

ILLINOIS POLLUTION CONTROL BOARD
December 4, 1997

IN THE MATTER OF:)	
)	
TIERED APPROACH TO)	R97-12(B)
CORRECTIVE ACTION)	R97-12(C)
OBJECTIVES: AMENDMENTS)	(Rulemaking - Land)
TO 35 ILL. ADM. CODE 742)	

Proposed Rule. First Notice.

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

The Board today opens a Docket C in this rulemaking, Tiered Approach to Corrective Action Objectives (also known as TACO), to amend certain sections of 35 Ill. Adm. Code 742. On December 3, 1997, in Docket R-97-12(B), the Site Remediation Advisory Committee (SRAC) and the Illinois Environmental Protection Agency (Agency), filed a "Joint Motion to Correct" (joint motion) Appendix A.Table H entitled "Chemicals Whose Tier 1 Class I Groundwater Remediation Objective Exceeds the 1 in 1,000,000 Cancer Risk Concentration" (Table H). In their joint motion, the SRAC and the Agency request that the Board make a correction to Table H at final notice under Docket B of this rulemaking.

At this point in the R97-12 rulemaking process, the Illinois Administrative Procedure Act (APA) does not provide for the expeditious correction of Table H. See 4 ILCS 5/-40(c),(d) (1994). Accordingly, today the Board adopted Docket B as final and ordered the rules filed with the Secretary of State, as those rules were submitted to JCAR for second notice review. See In the Matter of: Tiered Approach to Corrective Action Objectives: Amendments to Part 742 (December 4, 1997), R97-12(B). The purpose of this new docket is to consider the merits of the joint motion and evidence in support thereof. The joint motion filed in Docket B is hereby incorporated as public comment 1. The Board also on its own motion proposes to amend additional sections in Part 742 in order to make some non-substantive grammatical, typographical, and mechanical changes that were identified after the adoption of Docket A in this rulemaking.

In their joint motion, the SRAC and the Agency assert that, upon reviewing the numeric contaminant levels set forth under the 1 in 1,000,000 cancer risk concentration included within in Table H, they have concluded that the numeric contaminant levels are based on a 70-year exposure duration. The SRAC and the Agency further maintain that the use of a 70-year exposure duration, rather than a 30-year exposure duration, as a basis for the Table H levels was not intended. Finally, the SRAC and the Agency contend that the use of the 70-year exposure duration as a basis for the Table H levels is technically inconsistent with other aspects of 35 Ill. Adm. Code 742, which are based on a 30-year exposure duration.

The Board today adopts the following first notice order under the APA (5 ILCS 100/5-5 *et seq.* (1996)) without commenting on the merits of the Table H portion of the proposal.

This proposal will be published in the *Illinois Register* whereupon a 45-day comment period shall begin. The Board asks that parties interested in commenting on this proposal address their written comments to Amy Muran Felton, the hearing officer assigned to this matter.

Additionally, the Board presently intends to schedule and hold a hearing in this Docket C. The Board expects the SRAC and the Agency to present a justification for their proposed amendment, as the present record does not contain discussion of the proposed 30-year exposure duration.

Copies of this opinion, the proposed rules, and any hearing officer orders may be viewed and downloaded from the Board's Web site at <http://www.ipcb.state.il.us/>. Copies may also be requested from the Clerk of the Illinois Pollution Control Board, James R. Thompson Center, 100 West Randolph, Suite 11-500, Chicago, Illinois 60601 (312-814-3461).

ORDER

The Board directs the Clerk to cause the filing of the following proposed amendments 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

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Table G	Error Function (erf)
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Table I	$K_{[oc]}$ Values for Ionizing Organics as a Function of pH (cm(3)/g or L/kg)
Table J	Values to be Substituted for k_s When Evaluating Inorganics as a Function of pH (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, 57.14, and 58.5 of the Environmental Protection Act [415 ILCS 5/22.4, 22.12, 27, 57.14 and 58.5 and Title XVI and Title XVII].

Source: Adopted at 21 Ill. Reg. 7942, effective July 1, 1997, amended at 21 Ill. Reg. _____, effective _____; amended at _____ Ill. Reg. _____, effective _____.

NOTE: Capitalization indicates statutory language.

SUBPART B: GENERAL

Section 742.210 Incorporations by Reference

- a) The Board incorporates the following material by reference:

ASTM. American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103 (215) 299-5400

ASTM D 2974-87, Standard Test Methods for Moisture, Ash and Organic Matter of Peat and Other Organic Soils, approved May 29, 1987 (reapproved 1995).

ASTM D 2488-93, Standard Practice for Description and Identification of Soils (Visual-Manual Procedure), approved September 15, 1993.

ASTM D 1556-90, Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method, approved June 29, 1990.

ASTM D 2167-94, Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method, approved March 15, 1994.

ASTM D 2922-91, Standard Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth), approved December 23, 1991.

ASTM D 2937-94, Standard Test Method for Density of Soil in Place by the Drive-Cylinder Method, approved June 15, 1994.

ASTM D 854-92, Standard Test Method for Specific Gravity of Soils, approved November 15, 1992.

ASTM D 2216-92, Standard Method for Laboratory Determination of Water (Moisture) Content of Soil and Rock, approved June 15, 1992.

ASTM D 4959-89, Standard Test Method for Determination of Water (Moisture) Content of Soil by Direct Heating Method, approved June 30, 1989 (reapproved 1994).

ASTM D 4643-93, Standard Test Method for Determination of Water (Moisture) Content of Soil by the Microwave Oven Method, approved July 15, 1993.

ASTM D 5084-90, Standard Test Method for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter, approved June 29, 1990.

ASTM D 422-63, Standard Test Method for Particle-Size Analysis of Soils, approved November 21, 1963 (reapproved 1990).

ASTM D 1140-92, Standard Test Method for Amount of Material in Soils Finer than the No. 200 (75 μm) Sieve, approved November 15, 1992.

