a]	0.07
72-55-9	DDE	0.01[a]	*0.05*
50-29-3	DDT	0.006[a]	0.03
53-70-3	Dibenzo(*a,h*)anthracene	0.0003[a]	0.0015
96-12-8	1,2-Dibromo-3-chloropropane	0.0002[c]	0.0002[c]
106-93-4	1,2-Dibromoethane (Ethylene dibromide)	0.00005[c]	0.0005[c]
84-74-2	Di-n-butyl phthalate	0.7	3.5
95-50-1	1,2-Dichlorobenzene (*o* - Dichlorobenzene)	0.6[c]	1.5[c]
106-46-7	1,4-Dichlorobenzene (*p* - Dichlorobenzene)	0.075'	0.375'
91-94-1	3,3'-Dichlorobenzidine	0.02[a]	0.1
75-34-3	1,1-Dichloroethane	0.7	3.5
107-06-2	1,2-Dichloroethane (Ethylene dichloride)	0.005'	0.025'
75-35-4			
156-59-2	*cis*-1,2-Dichloroethylene	0.07'	0.2"
156-60-5	*trans*-1,2-Dichloroethylene	0.1'	**0.5'**
78-87-5	1,2-Dichloropropane	*0.005'*	0.025'
542-75-6	1,3-Dichloropropene (1,3-Dichloropropylene, *cis* + *trans*)	0.001[a]	0.005

CAS No.	Chemical Name	Groundwater Remediation Objective	
		Class I (mg/L)	Class II (mg/L)
60-57-1	Dieldrin	0.009"	0.045
84-66-2	Diethyl phthaiate	5.6	5.6
121-14-2	2,4-Dinitrotoluene[a]	0.00002[a]	0.00002
606-20-2	2,6-Dinitrotoluene[a]	0.00031[a]	0.0003 1
88-85-7	Dinoseb	0.007'	0.07'
117-84-0	Di-n-octyl phthalate	0.14	0.7
115-29-7	Endosulfan	0.042	0.21
145-73-3	Endothall	0.1"	0.1[c]
72-20-8	Endrin	0.002'	0.01'
100-41-4	Ethylbenzene	0.7'	1.0[c]
206-44-0	Fluoranthene	0.28	1.4
86-73-7	Fluorene	0.28	1.4
76-44-8	Heptachlor	0.0004'	0.002'
1024-57-3	Heptachlor epoxide	0.0002"	0.001'
118-74-1	Hexachlorobenzene	0.00006[a]	0.0003
319-84-6	*alpha*-HCH (*alpha*-BHC)	0.00011[a]	0.00055
58-89-9	Gamma-HCH (Lindane)	0.0002'	0.001'
77-47-4	Hexachlorocyclopentadiene	0.05'	0.5'
67-72-I	Hexachloroethane	0.007	0.035
193-39-5	Indeno(1,2,3-*c,d*)pyrene	0.00043[a]	0.00215
78-59-1	Isophorone	1.4	1.4
72-43-5	Methoxychlor	0.04'	0.2'
74-83-9	Methyl bromide (Bromomethane)	0.0098	0.049
1634-04-4	Methyl tert-butyl ether	0.07	0.07
75-09-2	(Methylene chloride)	0.005[c]	0.05[c] 0.05'
91-20-3	Naphthalene	0.14	0.22
98-95-3	Nitrobenzene[b]	0.0035	0.0035

