ILLINOIS POLLUTION CONTROL BOARD
January 23, 2025

IN THE MATTER OF:	)	
	)	
PROPOSED AMENDMENTS TO	)	R22-18
GROUNDWATER QUALITY	)	(Rulemaking – Public Water Supplies)
35 ILL. ADM. CODE 620	)	

ADDENDUM A

TITLE 35: ENVIRONMENTAL PROTECTION
SUBTITLE F: PUBLIC WATER SUPPLIES
CHAPTER I: POLLUTION CONTROL BOARD

PART 620
GROUNDWATER QUALITY

SUBPART A: GENERAL

SUBPART B: GROUNDWATER CLASSIFICATION

SUBPART C: NONDEGRADATION PROVISIONS FOR APPROPRIATE GROUNDWATERS

SUBPART D: GROUNDWATER QUALITY STANDARDS

SUBPART E: GROUNDWATER MONITORING AND ANALYTICAL PROCEDURES

SUBPART F: HEALTH ADVISORIES

AUTHORITY: Implementing and authorized by Section 8 of the Illinois Groundwater Protection Act [415 ILCS 55/8] and authorized by Section 27 of the Illinois Environmental Protection Act [415 ILCS 5/27].

SOURCE: Adopted in R89-14(B) at 15 Ill. Reg. 17614, effective November 25, 1991; amended in R89-14(C) at 16 Ill. Reg. 14667, effective September 11, 1992; amended in R93-27 at 18 Ill. Reg. 14084, effective August 24, 1994; amended in R96-18 at 21 Ill. Reg. 6518, effective May 8, 1997; amended in R97-11 at 21 Ill. Reg. 7869, effective July 1, 1997; amended in R01-14 at 26 Ill. Reg. 2662, effective February 5, 2002; amended in R08-18 at 36 Ill. Reg. 15206, effective October 5, 2012; amended in R08-18(B) at 37 Ill. Reg. 16529, effective October 7, 2013; amended in R22-18 at 48 Ill. Reg. _____, effective _____.

SUBPART A: GENERAL

Section 620.105 Purpose

This Part specifies requirements, standards, and procedures for protecting and managing ~~prescribes various aspects of~~ groundwater quality, including groundwater~~method of~~ classification~~, of groundwater groundwaters,~~ nondegradation, and groundwater quality~~ provisions,~~ standards ~~for quality of groundwaters, and various procedures and protocols for the management and protection of groundwaters~~.

(Source: Amended at 48 Ill. Reg. _____, effective _____)

Section 620.110 Definitions

The definitions of the Environmental Protection Act [415 ILCS 5] and the Groundwater Protection Act [415 ILCS 55] apply to this Part. The following definitions also apply to this Part~~:~~.

"Act" means the Environmental Protection Act [415 ILCS 5].

"Agency" means the Illinois Environmental Protection Agency.

"Aquifer" means saturated (with groundwater) soils and geologic materials that ~~*which*~~ *are sufficiently permeable to readily yield economically useful quantities of water to wells, springs, or streams under ordinary hydraulic gradients.* [415 ILCS 55/3(b)]

"BETX" means the sum of the concentrations of benzene, ethylbenzene, toluene, and xylenes.

"Board" means the Illinois Pollution Control Board.

~~"Chemical Abstracts Service Registry Number" or "CASRN" means a unique~~

~~numerical identifier designated for only one substance, assigned by the Chemical Abstracts Service for the substance.~~

"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 Organization's 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 or as "carcinogenic to humans" or "likely to become carcinogenic to humans" *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.* [415 ILCS 5/58.2]

"Chemical Abstracts Service Registry Number" or "CASRN" means a unique numerical identifier designated for only one substance, assigned by the Chemical Abstracts Service for the substance.

"Community water supply" means a public supply that ~~*which*~~ *serves or is intended to serve at least 15 service connections used by residents or regularly serves at least 25 residents.* [415 ILCS 5/3.145]

"Contaminant" means any solid, liquid, or gaseous matter, any odor, or any form of energy, from whatever source. [415 ILCS 5/3.165]

"Corrective action process" means the ~~those~~ procedures and practices that ~~may be imposed by~~ a regulatory agency may perform, require, or otherwise oversee, including corrective action and controls and management, ~~when a determination has been made that contamination of groundwater has taken place, and are necessary~~ to address a potential or existing violation of any Subpart D standard due to a release of one or more contaminants~~the standards set forth in Subpart D~~.

BOARD NOTE: This definition includes the performance of activities that, under Section 620.450(a)(3), stay the applicability of otherwise applicable standards specified in Section 620.410, 620.420, 620.430, or 620.440. This definition also includes the implementation of controls and management, under Section 620.250(d)(2) and (e), after the completion of corrective action.

"Cumulative impact area" means the area, including the coal mine area permitted under the Surface Coal Mining Land Conservation and Reclamation Act [225 ILCS 720] and 62 Ill. Adm. Code 1700 through 1850, within which impacts resulting from the proposed operation may interact with the impacts of all anticipated mining on surface water and groundwater systems.

~~"Department" means the Illinois Department of Natural Resources.~~

"Detection" means the identification of a contaminant in a sample at a value equal to or greater than the:

"Method detection limit~~Detection Limit~~" or "MDL" ~~means the minimum concentration of a substance that can be measured as reported with 99 percent confidence that the true value is greater than zero, pursuant to 40 CFR 136, appendix B (2006), incorporated by reference at Section 620.125~~; or
"Lower limit of quantitation~~Method Quantitation Limit~~" or "LLOQ" ~~"MQL" means the minimum concentration of a substance that can be measured and reported pursuant to "Test Methods for Evaluating Solid Wastes, Physical/Chemical Methods", incorporated by reference at Section 620.125~~.

"Groundwater" means underground water that ~~*which*~~ *occurs within the saturated zone and geologic materials where the fluid pressure in the pore space is equal to or greater than atmospheric pressure.* [415 ILCS 5/3.210]

"Hydrologic balance" means the relationship between the quality and quantity of water inflow to, water outflow from, and water storage in a hydrologic unit, such as a drainage basin, aquifer, soil zone, lake, or reservoir. It encompasses the dynamic relationships among precipitation, runoff, evaporation, and changes in ground and surface water storage.

"IGPA" means the Illinois Groundwater Protection Act~~.~~ [415 ILCS 55].

"Lower limit of quantitation" or "LLOQ" means the minimum concentration of a substance that can be measured or reported under "Test Methods of Evaluation Solid Wastes, Physical/Chemical Methods", incorporated by reference in Section 620.125.

"Lowest concentration minimum reporting level" or "LCMRL" means the lowest spiking concentration such that the probability of spike recovery in the 50% or 150% range is at least 99%.

"Lowest observable adverse effect level" or "LOAEL" ~~or "Lowest observable adverse effect level"~~ means the lowest tested concentration of a chemical or substance that produces a statistically significant increase in frequency or severity of non-overt adverse effects between the exposed population and its appropriate control. ~~LOAEL may be determined for a human population (LOAEL-H) or an animal population (LOAEL-A).~~

"Licensed Professional Engineer" or "LPE" ~~*or "LPE"*~~ *means a person, corporation, or partnership licensed under the laws of the State of Illinois to*

practice professional engineering. [415 ILCS 5/57.2]

"Licensed Professional Geologist" or "LPG" ~~*or "LPG"*~~ *means an individual who is licensed under the* Professional Geologist Licensing Act *to engage in the practice of professional geology in Illinois.* [225 ILCS 745/15]

"Method detection limit" or "MDL" means the minimum measured concentration of a substance that can be reported with 99% confidence that the measured concentration is distinguishable from method blank results as determined under 40 CFR 136, appendix B (2017), incorporated by reference in Section 620.125.

"Mutagen" means a carcinogen that can induce an alteration in the structure of DNA.

~~"NOAEL" or~~ "No observable adverse effect level" or "NOAEL" means the highest tested concentration of a chemical or substance that does not produce a statistically significant increase in frequency or severity of non-overt adverse effects between the exposed population and its appropriate control. ~~NOAEL may be determined for a human population (NOAEL-H) or an animal population (NOAEL-A).~~

"Non-community water supply" means a public water supply that is not a community water supply. [415 ILCS 5/3.145]

"Off-site" means not on-site.

"On-site" means on the same or geographically contiguous property that may be divided by public or private right-of-way, if ~~provided~~ the entrance and exit between properties is at a crossroads intersection and access is by crossing as opposed to going along the right-of-way. Noncontiguous properties owned by the same person but connected by a right-of-way that he controls and that the public does not have access to is also considered on-site property.

"Operator" means the person responsible for the operation of a site, facility, or unit.

"Owner" means the person who owns a site, facility, or unit, or part of a site, facility, or unit, or who owns the land on which the site, facility, or unit is located.

"Potable" means generally fit for human consumption in compliance ~~*accordance*~~ *with accepted water supply principles and practices.* [415 ILCS 5/3.340]

"Potential primary source" means any unit at a facility or site not currently subject to a removal or remedial action that ~~*which*~~*:*

Is used ~~*utilized*~~ *for the treatment, storage, or disposal of any hazardous or special waste not generated at the site; or*

Is used ~~*utilized*~~ *for the disposal of municipal waste not generated at the site, other than landscape waste and construction and demolition debris; or*

Is used ~~*utilized*~~ *for the landfilling, land treating, surface impounding, or piling of any hazardous or special waste that is generated on the site or at other sites owned, controlled, or operated by the same person; or*

Stores or accumulates at any time more than 75,000 pounds above ground, or more than 7,500 pounds below ground, of any hazardous substances. [415 ILCS 5/3.345]

"Potential route" means abandoned and improperly plugged wells of all kinds, drainage wells, all injection wells, including closed loop heat pump wells, and any excavation for the discovery, development or production of stone, sand, or gravel. This term does not include closed loop heat pump wells using USP (U.S. Pharmacopeia) *food grade propylene glycol.* [415 ILCS 5/3.350]

"Potential secondary source" means any unit at a facility or a site not currently subject to a removal or remedial action, other than a potential primary source, ~~*that*~~*which*~~*which*~~*:*

Is used~~*utilized*~~ *for the landfilling, land treating, or surface impounding of waste that is generated on the site or at other sites owned, controlled, or operated by the same person, other than livestock and landscape waste, and construction and demolition debris; or*

Stores or accumulates at any time more than 25,000 but not more than 75,000 pounds above ground, or more than 2,500 but not more than 7,500 pounds below ground, of any hazardous substance; or

Stores or accumulates at any time more than 25,000 gallons above ground, or more than 500 gallons below ground, of petroleum, including crude oil or any fraction of crude oil that~~*thereof which*~~ *is not otherwise specifically listed or designated as a hazardous substance; or*

Stores or accumulates pesticides, fertilizers, or road oils for ~~*purposes of*~~ *commercial application or for distribution to retail sales outlets; or*

Stores or accumulates at any time more than 50,000 pounds of any de-icing agent; or

Is used ~~*utilized*~~ *for handling livestock waste or for treating domestic wastewaters other than private sewage disposal systems as defined in the Private Sewage Disposal Licensing Act* [225 ILCS 225]. [415 ILCS 5/3.355]

~~"Practical Quantitation Limit" or "PQL" means the lowest concentration or level that can be reliably measured within specified limits of precision and accuracy during routine laboratory operating conditions in accordance with "Test Methods for Evaluating Solid Wastes, Physical/Chemical Methods", EPA Publication No. SW-846, incorporated by reference at Section 620.125.~~

"Previously mined area" means land disturbed or affected by coal mining operations before~~prior to~~ February 1, 1983.
BOARD NOTE: February 1, 1983, is the effective date of the Illinois Department of Natural Resources Permanent Program ~~permanent program~~ regulations (62 Ill. Adm. Code 1800 through 1850) implementing the Surface Coal Mining Land Conservation and Reclamation Act [225 ILCS 720], as specified ~~codified~~ in 62 Ill. Adm. Code 1700.11(c) ~~1700 through 1850~~.