ASTM D 3017-88, Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth), approved May 27, 1988.

ASTM D 4525-90, Standard Test Method for Permeability of Rocks by Flowing Air, approved May 25, 1990.

ASTM D 2487-93, Standard Test Method for Classification of Soils for Engineering Purposes, approved September 15, 1993.

ASTM E 1527-93, Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process, approved March 15, 1993. Vol. 11.04.

ASTM E 1739-95, Standard Guide for Risk-Based Corrective Action Applied at Petroleum Release Sites, approved September 10, 1995.

Barnes, Donald G. and Dourson, Michael. (1988). Reference Dose (RfD): Description and Use in Health Risk Assessments. *Regulatory Toxicology and Pharmacology*. 8, 471-486.

GPO. Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20401, (202) 783-3238.

USEPA Guidelines for Carcinogenic Risk Assessment, 51 Fed. Reg. 33992-34003 (September 24, 1986).

"Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," USEPA Publication number SW-846 (Third Edition, November 1986), as amended by Updates I and IIA (Document No. 955-001-00000-1)(contact USEPA, Office of Solid Waste, for Update IIA).

"Methods for the Determination of Organic Compounds in Drinking Water", EPA Publication No. EPA/600/4-88/039 (December 1988 (Revised July 1991)).

"Methods for the Determination of Organic Compounds in Drinking Water, Supplement II", EPA Publication No. EPA/600/R-92/129 (August 1992).

"Methods for the Determination of Organic Compounds in Drinking Water, Supplement III", EPA Publication No. EPA/600/R-95/131 (August 1995).

IRIS. Integrated Risk Information System, National Center for Environmental Assessment, U.S. Environmental Protection Agency, 26 West Martin Luther King Drive, MS-190, Cincinnati, OH 45268. (513) 569-7254.

"Reference Dose (RfD): Description and Use in Health Risk Assessments", Background Document 1A (March 15, 1993).

"EPA Approach for Assessing the Risks Associated with Chronic Exposures to Carcinogens", Background Document 2 (January 17, 1992).

Nelson, D.W., and L.E. Sommers. 1982. Total carbon, organic carbon, and organic matter. In: A.L. Page (ed.), *Methods of Soil Analysis. Part 2. Chemical and Microbiological Properties. 2nd Edition*, pp. 539-579, American Society of Agronomy. Madison, WI.

NTIS. National Technical Information Service, 5285 Port Royal Road, Springfield, VA 22161, (703) 487-4600.

"Dermal Exposure Assessment: Principles and Applications", EPA Publication No. EPA/600/8-91/011B (January 1992).

"Exposure Factors Handbook", EPA Publication No. EPA/600/8-89/043 (July 1989).

"Risk Assessment Guidance for Superfund, Vol. I; Human Health Evaluation Manual, Supplemental Guidance: Standard Default Exposure Factors", OSWER Directive 9285.6-03 (March 1991).

"Rapid Assessment of Exposure to Particulate Emissions from Surface Contamination Sites," EPA Publication No. EPA/600/8-85/002 (February 1985), PB 85-192219.

"Risk Assessment Guidance for Superfund, Volume I; Human Health Evaluation Manual (Part A)", Interim Final, EPA Publication No. EPA/540/1-89/002 (December 1989).

"Risk Assessment Guidance for Superfund, Volume I; Human Health Evaluation Manual, Supplemental Guidance, Dermal Risk Assessment Interim Guidance", Draft (August 18, 1992).

"Soil Screening Guidance: Technical Background Document", EPA Publication No. EPA/540/R-95/128, PB96-963502 (May 1996).

"Soil Screening Guidance: User's Guide", EPA Publication No. EPA/540/R-96/018, PB96-963505 (April 1996).

"Superfund Exposure Assessment Manual", EPA Publication No. EPA/540/1-88/001 (April 1988).

RCRA Facility Investigation Guidance, Interim Final, developed by USEPA (EPA 530/SW-89-031), 4 volumes (May 1989).

- b) CFR (Code of Federal Regulations). Available from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402 (202) 783-3238:

40 CFR 761.120 (1993).

- c) This Section incorporates no later editions or amendments.

Source: Amended at _____ Ill. Reg. _____, effective _____.

SUBPART C: EXPOSURE ROUTE EVALUATIONS

Section 742.310 Inhalation Exposure Route

The inhalation exposure route may be excluded from consideration if:

- a) The requirements of Sections 742.300 and 742.305 are met; and
- b) An institutional control, in accordance with Subpart J, is in place that meets the following requirements:
 - 1) Either:
 - A) The concentration of any contaminant of concern within ten feet of the land surface or within ten feet of any man-made pathway shall not exceed the Tier 1 remediation objective under Subpart E for the inhalation exposure route; or
 - B) An engineered barrier, as set forth in Subpart K and approved by the Agency, is in place; and
 - 2) Requires safety precautions for the construction worker if the Tier 1 construction worker remediation objectives are exceeded.

Source: Amended at _____ Ill. Reg. _____, effective, _____.