CAS No.	Chemical Name	Groundwater Remediation Objective	
		Class I (mg/L)	Class II (mg/L)
86-30-6	*N*-Nitrosodiphenylamine	0.0032[a]	0.016
621-64-7	N-Nitrosodi-n-propylamine	0.0018[a]	0.0018
87-86-5	Pentachlorophenol	0.001'	0.005'
108-95-2	Phenol	0. 1'	0.1[c]
1918-02-1	Picloram	0.5'	5.0"
1336-36-3	Polychlorinated biphenyls (PCBs)	0.0005[c]	0.0025'
129-00-0	Pyrene	0.21	1.05
122-34-9	Simazine	0.004'	0.04'
100-42-5	Styrene	0.1'	0.5'
93-72-1	2,4,5-TP (Silvex)	0.05'	0.25[c]
127-18-4	Tetrachloroethylene (Perchloroethylene)	0.005'	0.025'
108-88-3	Toluene	1.0[c]	2.5'
8001-35-2	Toxaphene	0.003'	0.015'
120-82-1	1,2,4-Trichlorobenzene	0.07'	0.7'
71-55-6	I, 1,1-Trichloroethane[b]	0.2'	1.0[c]
79-00-5	1,1,2-Trichloroethane	0.005[c]	0.05'
79-01-6	Trichloroethylene	0.005'	0.025'
108-05-4	Vinyl acetate	7.0	7.0
75-01-4	Vinyl chloride	0.002'	0.01'
1330-20-7	Xylenes (total)	10.0'	10.0[c]
	Ionizable Organics		
65-85-0	Benzoic Acid	*28*	28
106-47-8	4-Chloroaniline (@-Chloroaniline)	0.028	0.028
95-57-8	2-Chlorophenol	0.035	0.175
120-83-2	2,4-Dichlorophenol	0.021	0.021
105-67-9	2,4-Dimethylphenol	0.14	0.14
51-28-5	2,4-Dinitrophenol	0.014	0.014
95-48-7	2-Methylphenol (*o* - Cresol)	0.35	0.35

CAS No.	Chemical Name	Groundwater Remediation Objective	
		Class I (mg/L)	Class II (mg/L)
95-95-4	2,4,5-Trichlorophenol	0.7	3.5
88-06-2	2,4,6 Trichlorophenol	0.01[a]	0.05
	Inorganics		
7440-36-0	Antimony	0.006'	0.024'
7440-38-2	Arsenic	0.05'	0.2'
7440-39-3	Barium	2.0'	2.0'
7440-41-7	Beryllium	0.004'	0.5'
7440-42-8	Boron	2.0'	2.0'
7440-43-9	Cadmium	0.005'	0.05'
16887-00-6	Chloride	200[c]	200'
7440-47-3	Chromium, total	0.1'	1.0[c]
18540-29-9	Chromium, ion, hexavalent	---	---
7440-48-4	Cobalt	1.0[c]	1.0[c]
7440-50-8	Copper	0.65'	0.65'
57-12-5	Cyanide	0.2'	0.6'
7782-41-4	Fluoride	4.0'	4.0'
115438-31-0	Iron	5.0'	5.0[c]
7439-92-1	Lead	0.0075'	0.1[c]
7439-96-5	Manganese	0.15'	10.0'
7439-97-6	Mercury	0.002'	0.01'
7440-02-0	Nickel	0.1'	2.0'
14797-55-8	Nitrate as N	10.0'	100[c]
7782-49-2	Selenium	0.05'	0.05'
7440-22-4	Silver	0.05'	---
14808-79-8	Sulfate	400'	400'

CAS No.	Chemical Name	Groundwater Remediation Objective	
		Class I (mg/L)	Class II (mg/L)
7440-28-0	Thallium	0.002[c]	0.02'
7440-62-2	Vanadium[b]	*0.049*	0.1
7440-66-6	zinc	5.0[c]	10

b

c

(Source: Amended at **25** Ill. Reg. _____, effective _____)

Section 742.APPENDIX B: Tier 1 Tables and Illustrations

Section 742.TABLE F: Values Used to Calculate the Tier 1 Soil Remediation Objectives for the Soil Component of the Groundwater Ingestion Route

		Tier 1 Soil Remediation Objectives[a]	
CAS No.	Chemical Name	Class I (mg/L)	Class II (mg/L)
83-32-9	Acenaphthene	2.0[b]	10
67-64-1	Acetone	4.0[b]	4.0
15972-60-8	Alachlor	0.002'	0.01'
116-06-3	Aldicarb	0.003[c]	0.015'
309-00-2	Aldrin	5.0E-6[b]	2.5E-5
120-12-7	Anthracene	10[b]	50
1912-24-9	Atrazine	0.003'	0.015'
71-43-2	Benzene	0.005"	0.025'
56-55-3	Benzo(*a*)anthracene	0.0001[b]	0.0005
205-99-2	Benzo(*b*)fluoranthene	0.0001[b]	0.0005
207-08-9	Benzo(*k*)fluroanthene	0.001[b]	0.005
50-32-8	Benzo(*a*)pyrene	0.0002[a,c]	0.002'
111-44-4	Bis(2-chloroethyl)ether	8.0E-5[b]	8.0E-5
117-81-7	Bis(2-ethylhexyl)phthalate (Di(2-ethylhexyl)phthalate	0.006[a,c]	0.06'
75-27-4	Bromodichloromethane (Dichlorobromomethane)	0.1[b]	0.1
75-25-2	Bromoform	0.1[b]	0.01
71-36-3	Butanol	4.0[b]	4.0
85-68-7	Butyl benzyl phthalate	7.0[b]	35
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]

