ILLINOIS POLLUTION CONTROL BOARD
April 17, 1997

IN THE MATTER OF:	)	
	)	
TIERED APPROACH TO CORRECTIVE	)	R97-12 (B)
ACTION OBJECTIVES: AMENDMENTS	)	(Rulemaking - Land)
TO 35 ILL. ADM. CODE 742.505 and	)	
742.900.	)	

Proposed Rule. First Notice.

OPINION AND ORDER OF THE BOARD (by M. McFawn and J. Yi):

The rules proposed today for first notice are intended to fulfill the mandates of Title XVII of the Environmental Protection Act (Act) (415 ILCS 5/1 *et seq*.(1994)). Title XVII was added to the Act by P.A. 89-431, which was signed and became effective on December 15, 1995. Pursuant to Section 58.11(d) of Title XVII, the Agency was required to propose rules to fully implement the mandates of Title XVII by September 16, 1996 and the Board is required to conduct and complete rulemaking on the same in accordance with the Act and the Administrative Procedure Act no later than June 16, 1997. On September 16, 1996, the Illinois Environmental Protection Agency (Agency) filed a proposal to add a new Part 742 to the Board s rules, which would create a tiered approach to establishing corrective action objectives (also known as TACO). On November 7, 1996, the Board adopted the proposal for first notice publication in the *Illinois Register*, which appeared at 20 Ill. Reg. 15429 (December 6, 1996). Today, the Board adopted the proposal as modified based upon the hearings and public comments for second notice under Docket A to fulfill this mandate. The Board anticipates that the Joint Committee on Administrative Rules will complete its review in May, and the Board will adopt the rules as final on or before June 16, 1997. However, during the public comment period under first notice, the Agency raised some issues which could not be resolved based upon the record developed during first notice. There is not sufficient time to resolve these issues and meet the statutory deadline for adopting rules to implement the TACO process. Accordingly, the Board is proposing today for first notice amendments to certain rules the Board has adopted today for second notice and anticipates adopting as final on June 16, 1997. Additionally, the Board sends this matter to hearing and directs the hearing officer to set and conduct hearings in this matter on an expedited schedule.

To date in this rulemaking, R97-12(a), five public hearings were held, followed by an extended public comment period. The Board received 22 public comments during that period of time. On February 3, 1997, the Agency filed an Errata Sheet No.3 requesting, among other things, that new language be added at Sections 742.505(b)(3)(A) and (B) and 742.900(f) to the proposed TACO rules regarding mixtures of similar-acting substances. The Agency also proposed that Section 742.610, Chemicals with Cumulative Noncarcinogenic Effects, which was originally in its September 16, 1996 proposal, be relocated to Section 742.720. On February 25, 1997, the Agency proposed new language at Section 742.505(b)(3)(C), in addition to that proposed at subsections (3)(A) and (3)(B) of that Section in its February 3,

1997 filing. The new language parallels that proposed at Section 742.610 for Tier 2 and sets forth the requirements for demonstrating under Tier 1 that mixture of similar acting chemicals in Class I groundwater do not present unacceptable risks to users of the groundwater.

These proposed amendments and the Agency s explanation of the same were all entered into the record after the close of hearings. The Agency s reasons for these proposed changes were contained in its Final Comments filed on February 20, 1997. (PC 10 at 11.) Thereafter, several commentators objected to these amendments as being unsupported in the record developed at hearing. (See PC 3, 8, 20 and 21.)

Given the substantive nature of the Agency s requested amendments and the lack of support for the same in the record, the Board has decided to open a Docket B in this rulemaking to address the new language proposed by the Agency regarding mixtures of similar-acting substances. In Docket A, the Board adopted today for second notice the language proposed by the Agency bifurcating the mixture rule under Tier 2 to clarify that it is applicable to soil and groundwater remediation objectives. (See Errata Sheet No. 3.) That new language appears in Sections 742.720 and 742.805(c). At first notice, these requirements were proposed at Section 742.610. The Board also adopted some of the language proposed by the Agency at Section 742.505(b) to the effect that the mixture rule will apply to the groundwater objectives under Tier 1 for noncarcinogens only. Under this docket, we will consider whether this rule should apply to soil remediation objectives under Tier 1, and whether the rule should apply to carcinogenic contaminants of concern as well as noncarcinogenic contaminants under Tiers 1 and 2. The Board will schedule this matter for hearing at which the Agency and the public will be invited to testify with regard to this proposal.