"Property class" means the class assigned by a tax assessor to real property for ~~purposes of~~ real estate taxes.
BOARD NOTE: The property class (rural property, residential vacant land, residential with dwelling, commercial residence, commercial business, commercial office, or industrial) is identified on the property record card maintained by the tax assessor in compliance ~~accordance~~ with the Illinois Real Property Appraisal Manual (February 1987), published by the Illinois Department of Revenue, Property Tax Administration Bureau.

"Public water supply" means all mains, pipes, and structures through which water is obtained and distributed to the public, including wells and well structures, intakes and cribs, pumping stations, treatment plants, reservoirs, and *storage tanks and appurtenances, collectively or severally, actually used or intended for use for ~~the purpose of~~ furnishing water for drinking or general domestic use, and that~~which~~ serve at least 15 service connections or that~~which~~ regularly serve at least 25 persons at least 60 days per year. A public water supply is either a "community water supply" or a "non-community water supply".* [415 ILCS 5/3.365]

"Regulated entity" means a facility or unit regulated for groundwater protection by any State or federal agency.

~~"Regulatory agency" means the Illinois Environmental Protection Agency, Department of Public Health, Department of Agriculture, the Office of Mines and Minerals in the Department of Natural Resources, and the Office of State Fire Marshal.~~

"Regulated recharge area" means a compact geographic area, as determined by the Board under ~~pursuant to~~ Section 17.4 of the Act, *the geology of which renders a potable resource groundwater particularly susceptible to contamination.* [415 ILCS 5/3.390]

"Regulatory agency" means the Illinois Environmental Protection Agency, Department of Public Health, Department of Agriculture, the Office of Mines and Minerals and the Office of Oil and Gas Resource Management in the Department of Natural Resources, and the Office of State Fire Marshal.

"Resource groundwater" means groundwater that is presently being, or in the future is capable of being, put to beneficial use by reason of being of suitable quality. [415 ILCS 5/3.430]

"Saturated zone" means a subsurface zone in which all the interstices or voids are filled with water under pressure greater than that of the atmosphere.

"Setback zone" means a geographic area, designated under the~~*pursuant to this*~~ *Act, containing a potable water supply well or a potential source or potential route having a continuous boundary, and within which* specified~~*certain*~~ *prohibitions or regulations* apply~~*are applicable in order*~~ *to protect groundwaters.* [415 ILCS 5/3.450]

"Site" means any location, place, tract of land, and facilities, including ~~*but not limited to,*~~ *buildings and improvements used for* ~~*the*~~ *purposes subject to regulation or control by the Act or regulations* under the Act~~*thereunder*~~*.* [415 ILCS 5/3.460]

"Spring" means a natural surface discharge of an aquifer from rock or soil.

"Threshold dose" means the lowest dose of a chemical at which a specified measurable effect is observed and below which it is not observed.

"Treatment" means the technology, treatment techniques, or other procedures for compliance with 35 Ill. Adm. Code, Subtitle F.

"Unit" means any device, mechanism, equipment, or area (exclusive of land used~~*utilized*~~ *only for agricultural production). This term includes secondary containment structures and their contents at agrichemical facilities.* [415 ILCS 5/3.515]

"USEPA" means the United States Environmental Protection Agency.

"Wellhead protection area" or "WHPA" means the surface and subsurface recharge area surrounding a community water supply well or well field,

delineated outside of any applicable setback zones ~~(~~under~~pursuant to~~ Section 17.1 of the Act [415 ILCS 5/17.1]~~),~~ and ~~pursuant to~~ Illinois' Wellhead Protection Program, through which contaminants are reasonably likely to move toward thatsuch well or well field.

"Wellhead Protection Program" or "WHPP" means the wellhead protection program for the State of Illinois, approved by USEPA under 42 U.S.C.~~USC~~ 300h-7.

BOARD NOTE: Derived from 40 CFR 141.71(b) (2003). The wellhead protection program includes the "groundwater protection needs assessment" under Section 17.1 of the Act [415 ILCS 5/17.1] and 35 Ill. Adm. Code 615-617.

(Source: Amended at 48 Ill. Reg. _____, effective _____)

Section 620.115 Prohibition

A ~~No~~ person must notshall cause, threaten, or allow a violation of the Act, the IGPA, or regulations adopted by the Board under either statute, ~~thereunder,~~ including ~~but not limited to~~ this Part.

(Source: Amended at 48 Ill. Reg. _____, effective _____)

Section 620.125 Incorporations by Reference

a) The Board incorporates the following material by reference:

ASTM International. 100 Barr Harbor Drive, PO Box C700, West Conshohocken, PA 19428-2959 (610) 832-9500.

"Standard Practice for Classification of Soils for Engineering Purposes (Unified Classification System)" ASTM D2487-06.

"Standard Test Method for Determination of Per- and Polyfluoroalkyl Substances in Water, Sludge, Influent, Effluent, and Wastewater by Liquid Chromatography Tandem Mass Spectrometry (LC/MS/MS) ASTM D7979-20.

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

Method Detection Limit Definition, appendix B to Part 136, 40 CFR 136, appendix B – Revision 2 (82 FR 40939, Aug. 28, 2017)~~(2006)~~.

Control of Lead and Copper, general requirements, 40 CFR 141.80 (72 FR 57814, Oct. 10, 10, 2007) ~~(2006)~~.

Maximum contaminant levels for organic contaminants, 40 CFR 141.61 (59 FR 34324, July 1, 1994) ~~(2006)~~.

Maximum contaminant levels for inorganic contaminants, 40 CFR 141.62 (69 FR 38855, June 29, 2004) ~~(2006)~~.

Maximum contaminant levels for radionuclides, 40 CFR 141.66 (65 FR 76748, Dec. 7, 2000) ~~(2006)~~.

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

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

Illinois Environmental Protection Agency, 1020 North Grand Avenue East, P.O. Box 19276, Springfield, IL 62794-9276 (217) 785-478"7.

"Guidance Document for Groundwater Protection Needs Assessments~~,~~", Agency, Illinois State Water Survey, and Illinois State Geologic Survey Joint Report, January 1995.

"Illinois Integrated Water Quality Report and Section 303(d) List, 2020/2022~~2018~~", Agency, June 2022~~February 2021~~.

"The Illinois Wellhead Protection Program Pursuant to Section 1428 of the Federal Safe Drinking Water Act~~,~~", Agency, # 22480, October 1992.

Illinois Pollution Control Board, 60 E. Van Buren, Suite 630, Chicago, IL 60605 (312) 814-3669.

~~"Class III Groundwater Listing Notice Pautler Cave Nature Preserve and Stemler Cave Nature Preserve", Environmental Register, Num. 611, May 2005.~~

"Class III Groundwater Listing Notice Fogelpole Cave Nature Preserve", Environmental Register, No.~~Num.~~ 587, May 2003.

"Class III Groundwater Listing Notice Pautler Cave Nature Preserve and Stemler Cave Nature Preserve", Environmental Register, No. 611, May 2005.

"Class III Groundwater Listing Notice Armin Kruger Speleological Area", Environmental Register, No. ~~Num.~~ 666, Dec. 2009.

"Class III Groundwater Listing Notice Cotton Creek Marsh Nature Preserve and Spring Grove Fen Nature Preserve", Environmental Register, No.~~um~~. 697, July 2012.

BOARD NOTE: The Environmental Register is a Board publication available on the Board's website at https://pcb.illinois.gov/Resources/EnvironmentalRegister

NAS National Academy of Sciences, Engineering, and Medicine, 500 5th St. NW, Washington DC, 20001 (202) 334-2000.

"Water Quality Criteria 1972", EPA.R3.73-033, 1973. https://nepis.epa.gov

NCRP. National Council on Radiation Protection, 7910 Woodmont Ave., Bethesda, MD (301) 657-2652.

"Maximum Permissible Body Burdens and Maximum Permissible Concentrations of Radionuclides in Air and in Water for Occupational Exposure", NCRP Report Number 22, June 5, 1959.

USEPA, 1200 Pennsylvania Avenue, N. W., Washington DC, 20460 (202) 564-4700~~NTIS. National Technical Information Service, 5285 Port Royal Road, Springfield, VA 22161 (703) 605-6000.~~

"Low Stress (low flow) Purging and Sampling Procedure for the Collection of Groundwater Samples from Monitoring Wells", EPA Publication EQASOP-GW4, Region 1 Low-Stress (low flow) SOP Revision No. 4, July 30, 1996; revised September 19, 2017.

"Methods for Chemical Analysis of Water and Wastes~~,~~", March 1983, Doc. No. PB84-128677. EPA 600/4-79-020 (available online at http://nepis.epa.gov/).

"Methods for the Determination of Inorganic Substances in Environmental Samples~~,~~", August 1993, PB94-120821 (referred to as "USEPA Environmental Inorganic Methods"). EPA 600/R-93-100 (available online at http://nepis.epa.gov/).

"Methods for the Determination of Metals in Environmental Samples", June 1991, Doc. No. PB91-231498. EPA 600/4-91-010 (available online at http://nepis.epa.gov/).

"Methods for the Determination of Metals in Environmental Samples − Supplement I", May 1994, Doc. No. PB95-125472. EPA 600/R-94-111 (available online at http://nepis.epa.gov/).

"Methods for the Determination of Organic Compounds in Drinking Water", Doc. No. PB91-231480. EPA/600/4-88/039 (December 1988 (revised July 1991)) (available online at http://nepis.epa.gov/).

"Methods for the Determination of Organic Compounds in Drinking Water, Supplement I", Doc. No. PB91-146027. EPA/600/4-90/020 (July 1990) (available online at http://nepis.epa.gov/).

"Methods for the Determination of Organic Compounds in Drinking Water, Supplement II", Doc. No. PB92-207703. EPA/600/R-92/129 (August 1992) (available online at http://nepis.epa.gov/).

"Methods for the Determination of Organic Compounds in Drinking Water, Supplement III", Doc. No. PB95-261616. EPA/600/R-95/131 (August 1995) (available online at http://nepis.epa.gov/).

"Methods for the Determination of Organic and Inorganic Compounds in Drinking Water" Volume I: EPA 815-R-00-014 (August 2000) (available online at http://nepis.epa.gov/).