CAS No.	Chemical Name	GW_{obj} Concentration used to Calculate Tier 1 Soil Remediation Objectives*	
		Class I (mg/L)	Class II (mg/L)
108-90-7	Chlorobenzene (Monochlorobenzene)	0.1'	0.5[c]
124-48-1	Chlorodibromomethane (Dibromochloromethane)	0.06[b]	0.06
67-66-3	Chloroform	0.1[b]	*0.5*
218-01-9	Chrysene	0.1[b]	0.05
94-75-7	2,4-D	0.07'	0.35'
75-99-0	Dalapon	0.2'	2.0'
72-54-8	DDD	0.0004[b]	0.002
72-55-9	DDE	0.0003[b]	0.0015
50-29-3	DDT	0.0003[b]	0.0015
53-70-3	Dibenzo(*a,h*)anthracene	1.0E-5[b]	5.0E-5
96-12-8	1,2-Dibromo-3-chloropropane	0.0002'	0.0002[c]
106-93-4	1,2-Dibromoethane (Ethylene dibromide)	0.00005[a,c]	0.0005[c]
84-74-2	Di-n-butyl phthalate	4.0[b]	20
95-50-1	1,2-Dichlorobenzene (*o* - Dichlorobenzene)	0.6[c]	1.5"
106-46-7	1,4-Dichlorobenzene (*p* - Dichlorobenzene)	0.075'	0.375[c]
91-94-1	3,3'-Dichlorobenzidine	0.0002[b]	0.001
75-34-3	1,l-Dichloroethane	4.0[b]	20
107-06-2	1,2-Dichloroethane (Ethylene dichloride)	0.005'	0.025'
75-35-4	1,1-Dichloroethylene	0.007[c]	0.035[c]
156-59-2	*cis*-1,2-Dichloroethylene	0.07'	0.2"
156-60-5	*trans*-1,2-Dichloroethylene	*0.1*[c]	0.5'
78-97-5	1,2-Dichloropropane	*0.005'*	0.025'
542-75-6	1,3-Dichloropropene (1,3-Dichloropropylene, *cis* + ***trans)***	0.0005[b]	0.0025

CAS No.	Chemical Name	GW_{obj} Concentration used to Calculate Tier 1 Soil Remediation Objectives[a]	
		Class I (mg/L)	Class II (mg/L)
60-57-1	Dieldrin	5.0E-6[b]	2.5E-5
84-66-2	Diethyl phthalate	30[b]	30
121-14-2	2,4-Dinitrotoluene	0.0001[b]	0.0001
606-20-2	2,6-Dinitrotoluene	0.0001	0.0001
88-85-7	Dinoseb	0.007'	0.07'
117-84-0	Di-n-octyl phthalate	0.7[b]	3.5
115-29-7	Endosulfan	0.2[b]	1.0
145-73-3	Endothall	0.1'	0.1'
72-20-8	Endrin	0.002'	0.01[c]
100-41-4	Ethylbenzene	0.7'	1.0[c]
206-44-0	Fluoranthene	1.0[b]	5.0
86-73-7	Fluorene	1.0[b]	5.0
76-44-8	Heptachlor	0.0004'	0.002[c]
1024-57-3	Heptachlor epoxide	0.0002'	0.001'
118-74-1	Hexachlorobenzene	0.001[b]	0.005
319-84-6	*alpha*-HCH (*alpha*-BHC)	1.0E-5[b]	5.0E-5
58-89-9	*Gamma*-HCH (Lindane)	0.0002'	0.001[c]
77-47-4	Hexachlorocyclopentadiene	0.05'	0.5'
67-72-1	Hexachloroethane	0.007	0.035
193-39-5	Indeno(1,2,3-*c,d*)pyrene	0.0001[b]	0.0005
78-59-1	Isophorone	1.4	1.4
72-43-5	Methoxychlor	0.04'	0.2[c]
74-83-9	Methyl bromide (Bromomethane)	0.05[b]	0.25 0.07
1634-04-4	Methyl tert-butyl ether	0.07	0.05[c]
75-09-2	Methylene chloride (Dichloromethane)	0.005[c]	0.05'
91-20-3	Naphthalene	0.14	0.22
98-95-3	Nitrobenzene	0.02[b]	0.02