The attached order includes new language and amendments to Part 742, as adopted today for second notice in Docket A. Therefore, these amendments are proposed modifications to the TACO rules which are currently only proposed rules. The Board anticipates that Docket A will be adopted by the Board as final on or about June 6, 1997. Therefore the amendatory language proposed in this docket will be adopted, as modified pursuant to public hearings and public comment, for second notice and as final after the rules in Docket A are adopted as final. Accordingly, the reader should be aware that unlike an ordinary first notice proposal which proposes amendments to existing rules or entirely new rules, these amendments are proposed to amend proposed Part 742 in the form we reasonably believe it will read when it is adopted as final.

By today s action, the Board sends this proposal to first notice, pursuant to the Administrative Procedure Act (5 ILLS 100/1-1 *et seq.* (1994)), and directs the Clerk of the Board to cause the publication of the first notice proposal in the *Illinois Register*. Also, by today s action the Board sets this matter for hearing.

ORDER

The Board hereby proposes for first notice the following new rules at 35 Ill. Adm. Code 742. The Clerk of the Board is directed to file these proposed rules with the Secretary of State in the *Illinois Register*. The Board hereby directs this matter to hearing on an expedited schedule.

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

Section
742.100 Intent and Purpose
742.105 Applicability
742.110 Overview of Tiered Approach
742.115 Key Elements
742.120 Site Characterization

SUBPART B: GENERAL

Section
742.200 Definitions
742.205 Severability
742.210 Incorporations by Reference
742.215 Determination of Soil Attenuation Capacity
742.220 Determination of Soil Saturation Limit
742.225 Demonstration of Compliance with Remediation Objectives
742.230 Agency Review and Approval

SUBPART C: EXPOSURE ROUTE EVALUATIONS

Section
742.300 Exclusion of Exposure Route
742.305 Contaminant Source and Free Product Determination
742.310 Inhalation Exposure Route
742.315 Soil Ingestion Exposure Route
742.320 Groundwater Ingestion Exposure Route

SUBPART D: DETERMINING AREA BACKGROUND

Section
742.400 Background
742.405 Determination of Area Background for Soil
742.410 Determination of Area Background for Groundwater
742.415 Use of Area Background Concentrations

SUBPART E: TIER 1 EVALUATION

Section
742.500 Tier 1 Overview
742.505 Tier 1 Soil and Groundwater Remediation Objectives
742.510 Tier 1 Remediation Objectives Tables

SUBPART F: TIER 2 GENERAL EVALUATION

Section
742.600 Tier 2 Overview
742.605 Land Use
742.610 Chemical and Site Properties

SUBPART G: TIER 2 SOIL EVALUATION

Section
742.700 Tier 2 Soil Overview
742.705 Parameters for Soil Remediation Objective Equations
742.710 SSL Soil Equations
742.715 RBCA Soil Equations
742.720 Chemicals with Cumulative Noncarcinogenic Effects

SUBPART H: TIER 2 GROUNDWATER EVALUATION

Section
742.800 Tier 2 Groundwater Overview
742.805 Tier 2 Groundwater Remediation Objectives
742.810 Calculations to Predict Impacts from Remaining Groundwater Contamination

SUBPART I: TIER 3 EVALUATION

Section
742.900 Tier 3 Overview
742.905 Modifications of Parameters
742.910 Alternative Models
742.915 Formal Risk Assessments

742.920 Impractical Remediation
742.925 Exposure Routes
742.930 Derivation of Toxicological Data

SUBPART J: INSTITUTIONAL CONTROLS

Section
742.1000 Institutional Controls
742.1005 No Further Remediation Letters
742.1010 Restrictive Covenants, Deed Restrictions and Negative Easements
742.1015 Ordinances
742.1020 Highway Authority Agreements