SUBPART D: DETERMINING AREA BACKGROUND

Section 742.415 Use of Area Background Concentrations

- a) A person may request that area background concentrations determined pursuant to Sections 742.405 and 742.410 be used according to the provisions of subsection (b) of this Section. Such request shall address the following:
 - 1) The natural or man-made pathways of any suspected off-site contamination reaching the site;

- 2) Physical and chemical properties of suspected off-site contaminants of concern reaching the site; and
 - 3) The location and justification of all background sampling points.
- b) Except as specified in subsections (c) and (d) of this Section, an area background concentration may be used as follows:
- 1) To support a request to exclude a chemical as a contaminant of concern from further consideration for remediation at a site due to its presence as a result of background conditions; or
 - 2) As a remediation objective for a contaminant of concern at a site in lieu of an objective developed pursuant to the other procedures of this Part.
- c) An area background concentration shall not be used **IN THE EVENT THAT THE AGENCY HAS DETERMINED IN WRITING THAT THE BACKGROUND LEVEL FOR A REGULATED SUBSTANCE POSES AN ACUTE THREAT TO HUMAN HEALTH OR THE ENVIRONMENT AT THE SITE WHEN CONSIDERING THE POST-REMEDIATION ACTION LAND USE.** (Section 58.5(b)(3) of the Act)
- d) **IN THE EVENT THAT THE CONCENTRATION OF A REGULATED SUBSTANCE OF CONCERN ON THE SITE EXCEEDS A REMEDIATION OBJECTIVE ADOPTED BY THE BOARD FOR RESIDENTIAL LAND USE, THE PROPERTY MAY NOT BE CONVERTED TO RESIDENTIAL USE UNLESS SUCH REMEDIATION OBJECTIVE OR AN ALTERNATIVE RISK-BASED REMEDIATION OBJECTIVE FOR THAT REGULATED SUBSTANCE OF CONCERN IS FIRST ACHIEVED.** If the land use is restricted, there shall be an institutional control in place in accordance with Subpart J. (Section 58.5(b)(2) of the Act)

Source: Amended at ____ Ill. Reg. _____, effective, _____.

SUBPART E: TIER 1 EVALUATION

Section 742.510 Tier 1 Remediation Objectives Tables

- a) Soil remediation objectives are listed in Appendix B, Tables A, B, C and D.
 - 1) Appendix B, Table A is based upon residential property use.
 - A) The first column to the right of the chemical name lists soil remediation objectives for the soil ingestion exposure route.
 - B) The second column lists the soil remediation objectives for the inhalation exposure route.

- C) The third and fourth columns list soil remediation objectives for the soil component of the groundwater ingestion exposure route for the respective classes of groundwater:
 - i) Class I groundwater; and
 - ii) Class II groundwater.
 - D) The final column lists the Acceptable Detection Limit (ADL), only where applicable.
- 2) Appendix B, Table B is based upon industrial/commercial property use.
- A) The first and third columns to the right of the chemical name list the soil remediation objectives for the soil ingestion exposure route based on two receptor populations:
 - i) Industrial/commercial; and
 - ii) Construction worker.
 - B) The second and fourth columns to the right of the chemical name list the soil remediation objectives for the inhalation exposure route based on two receptor populations:
 - i) Industrial/commercial; and
 - ii) Construction worker.
 - C) The fifth and sixth columns to the right of the chemical name list the soil remediation objectives for the soil component of the groundwater ingestion exposure route for two classes of groundwater:
 - i) Class I groundwater; and
 - ii) Class II groundwater.
- 3) Appendix B, Tables C and D set forth pH specific soil remediation objectives for inorganic and ionizing organic chemicals for the soil component of the groundwater ingestion route.
- A) Table C sets forth remediation objectives based on Class I groundwater and Table D sets forth remediation objectives based on Class II groundwater.

- B) The first column in Tables C and D lists the chemical names.
 - C) The second through ninth columns to the right of the chemical names list the pH based soil remediation objectives.
- 4) For the inorganic chemicals listed in Appendix B, Tables A and B, the soil component of the groundwater ingestion exposure route shall be evaluated using TCLP (SW-846 Method 1311) or SPLP (SW-846 Method 1312), incorporated by reference at Section 742.210 unless a person chooses to evaluate the soil component on the basis of the total amount of contaminant in a soil sample result in accordance with subsection (a)(5) of this Section.
 - 5) For those inorganic and ionizing organic chemicals listed in Appendix B, Tables C and D, if a person elects to evaluate the soil component of the groundwater ingestion exposure route based on the total amount of contaminant in a soil sample result (rather than TCLP or SPLP analysis), the person shall determine the soil pH at the site and then select the appropriate soil remediation objectives based on Class I and Class II groundwaters from Tables C and D, respectively. If the soil pH is less than 4.5 or greater than 8.0, then Tables C and D cannot be used.
 - 6) Unless one or more exposure routes are excluded from consideration under Subpart C, the most stringent soil remediation objective of the exposure routes (*i.e.*, soil ingestion exposure route, inhalation exposure route, and soil component of the groundwater ingestion exposure route) shall be compared to the concentrations of soil contaminants of concern measured at the site. When using Appendix B, Table B to select soil remediation objectives for the ingestion exposure route and inhalation exposure route, the remediation objective shall be the more stringent soil remediation objective of the industrial/commercial populations and construction worker populations.
 - 7) Confirmation sample results may be averaged or soil samples may be composited in accordance with Section 742.225.
 - 8) If a soil remediation objective for a chemical is less than the ADL, the ADL shall serve as the soil remediation objective.
- b) Groundwater remediation objectives for the groundwater component of the groundwater ingestion exposure route are listed in Appendix B, Table E. However, Appendix B, Table E must be corrected for the cumulative effect of mixtures of similar-acting noncarcinogenic chemicals as set forth in Section 742.505(b)(3).

- 1) The first column to the right of the chemical name lists groundwater remediation objectives for Class I groundwater, and the second column lists the groundwater remediation objectives for Class II groundwater.
 - 2) To use Appendix B, Table E of this Part, the 35 Ill. Adm. Code 620 classification for groundwater at the site shall be determined. The concentrations of groundwater contaminants of concern at the site are compared to the applicable Tier 1 groundwater remediation objectives for the groundwater component of the groundwater ingestion exposure route in Appendix B, Table E.
- c) For contaminants of concern not listed in Appendix B, Tables A, B and E, a person may request site-specific remediation objectives from the Agency or propose site-specific remediation objectives in accordance with 35 Ill. Adm. Code 620, Subpart I of this Part, or both.

Source: Amended at _____ Ill. Reg. _____, effective _____.