CAS No.	Chemical Name	GW_{obj} concentration used to Calculate Tier 1 Soil Remediation Objectives"	
		Class I (mg/L)	Class II (mg/L)
1918-02-1	Picloram	0.5'	5.0[c]
1336-36-3	Polychlorinated biphenyls (PCBs)	---	---
129-00-0	Pyrene	1.0[b]	5.0
122-34-9	Simazine	0.004[c]	0.04'
100-42-5	Styrene	0.1[c]	0.5'
93-72-1	2,4,5-TP (Silvex)	0.05[c]	0.25'
127-18-4	Tetrachloroethylene (Perchloroethylene)	0.005'	0.025[c]
108-88-3	Toluene	1.0[c]	2.5'
8001-35-2	Toxaphene	0.003'	0.015[c]
120-82-1	1,2,4-Trichlorobenzene	0.07'	0.7[c]
71-55-6	1,1,1-Trichloroethane[2]	0.2'	1.0[c]
79-00-5	1,1,2-Trichloroethane	0.005[c]	0.05[c]
79-01-6	Trichloroethylene	0.005'	0.025[c]
108-05-4	Vinyl acetate	40[b]	40
75-01-4	Vinyl chloride	0.002"	0.01'
1330-20-7	Xylenes (total)	10.0'	10.0'
	Ionizable Organics		
65-85-0	Benzoic Acid	100[b]	100
106-47-8	4-Chloroaniline (*p*-Chloroaniline)	0.1[b]	0.1
95-57-8	2-Chlorophenol	0.2[b]	1.0
120-83-2	2,4-Dichlorophenol	0.1[b]	0.1
105-67-9	2,4-Dimethylphenol	0.7[b]	0.7
51-28-5	2,4-Dinitrophenol	0.04[b]	0.04
95-48-7	2-Methylphenol (*o* - Cresol)	2.0[b]	2.0
86-30-6	N-Nitrosodiphenylamine	0.02[b]	0.1

CAS No.	Chemical Name	GW_{obj} Concentration used to Calculate Tier 1 Soil Remediation Objectives[a]	
		Class I (mg/L)	Class II (mg/L)
621-64-7	*N*-Nitrosodi-*n*-propylamine	1.0E-5[b]	1.0E-5
87-86-5	Pentachlorophenol	0.001'"	0.005'
108-95-2	Phenol	0.1'	0.1[c]
95-95-4	2,4,5-Trichlorophenol	4.0[b]	20
8856-2	2,4,6-Trichlorophenol	0.008[b]	0.04
	Inorganics		
7440-36-0	Antimony	0.006'	0.024'
7440-38-2	Arsenic	*0.05'*	0.2'
7440-39-3	Barium	2.0'	2.0'
7440-41-7	Beryllium	0.004'	0.5'
7440-42-8	Boron	2.0'	2.0'
7440-43-9	Cadmium	0.005[c]	0.05[c]
16887-00-6	Chloride	200'	200'
7440-47-3	Chromium, total	*0.1*[c]	1.0[c]
18540-29-9	Chromium, ion, hexavalent	---	---
7440-48-4	Cobalt	1.0[c]	1.0[c]
7440-50-8	Copper	*0.65'*	0.65'
57-12-5	Cyamde	0.2'	0.6'
7782-41-4	Fluoride	4.0'	4.0[c]
15438-31-0	Iron	*5.0'*	*5.0'*
7439-92-1	Lead	0.0075'	0.1"
7439-96-5	Manganese	0.15[c]	10.0'
7439-97-6	Mercury	0.002"	0.01[c]
7440-02-0	Nickel	0.1[c]	2.0'
14797-55-8	Nitrate as N	10.0'	100'
7782-49-2	Selenium	0.05'	*0.05"*
7440-22-4	Silver	*0.05'*	---
14808-79-8	Sulfate	400'	400'

		GW_{obj} Concentration used to Calculate Tier 1 Soil Remediation Objectives[a]	
CAS No.	Chemical Name	Class I (mg/L)	Class II (mg/L)
7440-28-0	Thallium	0.002[c]	0.02'
7440-62-2	Vanadium	0.049	0.1
7440-66-6	Zinc	5.0[c]	10'

[a] The Equation **S17** is used to calculate the Soil Remediation Objective for the Soil Component of the Groundwater Ingestion Route; this equation requires calculation of the Target Soil Leachate Concentration (C_w) from Equation S18: $C_w = DF \times GW_{obj}$.