SUBPART K: ENGINEERED BARRIERS

Section
742.1100 Engineered Barriers
742.1105 Engineered Barrier Requirements

742.APPENDIX A General
Table A Soil Saturation Limits (C_{sat}) for Chemicals Whose Melting Point is Less Than 30^0C
Table B Tolerance Factor (K)
Table C Coefficients $\{A_{N-I+1}\}$ for W Test of Normality, for N=2(1)50
Table D Percentage Points of the W Test for N=3(1)50
Table E Chemicals with Noncarcinogenic Toxic Effects on Specific Target Organs/Organ Systems or Similar Modes of Action
Table F Chemicals with Carcinogenic Toxic Effects on Specific Target Organs/Organ Systems or Similar Modes of Action
Table G Concentrations of Inorganic Chemicals in Background Soils
ILLUSTRATION A Developing Soil Remediation Objectives Under the Tiered Approach
ILLUSTRATION B Developing Groundwater Remediation Objectives Under the Tiered Approach
742.APPENDIX B Tier 1 Tables and Illustrations
Table A Tier 1 Soil Remediation Objectives for Residential Properties
Table B Tier 1 Soil Remediation Objectives for Industrial/Commercial Properties
Table C pH Specific Soil Remediation Objectives for Inorganics and Ionizing Organics for the Soil Component of the Groundwater Ingestion Route (Class I Groundwater)
Table D pH Specific Soil Remediation Objectives for Inorganics and Ionizing Organics for the Soil Component of the Groundwater Ingestion Route (Class II Groundwater)
Table E Tier 1 Groundwater Remediation Objectives for the Groundwater Component of the Groundwater Ingestion Route

Table F Values Used to Calculate the Tier 1 Soil Remediation Objectives for the Soil Component of the Groundwater Ingestion Route
ILLUSTRATION A Tier 1 Evaluation
742.APPENDIX C Tier 2 Tables and Illustrations
Table A SSL Equations
Table B SSL Parameters
Table C RBCA Equations
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
Table J Values to be Substituted for k_s When Evaluating Inorganics as a Function of pH
Table K Parameter Estimates for Calculating Water-Filled Soil Porosity (θ_w)
ILLUSTRATION A Tier 2 Evaluation for Soil
ILLUSTRATION B Tier 2 Evaluation for Groundwater
ILLUSTRATION C US Department of Agriculture Soil Texture Classification

AUTHORITY: Implementing Sections 22.4, 22.12, Title XVI, and Title XVII and-authorized by Sections 27, 57.14, and 58.5 of the Environmental Protection Act [415 ILCS 5/22.4, 22.12, Title XVI and Title VII] (see P.A. 88-496, effective September 13, 1993 and P.A. 89-0431, effective December 15, 1995).

SOURCE: Adopted at 21 Ill. Reg. _____ , effective _____.

NOTE: Capitalization indicates statutory language.

Section 742.505 Tier 1 Soil and Groundwater Remediation Objectives

a) Soil

1) Inhalation Exposure Route

A) The Tier 1 soil remediation objectives for this exposure route based upon residential property use are listed in Appendix B, Table A.

B) The Tier 1 soil remediation objectives for this exposure route based upon industrial/commercial property use are listed in Appendix B, Table B. Soil remediation objective determinations relying on this table require use of institutional controls in accordance with Subpart J.

2) Ingestion Exposure Route

A) The Tier 1 soil remediation objectives for this exposure route based upon residential property use are listed in Appendix B, Table A.

B) The Tier 1 soil remediation objectives for this exposure route based upon industrial/commercial property use are listed in Appendix B, Table B. Soil remediation objective determinations relying on this table require use of institutional controls in accordance with Subpart J.

3) Soil Component of the Groundwater Ingestion Route

A) The Tier 1 soil remediation objectives for this exposure route based upon residential property use are listed in Appendix B, Table A.

B) The Tier 1 soil remediation objectives for this exposure route based upon industrial/commercial property use are listed in Appendix B, Table B.

C) The pH-dependent Tier 1 soil remediation objectives for identified ionizable organics or inorganics for the soil component of the groundwater ingestion exposure route (based on the total amount of contaminants present in the soil sample results and groundwater classification) are provided in Appendix B, Tables C and D.

D) Values used to calculate the Tier 1 soil remediation objectives for this exposure route are listed in Appendix B, Table F.