SUBPART H: TIER 2 GROUNDWATER EVALUATION

Section 742.810 Calculations to Predict Impacts from Remaining Groundwater Contamination

- a) Equation R26 predicts the contaminant concentration along the centerline of a plume emanating from a vertical planar source in the aquifer (dimensions S_w wide and S_d deep). This model accounts for both three-dimensional dispersion (x is the direction of groundwater flow, y is the other horizontal direction, and z is the vertical direction) and biodegradation.
 - 1) The parameters in this equation are:

$X =$	distance from the planar source to the location of concern, along the centerline of the plume (i.e., $y=0$, $z=0$)
$C_x =$	the concentration of the contaminant at a distance X from the source, along the centerline of the plume
$C_{source} =$	the greatest potential concentration of the contaminant of concern in the groundwater at the source of the contamination, based on the concentrations of contaminants in groundwater due to the release and the projected concentration of the contaminant migrating from the soil to the groundwater. As indicated above, the model assumes a planar source discharging groundwater at a concentration equal to C_{source}
$\alpha_x =$	dispersivity in the x direction (i.e., Equation R16)

- $\alpha_y =$ dispersivity in the y direction (i.e., Equation R17)
- $\alpha_z =$ dispersivity in the z direction (i.e., Equation R18)
- $U =$ specific discharge (i.e., actual groundwater flow velocity through a porous medium; takes into account the fact that the groundwater actually flows only through the pores of the subsurface materials) where the aquifer hydraulic conductivity (K), the hydraulic gradient (I) and the total soil porosity (θ_T) must be known (i.e., Equation R19)
- $\lambda =$ first order degradation constant obtained from Appendix C, Table E or from measured groundwater data
- $S_w =$ width of planar source in the y direction
- $S_d =$ depth of planar source in the z direction

- 2) The following parameters are determined through field measurements: U, K, I, θ_T , S_w , S_d .
- A) The determination of values for U, K, I and θ_T can be obtained through the appropriate laboratory and field techniques;
- B) From the immediate down-gradient edge of the source of the groundwater contamination values for S_w and S_d shall be determined. S_w is defined as the width of groundwater at the source which exceeds the Tier 1 groundwater remediation objective. S_d is defined as the depth of groundwater at the source which exceeds the Tier 1 groundwater remediation objective; and
- C) Total soil porosity can also be calculated using Equation R23.
- b) Once values are obtained for all the input parameters identified in subsection (a) of this Section, the contaminant concentration along the centerline of the plume at a distance X from the source shall be calculated such that that distance from the down-gradient edge of the source of the contamination at the site to the point where the contaminant concentration is equal to the Tier 1 groundwater remediation objective or Health Advisory concentration.

- 1) If there are any potable water supply wells located within the calculated distance X, then the Tier 1 groundwater remediation objective or Health Advisory concentration shall be met at the edge of the minimum or designated maximum setback zone of the nearest potable water supply well down-gradient of the source. If no potable water supply wells exist within the calculated distance X, then it can be determined that no existing potable water supply wells are adversely impacted.
- 2) To demonstrate that no surface water is adversely impacted, X shall be the distance from the down-gradient edge of the source of the contamination at the site to the nearest surface water body. This calculation must show that the contaminant in the groundwater at this location (C_x) does not exceed the applicable water quality standard.

Source: Amended at _____ Ill. Reg. _____ effective _____.

SUBPART I: TIER 3 EVALUATION

Section 742.900 Tier 3 Evaluation 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 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 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 an assessment indicates further remediation is not practical;
- 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;
- 8) Land uses which are substantially different from the assumed residential or industrial/commercial property uses of a site (e.g., as site will be used for recreation in the future and cannot be evaluated in Tiers 1 or 2); and
- 9) Requests for site-specific 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) of the Act)
- 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 specific 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.

Source: Amended at _____ Ill. Reg. _____, effective _____.

SUBPART J: INSTITUTIONAL CONTROLS

Section 742.1015 Ordinances

- a) An ordinance adopted by a unit of local government that effectively prohibits the installation of potable water supply wells (and the use of such wells) may be used as an institutional control to meet the requirements of Section 742.320(d) or 742.805(a)(3) if the requirements of this Section are met. Ordinances prohibiting the installation of potable water supply wells (and the use of such wells) that do not expressly prohibit the installation of potable water supply wells (and the use of such wells) by units of local government may be acceptable as institutional controls if the requirements of this Section are met and a Memorandum of Understanding (MOU) is entered into under subsection (i) of this Section.
- b) A request for approval of a local ordinance as an institutional control shall provide the following:
 - 1) A copy of the ordinance restricting groundwater use certified by an official of the unit of local government in which the site is located that it is the latest, most current copy of the ordinance, unless the Agency and the unit of local government have entered an agreement under subsection (i) of this Section, in which case the request may alternatively reference the MOU. The ordinance must demonstrate that potable use of groundwater from potable water supply wells is prohibited;
 - 2) A scaled map(s) delineating the areal extent of groundwater contamination (measured or modeled) above the applicable remediation objectives;
 - 3) Information showing the concentration of contaminants of concern in which the applicable remediation objectives are exceeded;
 - 4) A scaled map delineating the boundaries of all properties under which groundwater is located which exceeds the applicable groundwater remediation objectives;
 - 5) Information identifying the current owner(s) of each property identified in subsection (b)(4) of this Section; and
 - 6) A copy of the proposed submission of the information to the current owners identified in subsection (b)(5) of this Section of the information required in subsections (b)(1) through (b)(5) of this Section and proof that the notification required in subsection (c) of this Section has been submitted.
- c) Each of the property owners identified in subsection (b)(5) of this Section and the unit of local government must receive written notification from the party desiring to use the institutional control that groundwater remediation objectives have been

approved by the Agency. Written proof of this notification shall be submitted to the Agency within 45 days from the date of the instrument memorializing the Agency's no further remediation determination. The notification shall include:

- 1) The name and address of the unit of local government;
 - 2) The citation to the ordinance;
 - 3) A description of the property being sent notice by adequate legal description or by reference to a plat showing the boundaries;
 - 4) A statement that the ordinance restricting groundwater use has been used by the Agency in reviewing a request for a groundwater remediation objective;
 - 5) A statement as to the nature of the release and response action with the site name, address, and Agency site number or Illinois inventory identification number; and
 - 6) A statement as to where more information may be obtained regarding the ordinance.
- d) Unless the Agency and the unit of local government have entered into a MOU under subsection (i) of this Section, the current owner or successors in interest of a site who have received approval of use of an ordinance as an institutional control under this Section shall:
- 1) Monitor activities of the unit of local government relative to variance requests or changes in the ordinance relative to the use of potable groundwater at properties identified in subsection (b)(4) of this Section; and
 - 2) Notify the Agency of any approved variance requests or ordinance changes within 30 days after the date such action has been approved.
- e) The information required in subsections (b)(1) through (b)(6) of this Section and the Agency letter approving the groundwater remediation objective shall be submitted to the unit of local government. Proof that the information has been filed with the unit of local government shall be provided to the Agency.
- f) Any ordinance or MOU used as an institutional control pursuant to this Section shall be recorded in the Office of the Recorder or Registrar of Titles of the county in which the site is located together with the instrument memorializing the Agency's no further remediation determination pursuant to the specific program within 45 days after receipt of the Agency's no further remediation.

- g) An institutional control approved under this Section shall not become effective until officially recorded in accordance with subsection (f) of this Section. The person receiving the approval shall obtain and submit to the Agency within 30 days after recording a copy of the institutional control demonstrating that it has been recorded.
- h) The following shall be grounds for voidance of the ordinance as an institutional control and the instrument memorializing the Agency's no further remediation determination:
- 1) Modification of the ordinance by the unit of local government to allow potable use of groundwater;
 - 2) Approval of a site-specific request, such as a variance, to allow potable use of groundwater at a site identified in subsection (b)(4) of this Section; or
 - 3) Violation of the terms of an institutional control recorded under Section 742.1005 or Section 742.1010.
- i) The Agency and a unit of local government may enter into a MOU under this Section if the unit of local government has adopted an ordinance satisfying subsection (a) of this Section and if the requirements of this subsection are met. The MOU shall include the following:
- 1) Identification of the authority of the unit of local government to enter the MOU;
 - 2) Identification of the legal boundaries, or equivalent, under which the ordinance is applicable;
 - 3) A certified copy of the ordinance;
 - 4) A commitment by the unit of local government to notify the Agency of any variance requests or proposed ordinance changes at least 30 days prior to the date the local government is scheduled to take action on the request or proposed change;
 - 5) A commitment by the unit of local government to maintain a registry of all sites within the unit of local government that have received no further remediation determinations pursuant to specific programs and
 - 6) If the ordinance does not expressly prohibit the installation of potable water supply wells (and the use of such wells) by units of local government, a commitment by the unit of local government:

- A) To review the registry of sites established under subsection (i)(5) of this Section prior to siting potable water supply wells within the area covered by the ordinance;
- B) To determine whether the potential source of potable water may be or has been affected by contamination left in place at those sites; and
- C) To take whatever steps are necessary to ensure that the potential source of potable water is protected from the contamination or treated before it is used as a potable water supply.

Source: Amended at _____ Ill. Reg. _____, effective _____.

Section 742.APPENDIX A: General

Section 742.TABLE H: Chemicals Whose Tier 1 Class I Groundwater Remediation Objective Exceeds the 1 in 1,000,000 Cancer Risk Concentration.

Chemical	Class I Groundwater Remediation Objective (mg/l)	1 in 1,000,000 Cancer Risk Concentration (mg/l)	ADL (mg/l)
Aldrin	0.00004	0.0000025	0.00004
Benzo(a)pyrene	0.0002	0.00000512	0.00023
Bis(2-chloroethyl)ether	0.01	0.0000377	0.01
Bis(2-ethylhexyl)phthalate	0.006	0.00361	0.0027
Carbon Tetrachloride	0.005	0.000366	0.00003
Chlordane	0.002	0.0000366	0.00014
Dibenzo(a,h)anthracene	0.0003	0.00000512	0.0003
1,2-Dibromo-3-chloropropane	0.0002	0.0000361	0.0002
1,2-Dibromoethane	0.00005	0.00000410	0.00005
3,3'-Dichlorobenzidine	0.02	0.0000819	0.02
1,2-Dichloroethane	0.005	0.000494	0.00003
Dieldrin	0.00002	0.00000253	0.00002
Heptachlor	0.0004	0.00000819	0.00003
Heptachlor epoxide	0.0002	0.00000494	0.00032
Hexachlorobenzene	0.00006	0.0000253	0.00006
alpha-HCH	0.00003	0.00000614	0.00003
Tetrachloroethylene	0.005	0.000716	0.00001
Toxaphene	0.003	0.0000377	0.00086
Vinyl chloride	0.002	0.00004545	0.00006
Ionizable Organics			
N-Nitrosodiphenylamine	0.01	0.00717	0.01
N-Nitrosodi-n-propylamine	0.01	0.00000512	0.01
Pentachlorophenol	0.001	0.000371	0.001
2,4,6-Trichlorophenol	0.0064	0.00377	0.0064
Inorganics			
Arsenic	0.05	0.0000257	0.001
Beryllium	0.004	0.00000832	0.004

Source: Added at 21 Ill. Reg. _____, effective _____; amended at _____ Ill. Reg. _____, effective _____.