[b] Value listed is the Water Health Based Limit (HBL) for this chemical from Soil Screening Guidance: User's Guide, incorporated by reference at Section 742.210. The HBL is equal to the non-zero MCLG (if available); the MCL (if available);-or, for carcinogens, a cancer risk of 1.0E-6, and for noncarcinogens is equal to a Hazard Quotient of 1.0. NOTE: These GW_{obj} concentrations are not equal to the Tier 1 Groundwater Remediation Objectives for the Direct Ingestion of Groundwater Component of the Groundwater Ingestion Route, listed in Section 742.Appendix **B,** Table E.

[c] Value listed is also the Groundwater Quality Standard for this chemical pursuant to **35** Ill. Adm. Code 620.410 for Class **I** Groundwater or 35 Ill. Adm. Code 620.420 for Class II Groundwater.

(Source: Amended at 25 Ill. Reg. _____, effective _____)

Section 742. APPENDIX C: Tier 2 Tables and Illustrations

Section 742. Table E: Default Physical and Chemical Parameters

CAS No.	Chemical	Solubility in Water (S) (mg/L)	Diffusivity in Air (Di) (cm^2/s)	Diffusivity in Water (D_w) (cm^2/s)	Dimensionless Henry's Law Constant (H') (25°C)	Organic Carbon Partition Coefficient (K_{oc}) (L/kg)	First Order Degradation constant (λ) (d^{-1})
Neutral Organics							
83-32-9	Acenaphthene	4.24	0.0421	7.69E-6	0.00636	7,080	0.0034
67-64-1	Acetone	1,000,000	0.124	1.14E-5	0.00159	0.575	0.0495
15972-60-8	Alachlor	242	0.0198	5.69E-6	0.00000132	394	No Data
116-06-3	Aldicarb	6,000	0.0305	7.19E-6	0.0000000574	12	0.00109
309-00-2	Aldrin	0.18	0.0132	4.86E-6	0.00697	2,450,000	0.00059
120-12-7	Anthraccne	0.0434	0.0324	7.74E-6	0.00267	29,500	0.00075
1912-24-9	Atrazine	70	0.0258	6.69E-6	0.00000005	451	No Data
71-43-2	Benzene	1,750	0.088	9.80E-6	0.228	58.9	0.0009

CAS No.	Chemical	Solubility in Water (S) (mg/L)	Diffusivity in Air (Di) (cm^2/s)	Diffusivity in Water (D_w) (cm^2/s)	Dimensionless Henry's Law Constant (H') (25°C)	Organic Carbon Partition Coefficient (K_{oc}) (L/kg)	First Order Degradation Constant (d^{-1})
56-55-3	Benzo(a)anthracene	0.0094	0.0510	9.00E-6	0.000137	398,000	0.00051
205-99-2	Benzo(b)fluoranthene	0.0015	0.0226	5.56E-6	0.00455	1,230,000	0.00057
207-08-9	Benzo(k)fluoranthene	0.0008	0.0226	5.56E-6	0.000034	1,230,000	0.00016
65-85-0	Benzoic Acid	3,500	0.0536	7.97E-6	0.0000631	0.600	No Data
50-32-8	Benzo(a)pyrene	0.00162	0.043	9.00E-6	0.0000463	1,020,000	0.00065
111-44-4	Bis(2-chloroethyl)ether	17,200	0.0692	7.53E-6	0.000738	15.5	0.0019
117-81-7	Bis(2-ethylhexyl)phthalate	0.34	0.0351	3.66E-6	0.00000418	15,100,000	0.0018
75-27-4	Bromodichloromethane	6,740	0.0298	1.06E-5	0.0656	55.0	No Data
75-25-2	Broinoform	3,100	0.0149	1.03E-5	0.0219	87.1	0.0019
71-36-3	Butanol	74,000	0.0800	9.30E-6	0.000361	6.92	0.01283
85-68-7	Butyl Benzyl Phthalate	2.69	0.0174	4.83E-6	0.0000517	57,500	0.00385
86-74-8	Carbazole	7.48	0.0390	7.03E-6	0.000000626	3,390	No Data