4) Evaluation of the dermal contact with soil exposure route is not required under Tier 1.

b) Groundwater

1) The Tier 1 groundwater remediation objectives for the groundwater component of the groundwater ingestion route are listed in Appendix B, Table E.

2) The Tier 1 groundwater remediation objectives for this exposure route are given for Class I and Class II groundwaters, respectively.

3) The requirements of 35 Ill. Adm. Code 620.615 regarding mixtures of similar-acting chemicals shall be met for Class I groundwater at the point of human exposure.

A) Calculate the weighted average using the following equations:

$$W_{ave} = \frac{x_1}{CUO_{x_1}} + \frac{x_2}{CUO_{x_2}} + \frac{x_3}{CUO_{x_3}} + \ldots + \frac{x_a}{CUO_{x_a}}$$

where:

W_{ave} = Weighted Average

x_1 through x_a = Concentration of each individual contaminant at the location of concern. Note that, depending on the target organ/mode of action, the actual number of contaminants will range from 2 to 14.

$CUOx_a$ = A Tier 1 remediation objective must be developed for each x_a.

ii) If the value of the weighted average calculated in accordance with the equations above is less than or equal to 1.0, then the remediation objectives are met for those chemicals.

ii) If the value of the weighted average calculated in accordance with the equations above is greater than 1.0, then additional remediation must be carried out until the level of contaminants remaining in the remediated area have a weighted average calculated in accordance with the equation above less than or equal to one;

B) Divide each individual chemical's remediation objective by the number of chemicals in that specific target organ group that were detected at the site. Each of the contaminant concentrations at the site is then compared to the remediation objectives that have been adjusted to account for this potential additivity.

SOURCE: Adopted at 21 Ill. Reg. _____ , effective _____.

Section 742.900 Tier 3 Overview

a) Tier 3 sets forth a flexible framework to develop remediation objectives outside of the requirements of Tiers 1 and 2. Although Tier 1 evaluations and Tier 2

evaluations are not prerequisites to conduct Tier 3 evaluations, data from Tier 1 and Tier 2 can assist in developing remediation objectives under a Tier 3 evaluation.

b) The level of detail required to adequately characterize a site depends on the particular use of Tier 3. Tier 3 can require additional investigative efforts beyond those described in Tier 2 to characterize the physical setting of the site. However, in situations where remedial efforts have simply reached a physical obstruction (e.g., a building), additional investigation may not be necessary for a Tier 3 submittal.

c) Situations that can be considered for a Tier 3 evaluation include, but are not limited to:

1) Modification of parameters not allowed under Tier 2;

2) Use of models different from those used in Tier 2;

3) Use of additional site data to improve or confirm predictions of exposed receptors to contaminants of concern;

4) Analysis of site-specific risks using formal risk assessment, probabilistic data analysis, and sophisticated fate and transport models (e.g., requesting a target hazard quotient greater than 1 or a target cancer risk greater than 1 in 1,000,000) ;

5) Requests for site-specific remediation objectives because a "common sense" assessment indicates further remediation is not practical (e.g., the remaining contamination is under a structure such as a permanent building);

6) Incomplete human exposure pathway(s) not excluded under Subpart C;

7) Use of toxicological-specific information not available from the sources listed in Tier 2; and

8) Land uses which are substantially different from the assumed residential or industrial/commercial property uses of a site (e.g., a s site will be used for recreation in the future and cannot be evaluated in Tiers 1 or 2).

9) Requests for remediation objectives which exceed Tier 1 groundwater remediation objectives so long as the following is demonstrated:

A) TO THE EXTENT PRACTICAL, THE EXCEEDANCE OF THE GROUNDWATER QUALITY STANDARD HAS BEEN

MINIMIZED AND BENEFICIAL USE APPROPRIATE TO THE GROUNDWATER THAT WAS IMPACTED HAS BEEN RETURNED; AND

B) ANY THREAT TO HUMAN HEALTH OR THE ENVIRONMENT HAS BEEN MINIMIZED. (Section 58.5(D)(4)(A))

d) For requests of a target cancer risk ranging between 1 in 1,000,000 and 1 in 10,000 at the point of human exposure or a target hazard quotient greater than 1 at the point of human exposure, the requirements of Section 742.915 shall be followed. Requests for a target cancer risk exceeding 1 in 10,000 at the point of human exposure are not allowed.