Section 742.APPENDIX B: Tier 1 Tables and Illustrations

Section 742.Table C: pH Specific Soil Remediation Objectives for Inorganics and Ionizing Organics for the Soil Component of the Groundwater Ingestion Route (Class I Groundwater)

Chemical (totals) (mg/kg)	pH 4.5 to 4.74	pH 4.75 to 5.24	pH 5.25 to 5.74	pH 5.75 to 6.24	pH 6.25 to 6.64	pH 6.65 to 6.89	pH 6.9 to 7.24	pH 7.25 to 7.74	pH 7.75 to 8.0
Inorganics									
Antimony	5	5	5	5	5	5	5	5	5
Arsenic	25	26	27	28	29	29	29	30	31
Barium	260	490	850	1,200	1,500	1,600	1,700	1,800	2,100
Beryllium	1.1	2.1	3.4	6.6	22	63	140	1,000	8,000
Cadmium	1.0	1.7	2.7	3.7	5.2	7.5	11	59	430
Chromium (+6)	70	62	54	46	40	38	36	32	28
Copper	330	580	2,100	11,000	59,000	130,000	200,000	330,000	330,000
Cyanide	40	40	40	40	40	40	40	40	40
Mercury	0.01	0.01`	0.03	0.15	0.89	2.1	3.3	6.4	8.0
Nickel	20	36	56	76	100	130	180	700	3,800
Selenium	24	17	12	8.8	6.3	5.2	4.5	3.3	2.4
Silver	0.24	0.33	0.62	1.5	4.4	8.5	13	39	110

Chemical (totals) (mg/kg)	pH 4.5 to 4.74	pH 4.75 to 5.24	pH 5.25 to 5.74	pH 5.75 to 6.24	pH 6.25 to 6.64	pH 6.65 to 6.89	pH 6.9 to 7.24	pH 7.25 to 7.74	pH 7.75 to 8.0
Thallium	1.6	1.8	2.0	2.4	2.6	2.8	3.0	3.4	3.8
Vanadium	980	980	980	980	980	980	980	980	980
Zinc	1,000	1,800	2,600	3,600	5,100	6,200	7,500	16,000	53,000
Organics									
Benzoic Acid	440	420	410	400	400	400	400	400	400
2-Chlorophenol	4.0	4.0	4.0	4.0	3.9	3.9	3.9	3.6	3.1
2,4- Dichlorophenol	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.86	0.69
Dinoseb	8.4	4.5	1.9	0.82	0.43	0.34	0.31	0.27	0.25
Pentachlorophenol	0.54	0.32	0.15	0.07	0.04	0.03	0.02	0.02	0.02
2,4,5-TP (Silvex)	26	16	12	11	11	11	11	11	11
2,4,5- Trichlorophenol	400	390	390	370	320	270	230	130	64
2,4,6- Trichlorophenol	0.37	0.36	0.34	0.269	0.20	0.15	0.13	0.09	0.07

Source: Amended at _____ Ill. Reg. _____, effective _____.

Section 742.APPENDIX B

Section 742.Table D: pH Specific Soil Remediation Objectives for Inorganics and Ionizing Organics for the Soil Component of the Groundwater Ingestion Route (Class II Groundwater)

Chemical (totals) (mg/kg)	pH 4.5 to 4.74	pH 4.75 to 5.24	pH 5.25 to 5.74	pH 5.75 to 6.24	pH 6.25 to 6.64	pH 6.65 to 6.89	pH 6.9 to 7.24	pH 7.25 to 7.74	pH 7.75 to 8.0
Inorganics									
Antimony	20	20	20	20	20	20	20	20	20
Arsenic	100	100	100	110	110	120	120	120	120
Barium	260	490	850	1,200	1,500	1,600	1,700	1,800	2,100
Beryllium	140	260	420	820	2,800	7,900	17,000	130,000	1,000,000
Cadmium	10	17	27	37	52	75	110	590	4,300
Chromium (+6)	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data
Copper	330	580	2,100	11,000	59,000	130,000	200,000	330,000	330,000
Cyanide	120	120	120	120	120	120	120	120	120
Mercury	0.05	0.06	0.14	0.75	4.4	10	16	32	40
Nickel	400	730	1,100	1,500	2,000	2,600	3,500	14,000	76,000
Selenium	24	17	12	8.8	6.3	5.2	4.5	3.3	2.4
Thallium	16	18	20	24	26	28	30	34	38
Zinc	2,000	3,600	5,200	7,200	10,000	12,000	15,000	32,000	110,000

Chemical (totals) (mg/kg)	pH 4.5 to 4.74	pH 4.75 to 5.24	pH 5.25 to 5.74	pH 5.75 to 6.24	pH 6.25 to 6.64	pH 6.65 to 6.89	pH 6.9 to 7.24	pH 7.25 to 7.74	pH 7.75 to 8.0
Organics									
Benzoic Acid	440	420	410	400	400	400	400	400	400
2-Chlorophenol	20	20	20	20	20	20	19	3.6	3.1
2,4- Dichlorophenol	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.86	0.69
Dinoseb	84	45	19	8.2	4.3	3.4	3.1	2.7	2.5
Pentachlorophenol	2.7	1.6	0.75	0.33	0.18	0.15	0.12	0.11	0.10
2,4,5-TP (Silvex)	130	79	62	57	55	55	55	55	55
2,4,5- Trichlorophenol	2,000	2,000	1,900	1,800	1,600	1,400	1,200	640	64
2,4,6- Trichlorophenol	0.37 <u>1.9</u>	0.36 <u>1.8</u>	0.34 <u>1.7</u>	0.26 <u>1.4</u>	0.20 <u>1.0</u>	0.15 <u>0.77</u>	0.13	0.09	0.07