"Prescribed Procedures for Measurement of Radioactivity in Drinking Water", Doc. No. PB80-224744. EPA 600/4-80-032, (August 1980) (available online at http://nepis.epa.gov/).

"Procedures for Radiochemical Analysis of Nuclear Reactor Aqueous Solutions", H.L. Krieger and S. Gold, Doc. No. PB222-154/7BA. EPA-R4-73-014, May 1973.

"Radiochemical Analytical Procedures for Analysis of Environmental Samples", March 1979, Doc. No. EMSL LV 053917.

"Radiochemistry Procedures Manual,", Doc. No. PB-84-215581. EPA-520/5-84-006, December 1987.

"Selected Analytical Methods for Environmental Remediation and Recovery (SAM) 2017". Record last revision date February 10, 2020. https://cfpub.epa.gov/si/si_public_record_report.cfm?Lab=NHSRC&dirEntryId=339252.

"Practical Guide for Ground-Water Sampling", EPA Publication No. EPA/600/2-85/104 (September 1985), Doc. No. PB 86-137304.

"Test Methods for Evaluating Solid Waste, Physical/Chemical Methods,", USEPA Publication No. SW-846, Third Edition, Final Updates I (1993), II (1995), IIA (1994), IIB (1995), III (1997), IIIA (1999), IIIB (2005), IV (2008), V (2015), VI Phase 1 (2017), VI Phase 2 (2018), VI Phase 3 (2019), and VII Phase 1 (2020). http://www.epa.gov/hw-sw846/sw-846-compendium. as amended by Updates I, II, IIA, IIB, III, IIIA, and IIIB (Doc. No. 955-001-00000-1) (available on line at http://www.epa.gov/epaoswer/hazwaste/test/main.htm).

USEPA, Office of Ground Water and Drinking Water, Standards and Risk Management Division.

"Method 533: Determination of Per- and Polyfluoroalkyl Substances in Drinking Water by Isotope Dilution Anion Exchange Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry", November 2019. https://www.epa.gov/sites/default/files/2019-12/documents/method-533-815b19020.pdf.

USEPA, Office of Research and Development, Center for Environmental solutions & Emergency Response

Shoemaker, J. and Dan Tettenhorst, Method 537.1: Determination of selected Per- and Polyfluorinated Alkyl Substances in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass spectrometry (LC/MS/MS). U.S. Environmental Protection Agency, Office of Research and Development, Center for Environmental Assessment, Washington, DC. Version 2.0, March 2020.

USEPA, Office of Resource Conservation and Recovery.

"Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, (March 2009 Unified Guidance)", EPA 530/R-09-007.

USEPA, Office of Water, Engineering and Analysis Division

USEPA, Office of Water, Engineering and Analysis Division. "Method 1633: Analysis of Per- and Polyfluoroalkyl Substances (PFAS) in Aqueous, Solid, Biosolids, and Tissue Samples by LC-MS/MS," January 2024, EPA 821-R-24-001."

USEPA~~United States Environmental Protection Agency~~, Risk Assessment forum, Washington, D.C.

"A Review of the Reference Dose and References Concentration Process", EPA/630/P-02/002F, December 2002".

"Guidance for Applying Quantitative Data to Develop Data-Derived Extrapolation Factors for Interspecies and Intraspecies Extrapolation", EPA/R-14/002F, September 2014.

"Guidelines for Carcinogen Risk Assessment", EPA/630/P-03/001F, March 2005.

"Supplemental Guidance for Assessing Susceptibility for Early-Life Exposure to Carcinogens", EPA/630/R-03/003F, March 2005.

~~USGS.~~ United States Geological Survey, 1961 Stout St., Denver, CO 80294 (303) 844-4169

"Techniques of Water Resources Investigations of the United States Geological Survey, Guidelines for Collection and Field Analysis of Ground-Water Samples for Selected Unstable Constituents", Book I, Chapter D2 (1976).

b) This Section incorporates no later editions or amendments.

(Source: Amended at 48 Ill. Reg. _____, effective _____)

SUBPART B: GROUNDWATER CLASSIFICATION

Section 620.201 Groundwater Designations

All groundwaters of the State are designated as:

a) One of the following four classes of groundwater under ~~in accordance with~~ Sections 620.210 through 620.240:

1) Class I: Potable Resource Groundwater;

2) Class II: General Resource Groundwater;

3) Class III: Special Resource Groundwater; and

4) Class IV: Other Groundwater;

b) A groundwater management zone established under ~~in accordance with~~ Section 620.250; or

c) A groundwater management zone ~~as defined in 35 Ill. Adm. Code 740.120 and established~~ under 35 Ill. Adm. Code 740.530. See Section 620.250(h)-(i).

(Source: Amended at 48 Ill. Reg. _____, effective _____)

Section 620.210 Class I: Potable Resource Groundwater

Except as provided in Section ~~Sections~~ 620.230, 620.240, or 620.250, Potable Resource Groundwater is as described in subsection (a)~~, or (b), or (c)~~:

a) Groundwater that is ~~located~~ 10 feet or more below the land surface and within:

1) The minimum setback zone of a well that~~which~~ serves as a potable water supply and to the bottom of the ~~such~~ well;

2) Unconsolidated sand, gravel, or sand and gravel that~~which~~ is 5 feet or more in thickness and ~~that~~ contains 12% ~~percent~~ or less of fines (i.e., fines that~~which~~ pass through a No. 200 sieve tested in compliance with ~~according to~~ ASTM Standard Practice D2487-06, incorporated by reference in~~at~~ Section 620.125);

3) Sandstone that~~which~~ is 10 feet or more in thickness~~,~~ or fractured carbonate that~~which~~ is 15 feet or more in thickness; ~~or~~

4) Any geologic material that~~which~~ is capable of a:

A) Sustained groundwater yield, from up to a 12-inch borehole, of at least 150 gallons per day ~~or more~~ from a thickness of 15 feet or less; or

B) Hydraulic conductivity of 1 x 10^{-4} cm/sec or greater using one of

the following test methods or its equivalent:

i) Slug test; or ~~Permeameter;~~

ii) Pump test ~~Slug test~~; or

~~iii)~~ ~~Pump test.~~

5) A wellhead protection area, as defined in Section 620.110, that is a Phase I or Phase II wellhead protection area ~~and~~ delineated in compliance with the "The Illinois Wellhead Protection Program" and the "Guidance Document for Groundwater Protection Needs Assessments", both incorporated by reference in Section 620.125; or

6) The maximum setback zone of a community water supply well adopted under Section 14.3 of the Act.

b) Groundwater that~~Any groundwater which~~ is determined by the Board, under the ~~pursuant to petition~~ procedures specified ~~set forth~~ in Section 620.260, to be capable of potable use.

BOARD NOTE: In determining whether geologic material meets a subsection (a)(2) or (a)(3) thickness minimum or the subsection (a)(4)(A) thickness maximum, the entire thickness of the geologic material is considered, regardless of whether all or only some of the thickness is 10 feet or more below the land surface. For example, groundwater that is 10 feet or more below the land surface and within any geologic material described in subsection (a)(2), (a)(3), or (a)(4)(A) is designated as Class I: Potable Resource Groundwater, even if some of the geologic material's thickness is within 10 feet of the land surface. In addition, if groundwater that is 10 feet or more below the land surface—and within any region or geologic material described in subsection (a)—also extends upward to within 10 feet of the land surface, then the groundwater 10 feet or more below the land surface is designated as Class I: Potable Resource Groundwater but the groundwater within 10 feet of the land surface is not.

~~BOARD NOTE: Any portion of the thickness associated with the geologic materials as described in subsections 620.210(a)(2), (a)(3) or (a)(4) should be designated as Class I: Potable Resource Groundwater if located 10 feet or more below the land surface.~~

(Source: Amended at 48 Ill. Reg. _____, effective _____)

Section 620.220 Class II: General Resource Groundwater

Except as provided in Section 620.250, General Resource Groundwater is as described in subsection (a) or (b):

a) Groundwater that ~~which~~ does not meet ~~the provisions of~~ Section 620.210 (Class I), Section 620.230 (Class III), or Section 620.240 (Class IV); or~~.~~

b) Groundwater that ~~which~~ is determined ~~found~~ by the Board, under~~pursuant to~~ the ~~petition~~ procedures specified ~~set forth~~ in Section 620.260, to be capable of agricultural, industrial, recreational, or other beneficial uses.

(Source: Amended at 48 Ill. Reg. _____, effective _____)

Section 620.230 Class III: Special Resource Groundwater

Except as provided in Section 620.250, Special Resource Groundwater is as described in subsection (a) or (b):

a) Groundwater that is determined by the Board, under~~pursuant to~~ the procedures specified ~~set forth~~ in Section 620.260, to be:

1) Demonstrably unique (e.g., irreplaceable sources of groundwater) and suitable for application of a groundwater~~water~~ quality standard more stringent than the otherwise applicable groundwater~~water~~ quality standard specified in Subpart D; or

2) Vital for a particularly sensitive ecological system.

b) Groundwater that contributes to a dedicated nature preserve that is listed by the Agency as specified ~~set forth~~ below:

1) A written request to list a dedicated nature preserve under this subsection must contain~~, at a minimum,~~ the following information:

A) A general description of the site and the surrounding land use;

B) A topographic map or other map of suitable scale denoting the location of the dedicated nature preserve;

C) A general description of the existing groundwater quality at and surrounding the dedicated nature preserve;

D) A general geologic profile of the dedicated nature preserve based upon the most reasonably available information, including ~~but not limited to~~ geologic maps and subsurface groundwater flow directions; and

E) A description of the interrelationship between groundwater and the nature of the site.

2) Upon confirmation by the Agency of the technical adequacy of a written request, the Agency mustshall publish the proposed listing of the dedicated nature preserve in the Environmental Register for a 45-day public comment period. Within 60 days after the close of the public comment period, the Agency mustshall either publish a final listing of the dedicated nature preserve in the Environmental Register or provide a written response to the requestor specifying the reasons for not listing the dedicated nature preserve.

3) At least once annually, the Agency mustshall publish in the Environmental Register a complete listing of all dedicated nature preserves listed under this subsection (b).

4) For purposes of this subsectionSection the term "dedicated nature preserve" means a nature preserve that is dedicated underpursuant to the Illinois Natural Areas Preservation Act [525 ILCS 30].