CAS No.	Chemical	Solubility in Water (S) (mg/L)	Diffusivity in Air (Di) (cm^2/s)	Diffusivity in Water (D_w) (cm^2/s)	Dimensionless Henry's Law Constant (H') (25°C)	Organic Carbon Partition Coefficient (K_{oc}) (L/kg)	First Order Degradation Constant (λ) (d^{-1})
1563-66-2	Carbofuran	320	0.0249	6.63E-6	,00377	37	No Data
75-15-0	Carbon Disulfide	1,190	0.104	1.00E-5	1.24	45.7	No Data
56-23-5	Carbon Tetrachloride	793	0.0780	8.80E-6	1.25	174	0.0019
57-74-9	Chlordane	0.056	0.0118	4.37E-6	0.00199		
106-47-8	p-Chloroaniline	5,300	0.0483	1.01E-5	0.0000136		
108-09-7	Chlorobenzene	472	0.0730	8.70E-6	0.152	219	0.0023
124-48-1	Chlorodibromomethane	2,600	0.0196	1.05E-5	0.0321	63.1	0.00385
67-66-3	Chloroform	7,920	0.104	1.00E-5	0.15	39.8	0.00039
95-57-8	2-Chlorophenol	22,000	0.0501	9.46E-6	0.016	388	No Data
218-01-9	Chrysene	0.0016	0.0248	6.21E-6	0.00388	398,000	0.00035
94-75-7	2,4-D	680	0.0231	7.31E-6	0.00000041	45I	0.00385
72-54-8	4,4'-DDD	0.09	0.0169	4.76E-6	0.000164	1,000,000	0.000062

CAS No.	Chemical	Solubility in Water (S) (mg/L)	Diffusivity in Air (Di) (cm^2/s)	Diffusivity in Water (D_w) (cm^2/s)	Dimensionless Henry's Law Constant (H') (25°C)	Organic Carbon Partition Coefficient (L/kg)	First Order Degradation constant (λ) (d^{-1})
72-55-9	4,4'-DDE	0.12	0.0144	5.87E-6	0.000861	4,470,000	0.000062
50-29-3	4,4'-DDT	0.025	0.0137	4.95E-6	0.000332	2,630,000	0.000062
75-99-0	Dalapon	900,000	0.0414	9.46E-6	0.00000264	5.8	0.005775
53-70-3	Dibenzo(a,h)anthracene	0.00249	0.0202	5.18E-6	0.000000603	3,800,000	0.00037
96-12-8	1,2-Dibromo-3-chloropropane	1,200	0.0212	7.02E-6	0.00615	182	0.001925
106-93-4	1,2-Dibromoethane	4,200	0.0287	8.06E-6	0.0303	93	0.005775
84-74-2	Di-n-butyl Phthalate	11.2	0.0438	7.86E-6	0.0000000385	33,900	0.03013
95-50-1	1,2-Dichlorobenzene	156	0.0690	7.90E-6	0.0779	617	0.0019
106-46-7	1,4-Dichlorobenzene	73.8	0.0690	7.90E-6	0.0996	617	0.0019
91-94-1	3,3-Dichlorobenzidine	3.11	0.0194	6.74E-6	0.000000 164	724	0.0019

CAS No.	Chemical	Solubility in Water (S) (mg/L)	Diffusivity in Air (Di) (cm^2/s)	Diffusivity in Water (D_w) (cm^2/s)	Dimensionless Henry's Law Constant (H') (25°C)	Organic Carbon Partition Coefficient (K_{oc}) (L/kg)	First Order Degradation Constant (λ) (d^{-1})
75-34-3	1,1-Dichloroethane	5,060	0.0742	1.05E-5	0.23	31.6	0.0019
107-06-2	1,2-Dichloroethane	8,520	0.104	9.90E-6	0.0401	17.4	0.0019
75-35-4	1,1-Dichloroethylene	2,250	0.0900	1.04E-5	1.07	58.9	0.0053
156-59-2	Cis-1,2-Dichloroethylene	3,500	0.0736	1.13E-5	0.167	35.5	0.00024
156-60-5	Trans-1,2-Dichloroethylene	6,300	0.0707	1.19E-5	0.385	52.5	0.00024
120-83-2	2,4-Dichlorophenol	4,500	0.0346	8.77E-6	0.00013	147	0.00027
78-87-5	1,2-Dichloropropane	2,800	0.0782	8.73E-6	0.115	43.7	0.00027
542-75-6	1,3-Dichloropropylene (cis + trans)	2,800	0.0626	1.00E-5	0.726	45.7	0.061
60-57-1	Dieldrin	0.195	0.0125	4.74E-6	0.000619	21,400	0.00032
84-66-2	Diethyl Phthalate	1,080	0.0256	6.35E-6	0.0000185	288	0.00619
105-67-9	2,4-Dimethylphenol	7,870	0.0584	8.69E-6	0.000082	209	0.0495
51-28-5	2,4-Dinitrophenol	2,790	0.0273	9.06E-6	0.0000182	0.01	0.00132