Source: Amended at _____ 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

CAS No.	Chemical Name	GW _{obj} Concentration used to Calculate Tier 1 Soil Remediation Objectives ^a	
		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 ^c	0.01 ^c
116-06-3	Aldicarb	0.003 ^c	0.015 ^c
309-00-2	Aldrin	5.0E-6 ^b	2.5E-5
120-12-7	Anthracene	10 ^b	50
1912-24-9	Atrazine	0.003 ^c	0.015 ^c
71-43-2	Benzene	0.005 ^c	0.025 ^c
56-55-3	Benzo(<i>a</i>)anthracene	0.0001 ^b	0.0005
205-99-2	Benzo(<i>b</i>)fluoranthene	0.0001 ^b	0.0005
207-08-9	Benzo(<i>k</i>)fluroanthene	0.001 ^b	0.005
50-32-8	Benzo(<i>a</i>)pyrene	0.0002 ^{a,c}	0.002 ^c
111-44-4	Bis(2-chloroethyl)ether	8.0E-5 ^b	8.0E-5
117-81-7	Bis(2-ethylhexyl)phthalate	0.006 ^{a,c}	0.06 ^c
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
86-74-8	Carbazole	0.004 ^b	0.02
1563-66-2	Carbofuran	0.04 ^c	0.2 ^c
75-15-0	Carbon disulfide	4.0 ^b	20
56-23-5	Carbon tetrachloride	0.005 ^c	0.025 ^c
57-74-9	Chlordane	0.002 ^c	0.01 ^c

CAS No.	Chemical Name	GW _{obj} Concentration used to Calculate Tier 1 Soil Remediation Objectives ^a	
		Class I (mg/L)	Class II (mg/L)
108-90-7	Chlorobenzene (Monochlorobenzene)	0.1 ^c	0.5 ^c
124-48-1	Chlorodibromomethane (Dibromochloromethane)	0.06 ^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 ^c	0.35 ^c
75-99-0	Dalapon	0.2 ^c	2.0 ^c
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(<i>a,h</i>)anthracene	1.0E-5 ^b	5.0E-5
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- <i>n</i> -butyl phthalate	4.0 ^b	20
95-50-1	1,2-Dichlorobenzene (<i>o</i> - Dichlorobenzene)	0.6 ^c	1.5 ^c
106-46-7	1,4-Dichlorobenzene (<i>p</i> - Dichlorobenzene)	0.075 ^c	0.375 ^c
91-94-1	3,3'-Dichlorobenzidine	0.0002 ^b	0.001
75-34-3	1,1-Dichloroethane	4.0 ^b	20
107-06-2	1,2-Dichloroethane (Ethylene dichloride)	0.005 ^c	0.025 ^c
75-35-4	1,1-Dichloroethylene	0.007 ^c	0.035 ^c
156-59-2	<i>cis</i> -1,2-Dichloroethylene	0.07 ^c	0.2 ^c
156-60-5	<i>trans</i> -1,2-Dichloroethylene	0.1 ^c	0.5 ^c
78-97-5	1,2-Dichloropropane	0.005 ^c	0.025 ^c
542-75-6	1,3-Dichloropropene (1,3-Dichloropropylene, <i>cis</i> + <i>trans</i>)	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 ^c	0.07 ^c
117-84-0	Di- <i>n</i> -octyl phthalate	0.7 ^b	3.5
115-29-7	Endosulfan	0.2 ^b	1.0
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	1.0 ^b	5.0
86-73-7	Fluorene	1.0 ^b	5.0
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	0.001 ^b	0.005
319-84-6	<i>alpha</i> -HCH (<i>alpha</i> -BHC)	1.0E-5 ^b	5.0E-5
58-89-9	<i>gamma</i> -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- <i>c,d</i>)pyrene	0.0001 ^b	0.0005
78-59-1	Isophorone	1.4	1.4
72-43-5	Methoxychlor	0.04 ^c	0.2 ^c
74-83-9	Methyl bromide (Bromomethane)	0.05 ^b	0.25
75-09-2	Methylene chloride (Dichloromethane)	0.005 ^c	0.05 ^c
91-20-3	Naphthalene	1.0 ^b	5.0
98-95-3	Nitrobenzene	0.02 ^b	0.02

CAS No.	Chemical Name	GW _{obj} Concentration used to Calculate Tier 1 Soil Remediation Objectives ^a	
		Class I (mg/L)	Class II (mg/L)
1918-02-1	Picloram	0.5 ^c	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 ^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	40 ^b	40
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	100 ^b	100
106-47-8	4-Chloroaniline (<i>p</i> -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 (<i>o</i> - Cresol)	2.0 ^b	2.0
86-30-6	<i>N</i> -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	<i>N</i> -Nitrosodi- <i>n</i> -propylamine	1.0E-5 ^b	1.0E-5
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	4.0 ^b	20
88-06-2	2,4,6-Trichlorophenol	0.008 ^b	0.04
	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

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

Chemical Name and Groundwater Remediation Objective Notations

- ^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; for carcinogens, the HBL is equal to 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 ____ Ill. Reg. _____, effective _____.

Section 742.APPENDIX C: Tier 2 Tables and Illustrations

Section 742.TABLE I: K_{oc} Values for Ionizing Organics as a Function of pH (cm³/g or L/kg)