(Source: Amended at 48 Ill. Reg. _____, effective _____)

Section 620.240 Class IV: Other Groundwater

Except as provided in Section 620.250, Other Groundwater is as described in subsection (a), (b), (c), (d), (e), (f), (g) or (h).:

a) Groundwater within a the zone of attenuation under as provided in 35 Ill. Adm. Code 811 and 814;

b) Groundwater within a point of compliance under as provided in 35 Ill. Adm. Code 724, but not to exceed a lateral distance of 200 feet from the edge of a potential primary or secondary source.

c) Groundwater that naturally contains more than 10,000 mg/L of total dissolved solids.;

d) Groundwater thatwhich has been designated by the Board as an exempt aquifer underpursuant to 35 Ill. Adm. Code 730.104.; or

e) Groundwater thatwhich underlies a potential primary or secondary source, in which contaminants may be present from a release, if the owner or operator of the such source notifies the Agency in writing and the following conditions are met:

1) The outermost edge of what would be considered the Class IV groundwater is the closest practicable distance from thesuch source, but does not exceed:

A) A lateral distance of 25 feet from the edge of thesuch potential source or the property boundary, whichever is less, and

B) A depth of 15 feet from the bottom of thesuch potential source or the land surface, whichever is greater;

2) The source of any release of contaminants to groundwater has been controlled;

3) Migration of contaminants within the site resulting from a release to groundwater has been minimized;

4) Any on-site release of contaminants to groundwater has been managed to prevent migration off-site; and

5) No potable water well exists within the outermost edge as specified provided in subsection (e)(1).

f) Groundwater thatwhich underlies a coal mine refuse disposal area not contained within an area from which overburden has been removed, a coal combustion waste disposal area at a surface coal mine authorized under Section 21(s) of the Act, or an impoundment that contains sludge, slurry, or precipitated process material at a coal preparation plant, in which contaminants may be present, if thesuch area or impoundment began operatingwas placed into operation after February 1, 1983, if the owner and operator notifies the Agency in writing, and if the following conditions are met:

1) The outermost edge of what would be considered the Class IV groundwater is the closest practicable distance from the area or impoundment, but does not exceed:

A) A lateral distance of 25 feet from the edge of thesuch area or impoundment, or the property boundary, whichever is less; and

B) A depth of 15 feet from the bottom of thesuch area or impoundment, or the land surface, whichever is greater;

2) The source of any release of contaminants to groundwater has been controlled;

3) Migration of contaminants within the site resulting from a release to groundwater has been minimized;

4) Any on-site release of contaminants to groundwater has been managed to prevent migration off-site; and

5) No potable water well exists within the outermost edge as specified~~provided~~ in subsection (f)~~(e)~~(1).

g) Groundwater within a previously mined area, unless monitoring demonstrates that the groundwater is capable of consistently meeting the standards of specified in Section~~Sections~~ 620.410 or 620.420. If that ~~such~~ capability is determined, groundwater within the previously mined area must~~shall~~ not be considered Class IV.

h) Groundwater regulated under 35 Ill. Adm. Code 845 at both active and inactive electric utilities and independent power producers.

(Source: Amended at 48 Ill. Reg. _____, effective _____)

Section 620.250 Groundwater Management Zone

a) Within any class of groundwater, a groundwater management zone (GMZ) may be established as a three-dimensional ~~three dimensional~~ region containing groundwater being managed to mitigate impairment caused by the release of one or more contaminants ~~from a site:~~

~~1)~~ that ~~That~~ is subject to a corrective action process approved by the Agency~~; or~~

~~2) For which the owner or operator undertakes an adequate corrective action in a timely and appropriate manner and provides a written confirmation to the Agency. Such confirmation must be provided in a form as prescribed by the Agency~~.

b) Before a GMZ may be established, the owner or operator of a site at which there has been a release of one or more contaminants to groundwater must submit to the Agency a GMZ application. The application must contain the information required by Section 620.Appendix D, Parts I, II, and III, as well as any other information requested in writing by the Agency that is relevant to its review under subsection (c). ~~A groundwater management zone is established upon concurrence by the Agency that the conditions as specified in subsection (a) are met and groundwater management continue for a period of time consistent with the action described in that subsection.~~

1) If the GMZ would extend off-site, the GMZ application must include each off-site ~~property~~ owner's written permission to the establishment of the GMZ on its property. If effectively implementing the off-site portion of the GMZ requires accessing an off-site property, the GMZ application must also include the off-site property owner's written permission for that access. If the applicable written permission or permissions from an off-site property owner are not obtained—whether permission to establish the GMZ off-site, access the off-site property, or both—the GMZ will not include that off-site property.

2) Nothing in this subsection (b) precludes the owner or operator from including additional information in its GMZ application.

3) Nothing in this subsection (b) requires that a GMZ application be in the form specified in Section 620.Appendix D, Parts I, II, and III.

c) The Agency must review each GMZ application submitted under subsection (b) and issue a written determination approving or rejecting the GMZ.

1) In determining whether to approve a GMZ, the Agency must consider the substantive information provided in support of ~~the~~ GMZ, the technical sufficiency of the GMZ, the likelihood that the GMZ will protect public health and the environment, and the likelihood that the GMZ's corrective action process will, in a timely manner, result in compliance with the applicable standards specified in Section 620.410, 620.420, 620.430, or 620.440 or otherwise minimize exceedances to restore beneficial use as appropriate for the class or classes of groundwater. If the Agency rejects a GMZ, the Agency must, in its written determination, specify the reasons for the rejection.

2) A GMZ ~~groundwater management zone~~ is established when the Agency issues a written determination approving the GMZ, including its corrective action process. Once a GMZ is established and before the corrective action is complete, the Agency may, as new information warrants and subject to the standards of subsection (c)(1), issue written determinations amending any part of the GMZ, including its size, the contaminants that are subject to it, and its corrective action process, as provided in this subsection (c)(2). A GMZ is amended when the Agency issues a written determination amending the GMZ. If the Agency rejects a submittal of the site owner or operator to amend the GMZ under subsection (c)(2)(i) or (c)(2)(ii), the Agency must do so in a written determination that specifies the reasons for the rejection.

i) The Agency may issue a written determination directing that the site owner or operator submit to the Agency a written proposal to

amend the GMZ, consistent with subsection (b). The Agency's determination must identify the amendment to be proposed and specify the reasons why the amendment is necessary. If the owner or operator fails to submit a proposal or the Agency rejects the proposal, the Agency may terminate the GMZ under subsection (f) either on its own initiative or at the written request of the owner or operator.

ii) If it wishes to have the Agency amend the GMZ, the site owner or operator must submit to the Agency a written proposal to amend the GMZ, consistent with subsection (b). If the Agency rejects the proposal, the Agency may terminate the GMZ under subsection (f) either on its own initiative or at the written request of the owner or operator.

d~~e~~) When it ~~the owner or operator~~ completes the corrective action under subsection (c)(2), the site owner or operator must submit to the Agency a written demonstration that complies with subsection (d)(1) or (d)(2) and contains the information required by ~~includes~~ the completion certification specified in Section 620.Appendix D, Part IV. The Agency must review this demonstration and issue a written determination approving or rejecting the demonstration. Nothing in this subsection (d) requires the owner or operator to make the demonstration using any specific type of documentation or precludes the owner or operator from including additional information in the demonstration. ~~A groundwater management zone expires upon the Agency's receipt of appropriate documentation which confirms the completion of the action taken pursuant to subsection (a) and which confirms the attainment of applicable standards as set forth in Subpart D. The Agency shall review the on going adequacy of controls and continued management at the site if concentration of chemical constituents, as specified in Section 620.450(a)(4)(B), remain in groundwater at the site following completion of such action. The review must take place no less often than every 5 years and the results shall be presented to the Agency in a written report.~~

1) The owner or operator must demonstrate that it has completed the corrective action under subsection (c)(2) and the applicable standards of Subpart D, as specified in Section 620.450(a)(4)(A), have been attained in groundwater within the GMZ. If the Agency approves this demonstration, the Agency must issue a written determination to that effect in which the Agency terminates the GMZ. The termination takes effect when the Agency issues this determination. If the Agency rejects this demonstration, the Agency must, in its written determination, specify the reasons for the rejection, which may include the Agency's basis for amending the GMZ to require additional corrective action under subsection (c)(2).

2) The owner or operator must demonstrate that it has completed the corrective action under subsection (c)(2) and concentrations of released chemical constituents, as specified in Section 620.450(a)(4)(B), remain in groundwater within the GMZ. The owner or operator must also demonstrate compliance with Section 620.450(a)(4)(B)(i) and (ii), as well as the on-going adequacy of controls, management, or both, as applicable, to maintain compliance with Section 620.450(a)(4)(B)(i) and (ii). If the Agency approves this demonstration, the Agency must issue a written determination to that effect in which the Agency states that the GMZ remains in effect. If the Agency rejects this demonstration, the Agency must, in its written determination, specify the reasons for the rejection, which may include the Agency's basis for amending the GMZ to require additional corrective action under subsection (c)(2).

e) Within five years after the Agency issues a written determination approving a demonstration under subsection (d)(2), the site owner or operator must submit a report to the Agency demonstrating the on-going adequacy of controls, management, or both, as applicable, to maintain compliance with Section 620.450(a)(4)(B)(i) and (ii). The Agency must review the report and issue a written determination approving or rejecting the demonstration.

1) The submittal of these reports by the owner or operator and the corresponding issuance of these written determinations by the Agency must occur at least every five years while the GMZ remains in effect. If the Agency rejects a demonstration, the Agency must, in its written determination, specify the reasons for the rejection, which may include the Agency's basis for amending the GMZ to require additional controls or management under this subsection (e).

2) Any amendment to controls or management under this subsection (e) is subject to the amendment provisions of subsection (c)(2), except that the standard for the Agency's determination is whether the controls or management, as amended, would be adequate to maintain compliance with Section 620.450(a)(4)(B)(i) and (ii).

f) Without limiting any other legal authority of the Agency to terminate a GMZ, the Agency may issue a written determination terminating a GMZ based on any of the grounds specified in this subsection (f). The determination must specify the grounds for terminating the GMZ. The termination takes effect when the Agency issues this determination. The Agency may terminate a GMZ if:

1) The site owner or operator fails to perform or comply with the schedule for any part of the GMZ, including its corrective action under subsection (c)(2) or controls or its management under subsection (d)(2) or (e);

2) The Agency rejects a proposal to amend the GMZ under subsection (c)(2) or a demonstration under subsection (d) or (e);

3) The site owner or operator commits fraud or misrepresentation in any submittal under subsection (b), (c)(2), (d), or (e);

4) The site owner or operator submits to the Agency a written request to terminate the GMZ under subsection (c)(2); or~~.~~

5) The Agency, after issuing a written determination approving a demonstration under subsection (d)(2), determines that

i) The applicable standards specified in Section 620.410, 620.420, 620.430, or 620.440 have been attained in groundwater within the GMZ; or

ii) Additional corrective action is necessary because controls and management are no longer adequate to maintain compliance with Section 620.450(a)(4)(B)(i) and (ii).

g) Upon GMZ termination under subsection (f), the groundwater within the three-dimensional region formerly encompassed by the GMZ becomes both designated as one of the four classes of groundwater specified in Section 620.201(a) and subject to the standards for the applicable class of groundwater specified in Section 620.410, 620.420, 620.430, or 620.440.

h~~d~~) Regardless of ~~Notwithstanding~~ subsections (a) through (c)~~(f) and (b) above~~, a "groundwater management zone", as defined in 35 Ill. Adm. Code 740.120, may be established under ~~in accordance with the requirements of~~ 35 Ill. Adm. Code 740.530 for sites in ~~undergoing remediation pursuant to~~ the Site Remediation Program (35 Ill. Adm. Code 740). A GMZ established under 35 Ill. Adm. Code 740.530 remains ~~Such a groundwater management zone shall remain~~ in effect until any condition of ~~the requirements set forth at~~ 35 Ill. Adm. Code 740.530(c) is ~~are~~ met.