CAS No.	Chemical	Solubility in Water (S) (mg/L)	Diffusivity in Air (Di) (cm^2/s)	Diffusivity in Water (D_w) (cm^2/s)	Dimensionless Henry's Law Constant (H') (25°C)	Organic Carbon Partition Coefficient (K_{oc}) (L/kg)	First Order Degradation Constant (λ) (d^{-1})
121-14-2	2,4-Dinitrotoluene	270	0.203	7.06E-6	0.0000038	95.5	0.00192
606-20-2	2,6-Dinitrotoluene	182	0.0327	7.26E-6	0.0000306	69.2	0.00192
88-85-7	Dinoseb	52	0.0215	6.62E-6	0.0000189	1,120	0.002817
117-84-0	Di-n-octyl Phthalate	0.02	0.0151	3.58E-6	0.00274	83,200,000	0.0019
115-29-7	Endosulfan	0.51	0.0115	4.55E-6	0.000459	2,140	0.07629
145-73-3	Endothall	21,000	0.0291	8.07E-6	0.0000000107	0.29	No Data
72-20-8	Endrin	0.25	0.0125	4.74E-6	0.000308	12,300	0.00032
100-41-4	Ethylbenzene	169	0.0750	7.80E-6	0.323	363	0.003
206-44-0	Fluoranthene	0.206	0.0302	6.35E-6	0.00066	107,000	0.00019
86-73-7	Fluorene	1.98	0.0363	7.88E-6	0.00261	13,800	0.000691
76-44-8	Heptachlor	0.18	0.0112	5.69E-6	60.7	1,410,000	0.13
1024-57-3	Heptachlor epoxide	0.2	0.0132	4.23E-6	0.00039	83,200	0.00063

CAS No.	Chemical	Solubility in Water (S) (mg/L)	Diffusivity in Air (Di) (cm^2/s)	Diffusivity in Water (D_w) (cm^2/s)	Dimensionless Henry's Law Constant (H') (25°C)	Organic Carbon Partition Coefficient (K_{oc}) (L/kg)	First Order Degradation Constant (λ) (d^{-1})
118-74-1	Hexachlorobenzene	6.2	0.0542	5.91E-6	0.0541	55,000	0.00017
319-84-6	Alpha-HCH (alpha-BHC)	2.0	0.0142	7.34E-6	0.000435	1,230	0.0025
58-89-9	Gamma-HCH (Lindane)	6.8	0.0142	7.34E-6	0.000574	1,070	0.0029
77-47-4	Hexachlorocyclo-Pentadiene	1.8	0.0161	7.21E-6	1.11	200,000	0.012
67-72-1	Hexachloroethane	50	0.0025	6.80E-6	0.159	1,780	0.00192
193-39-5	Indeno(1,2,3-c,d)pyrene	0.000022	0.0190	5.66E-6	0.0000656	3,470,000	0.00047
78-59-1	Isophorone	12,000	0.0623	6.76E-6	0.000272	46.8	0.01238
7439-97-6	Mercury	---	0.0307	6.30E-6	0.467	---	No Data
72-43-5	Methoxychlor	0.045	0.0156	4.46E-6	0.000648	97,700	0.0019
74-83-9	Methyl Bromide	15,200	0.0728	1.21E-5	0.256	10.5	0.01824
1634-04-4	Methyl tert-butyl ether	51,000	0.102	1.10E-5	0.0241	11.5	No Data
75-09-2	Methylene Chloride	13,000	0.101	1.17E-5	0.0898	11.7	0.012
95-48-7	2-Methylphenol	26,000	0.0740	8.30E-6	0.0000492	91.2	0.0495