e) Requests for approval of a Tier 3 evaluation must be submitted to the Agency for review under the program under which remediation is performed. When reviewing a submittal under Tier 3, the Agency shall consider WHETHER THE INTERPRETATIONS AND CONCLUSIONS REACHED ARE SUPPORTED BY THE INFORMATION GATHERED. (Section 58.7(e)(1) of the Act) The Agency shall approve a Tier 3 evaluation if the person submits the information required under this Part and establishes through such information that public health is protected and that specified risks to human health and the environment have been minimized.

f) Contaminants of concern which affect the same target organ, organ system or similar mode of action shall be specifically addressed. At a minimum, the chemical subject to this requirement are identified in Appendix A, Tables E and F.

SOURCE: Adopted at 21 Ill. Reg. _____ , effective _____.

Section 742.APPENDIX B: Tier 1 Tables and Illustrations

TABLE E: Tier 1 Groundwater Remediation Objectives for the Groundwater Component of the Groundwater Ingestion Route

		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[c]	0.01[c]
116-06-3	Aldicarb	0.003[c]	0.015[c]
309-00-2	Aldrin	0.00004[a]	0.0002
120-12-7	Anthracene	2.1	10.5
1912-24-9	Atrazine	0.003[c]	0.015[c]
71-43-2	Benzene	0.005[c]	0.025[c]
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[c]
111-44-4	Bis(2-chloroethyl)ether	0.01[a]	0.01
117-81-7	Bis(2-ethylhexyl)phthalate	0.006[a,c]	0.06[c]
75-27-4	Bromodichloromethane (Dichlorobromomethane)	0.00002[a]	0.00002
75-25-2	Bromoform	0.0002[a]	0.0002
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[c]	0.2[c]
75-15-0	Carbon disulfide	0.7	3.5
56-23-5	Carbon tetrachloride	0.005[c]	0.025[c]
57-74-9	Chlordane	0.002[c]	0.01[c]

		Groundwater Remediation Objective	
CAS No.	Chemical Name	Class I (mg/L)	Class II (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	0.00002[a]	0.0001

218-01-9	Chrysene	0.0015[a]	0.0075
94-75-7	2,4-D	0.07[c]	0.35[c]
75-99-0	Dalapon	0.2[c]	2.0[c]
72-54-8	DDD	0.00011[a]	0.00055
72-55-9	DDE	0.00004[a]	0.0002
50-29-3	DDT	0.00012[a]	0.0006
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[a,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[c]	0.375[c]
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[c]	0.025[c]
75-35-4	1,1-Dichloroethylene[b]	0.007[c]	0.035[c]
156-59-2	*cis*-1,2-Dichloroethylene	0.07[c]	0.2[c]
156-60-5	*trans*-1,2-Dichloroethylene	0.1[c]	0.5[c]
78-87-5	1,2-Dichloropropane	0.005[c]	0.025[c]
542-75-6	1,3-Dichloropropene (1,3-Dichloropropylene,*cis* + *trans*)	0.001[a]	0.005

		Groundwater Remediation Objective	
CAS No.	Chemical Name	Class I (mg/L)	Class II (mg/L)
60-57-1	Dieldrin	0.00002[a]	0.0001
84-66-2	Diethyl phthalate	5.6	5.6
121-14-2	2,4-Dinitrotoluene[a]	0.00002	0.00002
606-20-2	2,6-Dinitrotoluene[a]	0.0001	0.0001
88-85-7	Dinoseb	0.007[c]	0.07[c]
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[c]	0.1[c]
72-20-8	Endrin	0.002[c]	0.01[c]
100-41-4	Ethylbenzene	0.7[c]	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[c]	0.002[c]
1024-57-3	Heptachlor epoxide	0.0002[c]	0.001[c]
118-74-1	Hexachlorobenzene	0.00006[a]	0.0003
319-84-6	*alpha*-HCH (*alpha*-BHC)	0.00003[a]	0.00015
58-89-9	*gamma*-HCH (Lindane)	0.0002[c]	0.001[c]
77-47-4	Hexachlorocyclopentadiene	0.05[c]	0.5[c]
67-72-1	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[c]	0.2[c]
74-83-9	Methyl bromide (Bromomethane)	0.0098	0.049
75-09-2	Methylene chloride (Dichloromethane)	0.005[c]	0.05[c]
91-20-3	Naphthalene[2]	0.025	0.039
98-95-3	Nitrobenzene[2]	0.0035	0.0035