i~~e~~) While a GMZ ~~the groundwater management zone~~ established under ~~in accordance with~~ 35 Ill. Adm. Code 740.530 is in effect, the otherwise applicable standards of ~~as specified in~~ Subpart D of this Part do ~~shall~~ not apply ~~be applicable~~ to the "contaminants of concern~~,~~", as defined in ~~at~~ 35 Ill. Adm. Code 740.120, for which groundwater remediation objectives have been approved under ~~in accordance with the procedures of~~ 35 Ill. Adm. Code 740.

j~~f~~) Regardless of subsection (d), that subsection's submittal and review requirements concerning the demonstration when corrective action is complete do not apply to

a GMZ under 35 Ill. Adm. Code 740.530. Regardless of ~~Notwithstanding~~ subsection (e)~~(c) above~~, that subsection's submittal and ~~the~~ review requirements concerning the on-going adequacy of controls and ~~continued~~ management do ~~at the site shall~~ not apply to groundwater within a three-dimensional region formerly encompassed by a GMZ ~~groundwater management zone~~ established under ~~in accordance with~~ 35 Ill. Adm. Code 740.530 while a No Further Remediation Letter issued under ~~in accordance with the procedures of~~ 35 Ill. Adm. Code 740 is in effect.

k~~j~~) The ~~At least annually, the~~ Agency must develop and maintain ~~publish in the Environmental Register~~ a list of all GMZs that have not been terminated~~, along with a brief statement of each GMZ's status~~. The list must identify the location of each GMZ. On its website (https://epa.illinois.gov), the Agency must post the list and, at least annually, update it. In addition, at least annually, the Agency must submit the list to the Board for publication in the Environmental Register.

l) In groundwater regulated under 35 Ill. Adm. Code 845, a GMZ is not available to address any exceedance of a groundwater protection standard specified in 35 Ill. Adm. Code 845.600(a) or (b) (see 35 Ill. Adm. Code 845.600(c).

(Source: Amended at 48 Ill. Reg. _____, effective _____)

Section 620.260 Reclassification of Groundwater by Adjusted Standard

Any person may petition the Board for an adjusted standard to reclassify a groundwater under ~~in accordance with the procedures for adjusted standards specified in~~ Section 28.1 of the Act and 35 Ill. Adm. Code 104.Subpart D~~106.Subpart G~~. In any proceeding to reclassify specific groundwater by adjusted standard, in addition to complying with ~~the requirements of~~ 35 Ill. Adm. Code 104.406~~106.Subpart G~~, and Section 28.1(c) of the Act, the petition must~~shall, at a minimum,~~ contain information to allow the Board to determine:

a) The specific groundwater for which reclassification is requested, including ~~but not limited to~~ geographical extent of any aquifers, depth of groundwater, and rate and direction of groundwater flow, and that the specific groundwater exhibits the characteristics of the requested class specified ~~as set forth~~ in Section 620.210(c)~~(b)~~, 620.220(b), 620.230, or 620.240;

b) Whether the proposed change or use restriction is necessary for economic or social development, ~~by providing information~~ including information concerning any negative economic or social~~, but not limited to, the~~ impacts of compliance with the currently applicable groundwater quality standards (e.g., job losses, facility closings) ~~on the regional economy, social benefits such as loss of jobs or closing of facilities~~, as well as an ~~and~~ economic analysis contrasting the costs of meeting the current standards with cost savings due to health and environmental

benefits resulting from compliance with those ~~costs likely to be incurred in meeting the~~ standards ~~would be beneficial or necessary~~;

c) Existing and anticipated uses of the specific groundwater;

d) Existing and anticipated quality of the specific groundwater;

e) Existing and anticipated contamination, if any, of the specific groundwater;

f) Technical feasibility and economic reasonableness of eliminating or reducing contamination of the specific groundwater or of maintaining existing water quality;

g) The anticipated time period over which contaminants will continue to affect the specific groundwater;

h) Existing and anticipated impact on any potable water supplies due to contamination;

i) Availability and cost of alternate water sources or of treatment for ~~those~~ users adversely affected;

j) Negative or positive effect on property values; and

k) For special resource groundwater, negative or positive effect on:

1) The quality of surface waters; and

2) Wetlands, natural areas, and the life contained in wetlands and natural areas~~therein~~, including endangered or threatened species of plant, fish, or wildlife listed under~~pursuant to~~ the Endangered Species Act, 16 U.S.C. 1531 et seq., or the Illinois Endangered Species Protection Act [520~~415~~ ILCS 10].

(Source: Amended at 48 Ill. Reg. _____, effective _____)

SUBPART C: NONDEGRADATION PROVISIONS FOR APPROPRIATE GROUNDWATERS

Section 620.301 General Prohibition Against Use Impairment of Resource Groundwater

a) A ~~No~~ person must not ~~shall~~ cause, threaten, or allow the release of any contaminant to a resource groundwater such that:

1) Treatment or additional treatment is necessary to continue an existing use or to assure a potential use of the ~~such~~ groundwater; or

2) An existing or potential use of the ~~such~~ groundwater is precluded.

b) Nothing in this Section prevents ~~shall prevent~~ the establishment of a groundwater management zone under~~pursuant to~~ Section 620.250 or a cumulative impact area within a permitted site.

c) Nothing in this Section limits ~~limit~~ underground injection in compliance with an underground injection control program administered ~~under~~pursuant to a permit ~~issued~~ by the Agency under the Act, ~~or issued~~ by the Department of Natural Resources, Office of Mines and Minerals under the Illinois Oil and Gas Act ([~~[~~225 ILCS 725)~~]~~], or by the USEPA ~~U.S. EPA~~ under the federal UIC regulations [40 CFR 144].

d) Nothing in this Section limits ~~shall limit~~ the Board from promulgating nondegradation provisions applicable to ~~particular~~ types of facilities or activities that~~which~~ impact ~~upon~~ groundwater, including ~~but not limited to~~ landfills regulated under~~pursuant to~~ 35 Ill. Adm. Code. Subtitle G.

(Source: Amended at 48 Ill. Reg. _____, effective _____)

Section 620.302 Applicability of Preventive Notification and Preventive Response Activities

a) Preventive notification and preventive response activities, as specified in Sections 620.305 through 620.310, apply ~~applies~~ to:

1) Class I groundwater under Section 620.210(a)(1), (a)(2), ~~or~~ (a)(3), (a)(5), ~~or~~ (a)(6) or (b) that is monitored by any person specified~~the persons listed~~ in subsection (b);and ~~or~~

2) Class III groundwater that is monitored by any person specified~~the persons listed~~ in subsection (b).

b) For ~~purposes of~~ subsection (a), the persons that conduct groundwater monitoring are:

1) An owner or operator of a regulated entity required to perform ~~for which~~ groundwater quality monitoring must be performed ~~must be performed~~ under ~~pursuant to~~ State or federal ~~Federal~~ law or regulation;~~section 106 and 107 of the Comprehensive Environmental Response, Compensation and Liability Act (42 USC 9601, et seq.); sections 3004 and 3008 of the Resource Conservation and Recovery Act (42 USC 6901, et seq.); sections~~

~~4(q), 4(v), 12(g), 21(d), 21(f), 22.2(f), 22.2(m) and 22.18 of the Act; 35 Ill. Adm. Code 724, 725, 730, 731, 750, 811 and 814;~~

2) An owner or operator of a public water supply well who conducts groundwater quality monitoring;

3) A State agency that is authorized to conduct, or is the recipient of, groundwater quality monitoring data (e.g., Illinois Environmental Protection Agency, Department of Public Health, Department of Agriculture, Office of State Fire Marshal, or Department of Natural Resources); or

4) An owner or operator of a facility that conducts groundwater quality monitoring under ~~pursuant to~~ State or federal judicial or administrative order.

c) If a contaminant exceeds a standard specified ~~set forth~~ in Section 620.410 or Section 620.430, the appropriate remedy is corrective action and Sections 620.305 and 620.310 do not apply.

(Source: Amended at 48 Ill. Reg. _____, effective _____)

Section 620.305 Preventive Notification Procedures

a) For~~Pursuant to~~ groundwater quality monitoring under ~~as described in~~ Section 620.302, a preventive notification must occur whenever a contaminant:

1) Specified in~~Listed under~~ Section 620.310(a)(3)(A) is detected (except due to natural causes) in Class I groundwater; ~~or~~

2) Denoted as a carcinogen under Section 620.410(b) is detected in Class I groundwater; or

3) Subject to a standard under Section 620.430 is detected (except due to natural causes) in Class III groundwater.

b) When a preventive notification is required for groundwater that~~which~~ is monitored by a regulated entity for the subject contaminant, the owner or operator of the site must:

1) Confirm ~~confirm~~ the detection by resampling the monitoring well~~. This resampling shall be made~~ within 30 days after ~~of~~ the date on which the first sample analyses are received; and ~~.~~

2) Provide~~The owner or operator shall provide~~ a preventive notification to the appropriate regulatory agency of the results of the resampling analysis within 30 days after ~~of~~ the date on which the sample analyses are received, but no later than 90 days after the results of the first samples were received.

c) When a preventive notification is required for groundwater that~~which~~ is monitored by a regulatory agency, the~~such~~ agency must~~shall~~ notify the owner or operator of the site where the detection has occurred. The owner or operator must:

1) Confirm ~~shall confirm~~ the detection by resampling within 30 days after ~~of~~ the date of the notice by the regulatory agency; and ~~.~~

2) Provide~~The owner or operator shall provide~~ preventive notification to the regulatory agency of the results of the resampling analysis within 30 days after ~~of~~ the date on which the sample analyses are received, but no later than 90 days after the results of the first samples were received.

d) When a preventive notification of a confirmed detection has been provided by an owner or operator under~~pursuant to~~ this Section, additional detections of the same contaminant do not require further notice~~,~~ if ~~provided that~~ the groundwater quality conditions are substantially unchanged or that preventive response is underway for the ~~such~~ contaminant.

(Source: Amended at 48 Ill. Reg. _____, effective _____)

Section 620.310 Preventive Response Activities

a) The following preventive assessment must be undertaken:

1) If a preventive notification under Section 620.305(c) is provided by a community water supply:

A) The Agency must ~~shall~~ notify the owner or operator of any identified potential primary source, potential secondary source, potential route, or community water supply well that is ~~located~~ within 2,500 feet of the wellhead.

B) The owner or operator notified under subsection (a)(1)(A) must~~shall~~, within 30 days after the date of issuance of that~~such~~ notice, sample each water well or monitoring well for the contaminant identified in the notice if the contaminant or material containing the~~such~~ contaminant is or has been stored, disposed of, or otherwise handled at the site. If a contaminant identified under

Section 620.305(a) is detected, then the well must be resampled within 30 days after~~of~~ the date on which the first sample results~~analyses~~ are received. If a contaminant identified under Section 620.305(a) is detected by the resampling, preventive notification must be given as specified ~~set forth~~ in Section 620.305.