pH	Benzoic Acid	2-Chloro-phenol	2,4-Dichloro-phenol	Pentachloro-phenol	2,4,5-Trichloro-phenol	2,4,6-Trichloro-phenol	Dinoseb	2,3,5-TP (Silvex)
4.5	1.07E+01	3.98E+02	1.59E+02	1.34E+04	2.37E+03	1.06E+03	3.00E+03 4	1.28E+04
4.6	9.16E+00	3.98E+02	1.59E+02	1.24E+04	2.37E+03	1.05E+03	2.71E+03 4	1.13E+04
4.7	7.79E+00	3.98E+02	1.59E+02	1.13E+04	2.37E+03	1.05E+03	2.41E+03 4	1.01E+04
4.8	6.58E+00	3.98E+02	1.59E+02	1.02E+04	2.37E+03	1.05E+03	2.12E+03 4	9.16E+03
4.9	5.54E+00	3.98E+02	1.59E+02	9.05E+03	2.37E+03	1.04E+03	1.85E+04	8.40E+03
5.0	4.64E+00	3.98E+02	1.59E+02	7.96E+03	2.36E+03	1.03E+03	1.59E+04	7.76E+03
5.1	3.88E+00	3.98E+02	1.59E+02	6.93E+03	2.36E+03	1.02E+03	1.36E+04	7.30E+03
5.2	3.25E+00	3.98E+02	1.59E+02	5.97E+03	2.35E+03	1.01E+03	1.15E+04	6.91E+03
5.3	2.72E+00	3.98E+02	1.59E+02	5.10E+03	2.34E+03	9.99E+02	9.66E+03	6.60E+03
5.4	2.29E+00	3.98E+02	1.58E+02	4.32E+03	2.33E+03	9.82E+02	8.10E+03	6.36E+03
5.5	1.94E+00	3.97E+02	1.58E+02	3.65E+03	2.32E+03	9.62E+02	6.77E+03	6.16E+03
5.6	1.65E+00	3.97E+02	1.58E+02	3.07E+03	2.31E+03	9.38E+02	5.65E+03	6.00E+03
5.7	1.42E+00	3.97E+02	1.58E+02	2.58E+03	2.29E+03	9.10E+02	4.73E+03	5.88E+03
5.8	1.24E+00	3.97E+02	1.58E+02	2.18E+03	2.27E+03	8.77E+02	3.97E+03	5.78E+03
5.9	1.09E+00	3.97E+02	1.57E+02	1.84E+03	2.24E+03	8.39E+02	3.35E+03	5.70E+03

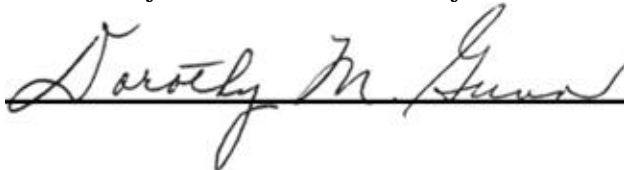
pH	Benzoic Acid	2-Chloro-phenol	2,4-Dichloro-phenol	Pentachloro-phenol	2,4,5-Trichloro-phenol	2,4,6-Trichloro-phenol	Dinoseb	2,3,5-TP (Silvex)
6.0	9.69E-01	3.96E+02	1.57E+02	1.56E+03	2.21E+03	7.96E+02	2.84E+03	5.64E+03
6.1	8.75E-01	3.96E+02	1.57E+02	1.33E+03	2.17E+03	7.48E+02	2.43E+03	5.59E+03
6.2	7.99E-01	3.96E+02	1.56E+02	1.15E+03	2.12E+03	6.97E+02	2.10E+03	5.55E+03
6.3	7.36E-01	3.95E+02	1.55E+02	9.98E+02	2.06E+03	6.44E+02	1.83E+03	5.52E+03
6.4	6.89E-01	3.94E+02	1.54E+02	8.77E+02	1.99E+03	5.89E+02	1.62E+03	5.50E+03
6.5	6.51E-01	3.93E+02	1.53E+02	7.81E+02	1.91E+03	5.33E+02	1.45E+03	5.48E+03
6.6	6.20E-01	3.92E+02	1.52E+02	7.03E+02	1.82E+03	4.80E+02	1.32E+03	5.46E+03
6.7	5.95E-01	3.90E+02	1.50E+02	6.40E+02	1.71E+03	4.29E+02	1.21E+03	5.45E+03
6.8	5.76E-01	3.88E+02	1.47E+02	5.92E+02	1.60E+03	3.81E+02	1.12E+03	5.44E+03
6.9	5.60E-01	3.86E+02	1.45E+02	5.52E+02	1.47E+03	3.38E+02	1.05E+03	5.43E+03
7.0	5.47E-01	3.83E+02	1.41E+02	5.21E+02	1.34E+03	3.00E+02	9.96E+02	5.43E+03
7.1	5.38E-01	3.79E+02	1.38E+02	4.96E+02	1.21E+03	2.67E+02	9.52E+02	5.42E+03
7.2	5.32E-01	3.75E+02	1.33E+02	4.76E+02	1.07E+03	2.39E+02	9.18E+02	5.42E+03
7.3	5.25E-01	3.69E+02	1.28E+02	4.61E+02	9.43E+02	2.15E+02	8.90E+02	5.42E+03
7.4	5.19E-01	3.62E+02	1.21E+02	4.47E+02	8.19E+02	1.95E+02	8.68E+02	5.41E+03
7.5	5.16E-01	3.54E+02	1.14E+02	4.37E+02	7.03E+02	1.78E+02	8.50E+02	5.41E+03
7.6	5.13E-01	3.44E+02	1.07E+02	4.29E+02	5.99E+02	1.64E+02	8.36E+02	5.41E+03

pH	Benzoic Acid	2-Chloro-phenol	2,4-Dichloro-phenol	Pentachloro-phenol	2,4,5-Trichloro-phenol	2,4,6-Trichloro-phenol	Dinoseb	2,3,5-TP (Silvex)
7.7	5.09E-01	3.33E+02	9.84E+01	4.23E+02	5.07E+02	1.53E+02	8.25E+02	5.41E+03
7.8	5.06E-01	3.19E+02	8.97E+01	4.18E+02	4.26E+02	1.44E+02	8.17E+02	5.41E+03
7.9	5.06E-01	3.04E+02	8.07E+01	4.14E+02	3.57E+02	1.37E+02	8.10E+02	5.41E+03
8.0	5.06E-01	2.86E+02	7.17E+01	4.10E+02	2.98E+02	1.31E+02	8.04E+02	5.41E+03

Source: Amended at _____. Ill. Reg. _____, effective _____.

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 4th day of December 1997, by a vote of 6-0.

A handwritten signature in cursive script, reading "Dorothy M. Gunn", is written over a solid horizontal line.

Dorothy M. Gunn, Clerk
Illinois Pollution Control Board