		Groundwater Remediation Objective	
CAS No.	Chemical Name	Class I (mg/L)	Class II (mg/L)
1918-02-1	Picloram	0.5[c]	5.0[c]
1336-36-3	Polychlorinatedbiphenyls (PCBs)[1]	0.0005[c]	0.0025[c]
129-00-0	Pyrene	0.21	1.05
122-34-9	Simazine	0.004[c]	0.04[c]
100-42-5	Styrene	0.1[c]	0.5[c]
93-72-1	2,4,5-TP (Silvex)	0.05[c]	0.25[c]
127-18-4	Tetrachloroethylene (Perchloroethylene)	0.005[c]	0.025[c]
108-88-3	Toluene	1.0[c]	2.5[c]
8001-35-2	Toxaphene	0.003[c]	0.015[c]
120-82-1	1,2,4-Trichlorobenzene	0.07[c]	0.7[c]
71-55-6	1,1,1-Trichloroethane[2]	0.2[c]	1.0[c]
79-00-5	1,1,2-Trichloroethane	0.005[c]	0.05[c]
79-01-6	Trichloroethylene	0.005[c]	0.025[c]
108-05-4	Vinyl acetate	7.0	7.0
75-01-4	Vinyl chloride	0.002[c]	0.01[c]
1330-20-7	Xylenes (total)	10.0[c]	10.0[c]
	Ionizable Organics		
65-85-0	Benzoic Acid	28	28
106-47-8	4-Chloroaniline	0.028	0.028

	(*p*-Chloroaniline)		
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
86-30-6	*N*-Nitrosodiphenylamine	0.01[a]	0.05

		Groundwater Remediation Objective	
CAS No.	Chemical Name	Class I (mg/L)	Class II (mg/L)
621-64-7	*N*-Nitrosodi-*n*-propylamine	0.01[a]	0.01
87-86-5	Pentachlorophenol	0.001[a,c]	0.005[c]
108-95-2	Phenol	0.1[c]	0.1[c]
95-95-4	2,4,5-Trichlorophenol	0.7	3.5
88-06-2	2,4,6 Trichlorophenol	0.0064[a]	0.032
	Inorganics		
7440-36-0	Antimony	0.006[c]	0.024[c]
7440-38-2	Arsenic	0.05[c]	0.2[c]
7440-39-3	Barium	2.0[c]	2.0[c]
7440-41-7	Beryllium	0.004[c]	0.5[c]
7440-42-8	Boron	2.0[c]	2.0[c]
7440-43-9	Cadmium	0.005[c]	0.05[c]
16887-00-6	Chloride	200[c]	200[c]
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[c]	0.65[c]
57-12-5	Cyanide	0.2[c]	0.6[c]
7782-41-4	Fluoride	4.0[c]	4.0[c]
15438-31-0	Iron	5.0[c]	5.0[c]
7439-92-1	Lead	0.0075[c]	0.1[c]
7439-96-5	Manganese	0.15[c]	10.0[c]
7439-97-6	Mercury	0.002[c]	0.01[c]
7440-02-0	Nickel	0.1[c]	2.0[c]
14797-55-8	Nitrate as N	10.0[c]	100[c]
7782-49-2	Selenium	0.05[c]	0.05[c]
7440-22-4	Silver	0.05[c]	---
14808-79-8	Sulfate	400[c]	400[c]

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

Chemical Name and Groundwater Remediation Objective Notations

[a] The groundwater Health Advisory concentration is equal to ADL for carcinogens.

[b] Oral Reference Dose and/or Reference Concentration under review by USEPA. Listed values subject to change.

[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.