C) If the Agency receives analytical results under subsection (a)(1)(B) that show a contaminant identified under Section 620.305(a) has been detected, the Agency must~~shall~~:

i) Conduct a well site survey under Section 17.1(d) of the Act~~pursuant to~~ [415 ILCS 5/17.1(d)]~~,~~ if one~~such a survey~~ has not been ~~previously~~ conducted within the last 5 years; and

ii) Identify those sites or activities that represent a hazard to the continued availability of groundwaters for public use unless a groundwater protection needs assessment has been prepared under Section 17.1(d) of the Act~~pursuant to 415 ILCS 5/17.1(d)~~.

2) If a preventive notification is provided under Section 620.305(c) by a non-community water supply or for multiple private water supply wells, the Department of Public Health must ~~shall~~ conduct a sanitary survey within 1,000 feet of the wellhead of a non-community water supply or within 500 feet of the wellheads for multiple private water supply wells.

3) If a preventive notification under Section 620.305(b) is provided by the owner or operator of a regulated entity and the applicable standard of~~in~~ Subpart D has not been exceeded, the appropriate regulatory agency must:

A) Determine ~~The appropriate regulatory agency shall determine~~ if any of the following occurs for Class I: Potable Resource Groundwater:

i) The levels specified ~~set forth~~ below are exceeded or are changed for pH:

CASRN	Constituent	Criteria (mg/L)
95-50-1	~~Para-Dichlorobenzene~~ *o*~~Ortho-~~ Dichlorobenzene (1,2-dichlorobenzene)	~~0.005~~ 0.01

	~~Ethylbenzene~~	~~0.03~~
1634-04-4	MTBE methyl tertiary butyl ether ~~Methyl Tertiary Butyl Ether (MTBE)~~	0.02
108-95-2	Phenols	0.001
100-42-5	Styrene	0.01
108-88-3	Toluene	0.04
1330-20-7	Xylenes	0.02

ii) A statistically significant increase occurs above background (as determined under ~~pursuant to~~ other regulatory procedures (e.g., 35 Ill. Adm. Code 616, 724, 725, or 811)) for the following inorganic constituents (except due to natural causes) or organic constituents: ~~arsenic, beryllium, cadmium, chromium, cyanide, lead, mercury, thallium, or vanadium (except due to natural causes); or for acenaphthene, acetone, aldicarb, anthracene, atrazine, benzoic acid, carbon disulfide, carbofuran, dalapon, 2-butanone (MEK), dicamba, dichlorodifluoromethane, 1,1-dichloroethane, diethyl phthalate, di-n-butyl phthalate, dinoseb, endrin, endothall, fluoranthene, fluorine, hexachlorocyclopentadiene, isopropylbenzene (cumene), lindane (gamma-hexachloro cyclohexane), 2,4-D,1,1 - dichloroethylene, cis-1,2-dichloroethylene, trans-1,2-dichloroethylene, MCPP (mecoprop), 2-methylnaphthalene, methoxychlor, 2-methylphenol, monochlorobenzene, naphthalene, picloram, pyrene, simazine, 2,4,5-TP (silvex), 1,2,4-trichlorobenzene, 1,1,2-trichloroethane, 1,1,1trichloroethane, and trichlorofluoromethane.~~

CASRN	**Constituent**
Inorganics	
7429-90-5	Aluminum
7440-38-2	Arsenic
7440-41-7	Beryllium
7440-43-9	Cadmium
7440-47-3	Chromium (total)
143-33-9	Cyanide
7439-92-1	Lead
7487-94-7	Mercury (mercuric chloride)
7439-98-7	Molybdenum
7440-28-0	Thallium
7440-62-2	Vanadium
Organics	
83-32-9	Acenaphthene
67-64-1	Acetone

116-06-3	Aldicarb
120-12-7	Anthracene
319-84-6	*alpha-BHC (alpha*-benzene hexachloride)
1912-24-9	Atrazine and metabolites DEA, DIA, DACT
71-43-2	Benzene
56-55-3	Benzo(a)anthracene
205-99-2	Benzo(b)fluoranthene
207-08-9	Benzo(k)fluoranthene
50-32-8	Benzo(a)pyrene
65-85-0	Benzoic acid
78-93-3	2-Butanone (methyl ethyl ketone)
1563-66-2	Carbofuran
75-15-0	Carbon disulfide
56-23-5	Carbon tetrachloride
12789-03-6	Chlordane
108-90-7	Chlorobenzene
67-66-3	Chloroform
218-01-9	Chrysene
94-75-7	2.4-D (2.4-dichlorophenoxy acetic acid)
75-99-0	Dalapon
96-12-8	1,2-Dibromo-3-chloropropane (dibromochloroorooane)
1918-00-9	Dicamba
106-46-7	*p*-Dichlorobenzene (1,4-dichlorobenzene)
75-71-8	Dichlorodifluoromethane
75-34-3	1,1-Dichloroethane
75-35-4	1,1-Dichloroethylene
107-06-2	1,2-Dichloroethane
156-59-2	*cis*-1,2-Dichloroethylene
156-60-5	*trans*-1,2-Dichloroethylene
75-09-2	Dichloromethane (methylene chloride)
78-87-5	1,2-Dichloropropane
117-81-7	Di(2-ethylhexyl)phthalate
84-66-2	Diethyl phthalate
84-74-2	Di-*n*-butyl phthalate
99-65-0	1,3-Dinitrobenzene
121-14-2	2,4-Dinitrotoluene
88-85-7	Dinoseb
123-91-1	1,4-Dioxane (*p* dioxane)
145-73-3	Endothall
72-20-8	Endrin
100-41-4	Ethylbenzene
106-93-4	Ethylene dibromide (1,2-dibromoethane)
206-44-0	Fluoranthene
86-73-7	Fluorene

58-89-9	*gamma-HCH* (*gamma*-hexachlorocyclohexane lindane)
13252-13-6	HFPO-DA (hexafluoropropylene oxide dimer acid, GenX)
2691-41-0	HMX (octahydro-1,3,5,7-tetranitro-1, 3, 5, 7-tetrazocine)
76-44-8	Heptachlor
1024-57-3	Heptachlor epoxide
77-47-4	Hexachlorocyclopentadiene
193-39-5	Indeno(1,2,3-c,d)pyrene
98-82-8	Isopropylbenzene (cumene)
72-43-5	Methoxychlor
90-12-0	1-Methylnaphthalene
91-57-6	2-Methylnaphthalene
95-48-7	2-Methylphenol (*o*-cresol)
91-20-3	Naphthalene
98-95-3	Nitrobenzene
1336-36-3	PCBs (polychlorinated biphenyls as decachloro-biphenyl)
375-73-5	PFBS (perfluorobutanesulfonic acid)
355-46-4	PFHxS (perfluorohexanesulfonic acid)
375-95-1	PFNA (perfluorononanoic acid)
335-67-1	PFOA (perfluorononanoic acid)
1763-23-1	PFOS (perfluorooctanesulfonic acid)
87-86-5	Pentachlorophenol
1918-02-1	Picloram
129-00-0	Pyrene
121-82-4	RDX (hexahydro-1,3,5-trinitro-1,3,5-triazine)
122-34-9	Simazine
118-96-7	TNT (2,4,6-trinitrotoluene)
93-72-1	2,4,5-TP (silvex)
127-18-4	Tetrachloroethylene
8001-35-2	Toxaphene
120-82-1	1,2,4-Trichlorobenzene
71-55-6	1,1,1-Trichloroethane
79-00-5	1,1,2-Trichloroethane
79-01-6	Trichloroethylene
75-69-4	Trichlorotluoromethane
99-35-4	1,3,5-Trinitrobenzene
75-01-4	Vinyl chloride

iii) For a chemical constituent of gasoline, diesel fuel, or heating fuel, the constituent exceeds the following:

Constituent	Criterion (mg/L)
BETX	0.095

iv) For pH, a statistically significant change occurs from background.

~~BOARD NOTE: Constituents that are carcinogens have not been listed in subsection (a)(3)(A) because the standard is set at the PQL and any exceedence thereof is a violation subject to corrective action.~~

B) Determined if~~The appropriate agency shall determine if~~, for Class III: Special Resource Groundwater, the levels as determined by the Board are exceeded.

C) Consider ~~The appropriate regulatory agency shall consider~~ whether the owner or operator reasonably demonstrates that:

i) The contamination is a result of contaminants remaining in groundwater from a prior release for which appropriate action was taken in compliance ~~accordance~~ with laws and regulations in existence at the time of the release;

ii) The source of contamination is not due to the on-site release of contaminants; or

iii) The detection resulted from error in sampling, analysis, or evaluation.

D) Consider ~~The appropriate regulatory agency shall consider~~ actions necessary to minimize the degree and extent of contamination.

b) The appropriate regulatory agency must ~~shall~~ determine whether a preventive response should ~~must~~ be undertaken based on relevant factors, including~~,~~ ~~but not limited to,~~ the considerations in subsection (a)(3).

c) After completion of preventive response under the ~~pursuant to~~ authority of an appropriate regulatory agency, the concentration of a contaminant specified~~listed~~ in subsection (a)(3)(A) in groundwater may exceed 50% ~~percent~~ of the applicable numerical standard of ~~in~~ Subpart D ~~only~~ if the following conditions are met:

1) The exceedance ~~exceedence~~ has been minimized to the extent practicable;

2) Beneficial use, as appropriate for the class of groundwater, has been

assured; and

3) Any threat to public health or the environment has been minimized.

d) Nothing in this Section limits ~~shall in any way limit~~ the authority of the State or ~~of~~ the United States to require or perform any corrective action process.

(Source: Amended at 48 Ill. Reg. _____, effective _____)

SUBPART D: GROUNDWATER QUALITY STANDARDS

Section 620.401 Applicability

Groundwater ~~Groundwaters~~ must meet the standards appropriate to the groundwater's class as specified in this Subpart and the nondegradation provisions of Subpart C

(Source: Amended at 48 Ill. Reg. _____, effective _____)

Section 620.405 General Prohibitions Against Violations of Groundwater Quality Standards

A person must not ~~shall~~ cause, threaten, or allow the release of any contaminant to groundwater so as to cause a groundwater quality standard specified ~~set forth~~ in this Subpart to be exceeded.