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91-20-3	Naphthalene	31.0	0.0590	7.50E-6	0.0198	2,000	0.0027
98-95-3	Nitrobenzene	2,090	0.0760	8.60E-6	0.000984	64.6	0.00176
86-30-6	N-Nitrosodiphenylamine	35.1	0.0312	6.35E-6	0.000205	1,290	0.01
621-64-7	N-Nitrosodi-n-propylamine	9,890	0.0545	8.17E-6	0.0000923	24.0	0.0019
87-86-5	Pentachlorophenol	1,950	0.0560	6.10E-6	0.000001	592	0.00045
108-95-2	Phenol	82,800	0.0820	9.10E-6	0.0000163	28.8	0.099
1918-02-1	Picloram	430	0.0255	5.28E-6	0.00000000166	1.98	No Data
1336-36-3	Polychlorinated biphenyls (PCBs)	0.7	-------[a]	-------[a]	-------[a]	309,000	No Data
129-00-0	Pyrene	0.135	0.0272	7.24E-6	0.000451	105,000	0.00018
122-34-9	Simazine	5	0.027	7.36E-6	0.0000000133	133	No Data
						776	0.0033
93-72-1	2,4,5-TP (Silvex)	31	0.0194	5.83E-6	0.0000000032	5,440	No Data

CAS No.	Chemical	Solubility in Water **(S)** (mg/L)	Diffusivity in **Air** (Di) (cm^2/s)	Diffusivity in Water (D_w) (cm^2/s)	Dimensionless Henry's Law Constant **(H')** (25°C)	Organic Carbon Partition Coefficient (K_{oc}) (L/kg)	First Order Degradation Constant (λ) (d^{-1})
127-18-4	Tetrachtoroethylene	200	0.0720	8.20E-6	0.754	155	0.00096
108-88-3	Toluene	526	0.0870	8.60E-6	0.272	182	0.011
8001-35-2	Toxaphene	0.74	0.0116	4.34E-6	0.000246	257,000	**No** Data
120-82-1	1,2,4-Trichlorobenzene	300	0.0300	8.23E-6	0.0582	1,780	0.0019
71-55-6	1,1,1-Trichloroethane	1,330	0.0780	8.80E-6	0.705	110	0.0013
79-00-5	1,1,2-Trichloroethane	4,420	0.0780	8.80E-6	0.0374	50.1	0.00095
79-01-6	Trichloroethylene	1,100	0.0790	9.10E-6	0.422	166	0.00042
95-95-4	2,4,5-Trichlorophenol	1,200	0.0291	7.03E-6	0.000178	1,600	0.00038
88-06-2	2,4,6-Trichlorophenol	800	0.0318	6.25E-6	0.000319	381	0.00038
108-05-4	Vinyl Acetate	20,000	0.0850	9.20E-6	0.021	5.25	No Data
57-01-4	Vinyl Chloride	2,760	0.106	1.23E-6	1.11	18.6	0.00024
108-38-3	m-Xylene	161	0.070	7.80E-6	0.301	407	0.0019

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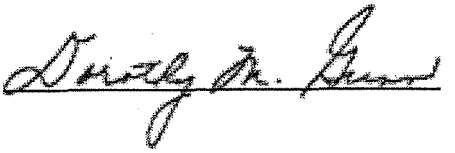
95-47-6	o-Xylene	178	0.087	I.00E-5	0.213	363	0.0019
106-42-3	p-Xylene	185	0.0769	8.44E-6	0.314	389	0.0019
1330-20-7	Xylenes (total)	186	0.0720	9.34E-6	0.25	260	0.0019

Chemical Abstracts Service (CAS) registry number. This number in the format xxx-xx-x, is unique for each chemical and allows efficient searching on computerized data bases.

[a]Soil Remediation objectives are determined pursuant **to** 40 CFR 761, **as** incorporated by reference at Section 732.104 (the USEPA "PCB Spill Cleanup Policy"), for most sites; persons remediating sites should consult with BOL if calculation of Tier 2 soil remediation objectives is desired.

(Source: Amended at 25 Ill. Reg. _____, effective _____)

I, Dorothy M. Gunn, Clerk of the Illinois Pollution Control Board, certify that the Board adopted the above opinion and order on September 6, 2001, by a vote of 7-0.



Dorothy M. Gunn, Clerk
Illinois Pollution Control Board