Section 742.APPENDIX A: General

TABLE E: Chemicals with Noncarcinogenic Toxic Effects on Specific Target Organs/Organ Systems or Similar Modes of Action

Kidney

Cadmium (Ingestion only)
Chlorobenzene

1,1-Dichloroethane
Di-n-octyl phthalate

Ethylbenzene
Fluoranthene

Pyrene
Toluene

Vinyl acetate

Liver

Acetone
Butylbenzyl phthalate
1,1-Dichloroethylene
Chlorobenzene
Di-n-octyl phthalate
Endrin
Ethylbenzene
Fluoranthene
Nitrobenzene
Picloram
Styrene
2,4,5-TP (Silvex)
Toluene
2,4,5-Trichlorophenol

Central Nervous System
Butanol
Cyanide (amenable)
2,4-Dimethylphenol
Endrin
Manganese
2-Methylphenol
Mercury
Styrzene
Xylenes

Circulatory System
Antimony
Barium
2,4-D
cis-1,2-Dichloroethylene
Nitrobenzene
trans 1,2-Dichloroethylene
2,4-Dimethylphenol
Fluoranthene
Fluorene
Styrene
Zinc

Gastrointestinal System
Endothall
Hexachlorocyclopentadiene
Methyl bromide

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

Cholinesterase Inhibition
Aldicarb
Carbofuran

Decreased Body Weight Gains
and Circulatory System Effects
Atrazine
Simazine

Adrenal Gland
Nitrobenzene
1,2,4-Trichlorobenzene

Respiratory System
1,2-Dichloropropane
Hexachlorocyclopentadiene
Methyl bromide
Vinyl acetate

Immune System
2,4-Dichlorophenol
p-Chloroaniline

Section 742.APPENDIX A: General

TABLE F: Chemicals With Carcinogenic Toxic Effects on Specific Target Organs/Organ Systems or Similar Modes of Action

Kidney
Bromodichloromethane
Chloroform
1,2-Dibromo-3-chloropropane
2,4-Dinitrotoluene
2,6-Dinitrotoluene
Hexachlorobenzene

Liver
Aldrin
Bix(2-chloroethyl)ether
Bis(2-ethylhexyl)phthalate
Carbazole
Carbon tetrachloride
Chlordane
Chloroform
DDD
DDE
DDT
1,2-Dibromo-3-chloropropane
1,2-Dibromoethane
3,3□-Dichlorobenzidine
1,2-Dichloroethane
1,3-Dichloropropane (Ingestion only)
1,3-Dichloropropylene
Dieldrin
2,4-Dinitrotoluene
2,6-Dinitortoluene
Heptachlor
Heptachlor epoxide
Hexachlorobenzene
alpha-HCH
gamma-HCH (Lindane)
Methylene chloride
N-Nitrosodiphenylamine
N-Nitrosodi-n-propylamine
Pentachlorophenol
Tetrachloroethylene
Trichloroethylene
2,4,6-Trichlorophenol
Toxaphene
Vinyl chloride
Circulatory System
Benzene
2,4,6-Trichlorophenol

Gastrointestinal System
Benzo(a)anthracene
Benzo(b)fluoranthene
Benzo(k)fluoranthene
Benzo(a)pyrene
Chrysene
Dibenzo(a,h)anthracene
Indeno(1,2,3-c,d)pyrene
Bromodichloromethane

Bromoform
1,2-Dibromo-3-chloropropane
1,2-Dibromoethane
1,3-Dichloropropylene

Lung
Arsenic
Beryllium (Inhalation only)
Cadmium (Inhalation only)
Chromium, hexavalent (Inhalation only)
1,3-Dichloropropylene
Methylene chroride
N-Nitrosodi-n-propylamine
Vinyl chloride

Nasal Cavity
1,2-Dibromo-3-chloropropane
(Inhalation only)
1,2-Dibromoethane (Inhalation only)
N-Nitrosodi-n-propylamine

Bladder
3,3□-Dichlorobenzidine
1,3-Dichloropropylene
N-Nitrosodiphenylamine

IT IS SO ORDERED.

I, Dorothy M. Gunn, Clerk of the Illinois Pollution Control Board, hereby certify that the above opinion and order was adopted on the _____ day of _____, 1997, by a vote of _____.

_____
Dorothy M. Gunn, Clerk
Illinois Pollution Control Board