(Source: Amended at 48 Ill. Reg. _____, effective _____)

Section 620.410 Groundwater Quality Standards for Class I: Potable Resource Groundwater

a) Inorganic Chemical Constituents
Except due to natural causes or as provided in Section 620.450, concentrations of the following chemical constituents must not be exceeded in Class I groundwater:

CASRN	Constituent	Standard (mg/L) [a,b]
7429-90-5	Aluminum	1.9[c]
7440-36-0	Antimony	0.006[d]
7440-38-2	Arsenic[e]	0.01[d]
7440-39-3	Barium	2.0[d]
7440-41-7	Beryllium	0.004[d]
7440-42-8	Boron	2.0[f]
7440-43-9	Cadmium	0.005[d]
16887-00-6	Chloride	200[g]
7440-47-3	Chromium (total)	0.1[d]
7440-48-4	Cobalt	0.0012[c]
7440-50-8	Copper	0.5[hg]
143-33-9	Cyanide	0.2[d]

7681-49-4	Fluoride	42[dh]
7439-89-6	Iron	5[g]
7439-92-1	Lead	0.0075[i]
7439-93-2	Lithium	0.04[j]
7439-96-5	Manganese	0.15[k]
7487-94-7	Mercury (mercuric chloride)	0.002[d]
7439-98-7	Molybdenum	0.308[c]
7440-02-0	Nickel	0.077[c]
14797-55-8	Nitrate as N	10[d]
14797-73-0	Perchlorate	0.0081[c]
7440-14-4	Radium (combined 226+228)	5[d]
7782-49-2	Selenium	0.02[f]
7440-22-4	Silver	0.058[c]
14808-79-8	Sulfate	400[g]
	TDS (total dissolved solids)	1,200[g]
7440-28-0	Thallium	0.002[d]
7440-62-2	Vanadium	0.00027[c]
7440-66-6	Zinc	1.2[c]

Constituent Name and Groundwater Quality Standard Notations

[a] The standard unit for radium (combined 226+228) is picocuries per liter (pCi/L).

[b] The inorganic groundwater quality standards are based on total metal analyses for the evaluation of human health effects.

[c] The standard is calculated using the Human Threshold Toxicant Advisory Concentration (HTTAC) procedures at Appendix A.

[d] The standard is based on the Maximum Contaminant Level (MCL), promulgated by USEPA, Office of Water, and Illinois Primary Drinking Water Standards specified in 35 Ill. Adm. Code 611.

[e] The constituent meets the definition of a "carcinogen" in Section 620.110.

[f] The standard is based on beneficial use for irrigation of crops, per "*Water Quality Criteria*", by National Academy of Sciences, incorporated by reference in Section 620.125.

[g] The standard is the 95% confidence concentration stated in the Agency's "*Integrated Water Quality Report and Section 303(d) List*", incorporated by reference in Section 620.125.

[h] The standard is based on beneficial use for watering livestock, per "*Water Quality Criteria*", by National Academy of Sciences, incorporated by reference in Section 620.125.

[i] The standard is 50% of the USEPA "action level" of 0.015 mg/L for lead. The USEPA action level applies at the service connection. The standard is reduced by 50% as a safety margin, based on the assumption that 50% of water would be treated.

[j] The standard is the "LLOQ" or "LCMRL" as defined in Section 620.110.

[k] The standard is promulgated at 35 Ill. Adm. Code 611.300.

~~Constituent~~	~~Units~~	~~Standard~~
~~Antimony~~	~~mg/L~~	~~0.006~~
~~Arsenic*~~	~~mg/L~~	~~0.010~~
~~Barium~~	~~mg/L~~	~~2.0~~
~~Beryllium~~	~~mg/L~~	~~0.004~~
~~Boron~~	~~mg/L~~	~~2.0~~
~~Cadmium~~	~~mg/L~~	~~0.005~~
~~Chloride~~	~~mg/L~~	~~200.0~~
~~Chromium~~	~~mg/L~~	~~0.1~~
~~Cobalt~~	~~mg/L~~	~~1.0~~
~~Copper~~	~~mg/L~~	~~0.65~~
~~Cyanide~~	~~mg/L~~	~~0.2~~
~~Fluoride~~	~~mg/L~~	~~4.0~~
~~Iron~~	~~mg/L~~	~~5.0~~
~~Lead~~	~~mg/L~~	~~0.0075~~
~~Manganese~~	~~mg/L~~	~~0.15~~
~~Mercury~~	~~mg/L~~	~~0.002~~
~~Nickel~~	~~mg/L~~	~~0.1~~
~~Nitrate as N~~	~~mg/L~~	~~10.0~~
~~Perchlorate~~	~~mg/L~~	~~0.0049~~
~~Radium-226~~	~~pCi/l~~	~~20.0~~
~~Radium-228~~	~~pCi/l~~	~~20.0~~
~~Selenium~~	~~mg/L~~	~~0.05~~
~~Silver~~	~~mg/L~~	~~0.05~~
~~Sulfate~~	~~mg/L~~	~~400.0~~
~~Thallium~~	~~mg/L~~	~~0.002~~
~~Total Dissolved Solids (TDS)~~	~~mg/L~~	~~1,200~~
~~Vanadium~~	~~mg/L~~	~~0.049~~
~~Zinc~~	~~mg/L~~	~~5.0~~

~~*Denotes a carcinogen.~~

b) Organic Chemical Constituents

Except due to natural causes or as provided in Section 620.450 or subsection (c) of this Section~~(d)~~, concentrations of the following organic chemical constituents

must ~~shall~~ not be exceeded in Class I groundwater:

CASRN	Constituent	Standard (mg/L)
83-32-9	Acenaphthene	0.23[a]
67-64-1	Acetone	3.5[a]
15972-60-8	Alachlor[b]	0.002[c]
116-06-3	Aldicarb	0.003[c]
120-12-7	Anthracene	1.2[a]
319-84-6	*alpha*-BHC (*alpha*-benzene hexachloride)[b]	0.000012[d]
71-43-2	Benzene[b]	0.005[c]
56-55-3	Benzo(a)anthracene[e]	0.00025[d]
205-99-2	Benzo(b)fluoranthene[e]	0.00025[d]
207-08-9	Benzo(k)fluoranthene[e]	0.0025[d]
50-32-8	Benzo(a)pyrene[e]	0.0002[c]
65-85-0	Benzoic acid	15[a]
78-93-3	2-Butanone (methyl ethyl ketone)	2.3[a]
1563-66-2	Carbofuran	0.04[c]
75-15-0	Carbon disulfide	0.38[a]
56-23-5	Carbon tetrachloride[b]	0.005[c]
12789-03-6	Chlordane[b]	0.002[c]
108-90-7	Chlorobenzene	0.1[c]
67-66-3	Chloroform[b]	0.07[f]
218-01-9	Chrysene[e]	0.025[d]
94-75-7	2,4-D (2,4-dichlorophenoxy acetic acid)	0.07[c]
75-99-0	Dalapon	0.2[c]
53-70-3	Dibenzo(a,h)anthracene[e]	0.0001[g]
96-12-8	1,2-Dibromo-3-chloropropane (dibromochloropropane)[e]	0.0002[c]
1918-00-9	Dicamba	0.12[a]
95-50-1	*o*-Dichlorobenzene (1,2-dichlorobenzene)	0.6[c]
106-46-7	*p*-Dichlorobenzene (1,4-dichlorobenzene)[b]	0.075[c]
75-71-8	Dichlorodifluoromethane	0.77[a]
75-34-3	1,1-Dichloroethane	0.77[a]
107-06-2	1,2-Dichloroethane[b]	0.005[c]
75-35-4	1,1-Dichloroethylene	0.007[c]
156-59-2	*cis*-1,2-Dichloroethylene	0.07[c]
156-60-5	*trans*-1,2-Dichloroethylene	0.1[c]
75-09-2	Dichloromethane (methylene chloride)[e]	0.005[c]
78-87-5	1,2-Dichloropropane[b]	0.005[c]
117-81-7	Di(2-ethylhexyl)phthalate[b]	0.006[c]
84-66-2	Diethyl phthalate	3.1[a]
84-74-2	Di-*n*-butyl phthalate	0.38[a]
99-65-0	1,3-Dinitrobenzene	0.001[a]

121-14-2	2,4-Dinitrotoluene[b]	0.001[d]
606-20-2	2,6-Dinitrotoluene[b]	0.0001[g]
88-85-7	Dinoseb	0.007[c]
123-91-1	1,4-Dioxane (*p*-dioxane)[b]	0.00078[d]
145-73-3	Endothall	0.1[c]
72-20-8	Endrin	0.002[c]
100-41-4	Ethylbenzene[b]	0.7[c]
106-93-4	Ethylene dibromide (1,2-dibromoethane)[b]	0.00005[c]
206-44-0	Fluoranthene	0.15[a]
86-73-7	Fluorene	0.15[a]
58-89-9	*gamma*-HCH (*gamma*-Hexachlorocyclohexane, lindane)[b]	0.0002[c]
13252-13-6	HFPO-DA (hexafluoropropylene oxide dimer acid GenX)	0.000010[c]
2691-41-0	HMX (octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine)	0.77[a]
76-44-8	Heptachlor[b]	0.0004[c]
1024-57-3	Heptachlor epoxide[b]	0.0002[c]
77-47-4	Hexachlorocyclopentadiene	0.05[c]
193-39-5	Indeno(l,2,3-c,d)pyrene[e]	0.00025[d]
98-82-8	Isopropylbenzene (cumene)[b]	0.38[a]
93-65-2	MCPP (mecoprop)	0.1[g]
1634-04-4	MTBE (methyl tertiary-butyl ether)	0.038[a]
72-43-5	Methoxychlor	0.04[c]
90-12-0	1-Methylnaphthalene	0.27[a]
91-57-6	2-Methylnaphthalene	0.015[c]
95-48-7	2-Methylphenol (*o*-cresol)	0.19[a]
91-20-3	Naphthalene	0.077[a]
98-95-3	Nitrobenzene	0.0077[a]
1336-36-3	PCBs (polychlorinated biphenyls as decachloro-biphenyl)[b]	0.0005[c]
375-73-5	PFBS (perfluorobutanesulfonic acid)	0.002[c]
355-46-4	PFHxS (perfluorohexanesulfonic acid)	0.000010[c]
375-95-1	PFNA (perfluorononanoic acid)	0.000010[c]
335-67-1	PFOA (perfluorooctanoic acid)[b]	0.000004[bcg]
1763-23-1	PFOS (perfluorooctanesulfonic acid)	0.000004[bca]
87-86-5	Pentachlorophenol	0.001[c]
108-95-2	Phenol	0.1[h]
1918-02-1	Picloram	0.5[c]
129-00-0	Pyrene	0.12[a]
121-82-4	RDX (hexahydro-1,3,5-trinitro-1,3,5-triazine)	0.062[a]
122-34-9	Simazine	0.004[c]
100-42-5	Styrene	0.1[c]

118-96-7	TNT (2,4,6-trinitrotoluene)	0.0077[a]
93-72-1	2,4,5-TP (silvex)	0.05[c]
127-18-4	Tetrachloroethylene[b]	0.005[c]
108-88-3	Toluene	1[c]
8001-35-2	Toxaphene[b]	0.003[c]
120-82-1	1,2,4-Trichlorobenzene	0.07[c]
71-55-6	1,1,1-Trichloroethane	0.2[c]
79-00-5	1,1,2-Trichloroethane	0.005[c]
79-01-6	Trichloroethylene[e]	0.005[c]
75-69-4	Trichlorofluoromethane	1.2[a]
99-35-4	1,3,5-Trinitrobenzene	0.46[a]
75-01-4	Vinyl chloride[e]	0.002[c]
1330-20-7	Xylenes	10[c]

Constituent Name and Groundwater Quality Standard Notations

[a] The standard is the Human Threshold Toxicant Advisory Concentration (HTTAC), calculated using procedures specified in Appendix A.

[b] The constituent meets the definition of a "carcinogen" in Section 620.110.

[c] The standard is based on the Maximum Contaminant Level (MCL), promulgated by USEPA, Office of Water, and Illinois ~~EPA~~ Primary Drinking Water Standardsin 35 Ill. Adm. Code 611.

[d] The standard is the Human Nonthreshold Toxicant Advisory Concentration (HNTAC), calculated using procedures specified in Appendix A.

[e] The constituent meets the definition of a "mutagen" in Section 620.110.

[f] The standard is based on the Maximum Contaminant Level Goal (MCLG), promulgated by USEPA, Office of Water.

[g] The standard is the "LLOQ" or "LCMRL" as defined in Section 620.110.

[h] The standard is ~~in~~ based on 35 Ill. Adm. Code 302.208.

~~Constituent~~	~~Standard (mg/L)~~
~~Acenaphthene~~	~~0.42~~
~~Acetone~~	~~6.3~~
~~Alachlor*~~	~~0.002~~
~~Aldicarb~~	~~0.003~~
~~Anthracene~~	~~2.1~~
~~Atrazine~~	~~0.003~~
~~Benzene*~~	~~0.005~~
~~Benzo(a)anthracene*~~	~~0.00013~~

~~Benzo(b)fluoranthene*~~	~~0.00018~~
~~Benzo(k)fluoranthene*~~	~~0.00017~~
~~Benzo(a)pyrene*~~	~~0.0002~~
~~Benzoic acid~~	~~28.0~~
~~2-Butanone (MEK)~~	~~4.2~~
~~Carbofuran~~	~~0.04~~
~~Carbon Disulfide~~	~~0.7~~
~~Carbon Tetrachloride*~~	~~0.005~~
~~Chlordane*~~	~~0.002~~
~~Chloroform*~~	~~0.07~~
~~Chrysene*~~	~~0.012~~
~~Dalapon~~	~~0.2~~
~~Dibenzo(a,h)anthracene*~~	~~0.0003~~
~~Dicamba~~	~~0.21~~
~~Dichlorodifluoromethane~~	~~1.4~~
~~1,1-Dichloroethane~~	~~1.4~~
~~Dichloromethane*~~	~~0.005~~
~~Di(2-ethylhexyl)phthalate*~~	~~0.006~~
~~Diethyl Phthalate~~	~~5.6~~
~~Di-n-butyl Phthalate~~	~~0.7~~
~~Dinoseb~~	~~0.007~~
~~Endothall~~	~~0.1~~
~~Endrin~~	~~0.002~~
~~Ethylene Dibromide*~~	~~0.00005~~
~~Fluoranthene~~	~~0.28~~
~~Fluorene~~	~~0.28~~
~~Heptachlor*~~	~~0.0004~~
~~Heptachlor Epoxide*~~	~~0.0002~~
~~Hexachlorocyclopentadiene~~	~~0.05~~
~~Indeno(1,2,3-cd)pyrene*~~	~~0.00043~~
~~Isopropylbenzene (Cumene)~~	~~0.7~~
~~Lindane (Gamma-Hexachlorocyclohexane)~~	~~0.0002~~
~~2,4-D~~	~~0.07~~
~~ortho-Dichlorobenzene~~	~~0.6~~
~~para-Dichlorobenzene~~	~~0.075~~
~~1,2-Dibromo-3-Chloropropane*~~	~~0.0002~~
~~1,2-Dichloroethane*~~	~~0.005~~
~~1,1-Dichloroethylene~~	~~0.007~~
~~cis-1,2-Dichloroethylene~~	~~0.07~~
~~trans-1,2-Dichloroethylene~~	~~0.1~~
~~1,2-Dichloropropane*~~	~~0.005~~
~~Ethylbenzene~~	~~0.7~~
~~MCPP (Mecoprop)~~	~~0.007~~
~~Methoxychlor~~	~~0.04~~

2-Methylnaphthalene	0.028
2-Methylphenol	0.35
Methyl Tertiary-Butyl Ether (MTBE)	0.07
Monochlorobenzene	0.1
Naphthalene	0.14
P-Dioxane*	0.0077
Pentachlorophenol*	0.001
Phenols	0.1
Picloram	0.5
Pyrene	0.21
Polychlorinated Biphenyls (PCBs) (as decachloro-biphenyl)*	0.0005
alpha-BHC (alpha-Benzene hexachloride)*	0.00011
Simazine	0.004
Styrene	0.1
2,4,5-TP (Silvex)	0.05
Tetrachloroethylene*	0.005
Toluene	1.0
Toxaphene*	0.003
1,1,1-Trichloroethane	0.2
1,1,2-Trichloroethane	0.005
1,2,4-Trichlorobenzene	0.07
Trichloroethylene*	0.005
Trichlorofluoromethane	2.1
Vinyl Chloride*	0.002
Xylenes	10.0

*Denotes a carcinogen.

c) Explosive Constituents

Concentrations of the following explosive constituents must not exceed the Class I groundwater standard:

Constituent	Standard (mg/L)
1,3-Dinitrobenzene	0.0007
2,4-Dinitrotoluene*	0.0001
2,6-Dinitrotoluene*	0.00031
HMX (High Melting Explosive, Octogen)	1.4
Nitrobenzene	0.014
RDX (Royal Demolition	

~~Explosive, Cyclonite)~~ ~~0.084~~
~~1,3,5-Trinitrobenzene~~ ~~0.84~~
~~2,4,6-Trinitrotoluene (TNT)~~ ~~0.014~~

~~*Denotes a carcinogen.~~

c)~~d)~~ Complex Organic Chemical Mixtures

1) Concentrations of the following chemical constituents ~~of gasoline, diesel fuel, or heating fuel~~ must not be exceeded in Class I groundwater:

CASRN	Constituent	Standard (mg/L)
71-43-2	Benzene[a]	0.005[b]
	Total BETX	11.705[c]

Constituent Name and Groundwater Quality Standard Notations

[a] The constituent meets the definition of a "carcinogen" in Section 620.110.

[b] The standard is based on the Maximum Contaminant Level (MCL), promulgated by USEPA, Office of Water, and Illinois Primary Drinking Water Standards at 35 Ill. Adm. Code 611.

[c] The standard is the total combined standard of benzene, ethylbenzene, toluene, and xylenes.

2) Atrazine and Metabolites

Concentrations of the following chemical constituents must not be exceeded in Class I groundwater.

CASRN	Constituent	Standard (mg/L)
1912-24-9	Atrazine	0.003[a]
	Total Atrazine and Metabolites	0.003
6190-65-4	DEA (desethyl-atrazine)	
1007-28-9	DIA (desisopropyl-atrazine)	
3397-62-4	DACT (diaminochlorotriazine)	

Groundwater Quality Standard Notation

[a]The standard is based on the Maximum Contaminant Level (MCL),

promulgated by USEPA, Office of Water, and Illinois Primary Drinking Water Standards at 35 Ill. Adm. Code 611.

~~Constituent~~	~~Standard (mg/L)~~
~~Benzene*~~	~~0.005~~
~~BETX~~	~~11.705~~

~~*Denotes a carcinogen.~~

d)~~e)~~ pH
Except due to natural causes, a pH range of 6.5 - 9.0 units must not be exceeded in Class I groundwater.

e)~~f)~~ Beta Particle and Photon Radioactivity

1) Except due to natural causes, the average annual concentration of beta particle and photon radioactivity from man-made radionuclides must ~~shall~~ not exceed a dose equivalent to the total body or any internal organ greater than 4 mrem/year in Class I groundwater. If two or more radionuclides are present, the sum of their dose equivalent to the total body~~,~~ or ~~to~~ any internal organ must ~~shall~~ not exceed 4 mrem/year in Class I groundwater except due to natural causes.

2) Except for the radionuclides specified ~~listed~~ in subsection (e~~f~~)(3), the concentration of man-made radionuclides causing 4 mrem total body or organ dose equivalent must be calculated on the basis of a 2 liter per day drinking water intake using the 168-hour data in compliance~~accordance~~ with the procedure specified ~~set forth~~ in NCRP Report Number 22, incorporated by reference in~~at~~ Section 620.125(a).

3) Except due to natural causes, the average annual concentration assumed to produce a total body or organ dose of 4 mrem/year of the following chemical constituents must ~~shall~~ not be exceeded in Class I groundwater:

CASRN	**Constituent**	**Critical Organ**	**Standard (pCi/L)**
10028-17-8	Tritium	Total Body	20,000
10098-97-2	Strontium-90	Bone Marrow	8.0

~~Constituent~~	~~Critical Organ~~	~~Standard (pCi/L)~~
~~Tritium~~	~~Total body~~	~~20,000.0~~
~~Strontium-90~~	~~Bone marrow~~	~~8.0~~

f) No facility that is subject to 35 Ill. Adm. Code 811 or 814 must comply with any requirement or standard of those rules to the extent it incorporates or is otherwise based on any of the following constituents or their standards under this Section:

CASRN	Constituent
13252-13-6	HFPO-DA (hexafluoropropylene oxide dimer acid GenX)
375-73-5	PFBS (perfluorobutanesulfonic acid)
355-46-4	PFHxS (perfluorohexanesulfonic acid)
375-95-1	PFNA (perfluorononanoic acid)
335-67-1	PFOA (perfluorooctanoic acid)
1763-23-1	PFOS (perfluorooctanesulfonic acid)

(Source: Amended at 48 Ill. Reg. _____, effective _____)

Section 620.420 Groundwater Quality Standards for Class II: General Resource Groundwater

a) Inorganic Chemical Constituents

1) Except due to natural causes or as provided in Section 620.450 or subsection (a)(3) or (e) of this Section, concentrations of the following chemical constituents must not be exceeded in Class II groundwater:

CASRN	Constituent	Standard (mg/L)[a]
7440-36-0	Antimony	0.024[b]
7440-38-2	Arsenic[b]	0.2[d]
7440-39-3	Barium	2.0[e]
7440-41-7	Beryllium	0.5[f]
7440-43-9	Cadmium	0.05[g]
7440-47-3	Chromium (total)	1.0[g]
7440-48-4	Cobalt	1[d]
143-33-9	Cyanide	0.6[d]
7681-49-4	Fluoride	42[ed]
7439-92-1	Lead	1.0[d]
7439-93-2	Lithium	2.5[f]
7487-94-7	Mercury (mercuric chloride)	0.01[d]
7439-98-7	Molybdenum	0.308[e]
14797-55-8	Nitrate as N	100[d]

14797-73-0	Perchlorate	0.0081[e]
7440-28-0	Thallium	0.02[h]
7440-62-2	Vanadium	0.1[d]

Constituent Name and Groundwater Quality Standard Notations

[a] The inorganic groundwater quality standards are based on total metal analyses for the evaluation of human health effects.

[b] A treatment factor of 4 is applied to the Class I groundwater quality standard. The constituent's treatment efficiency is based on the effectiveness to treat the constituent in the groundwater at an 75% removal efficiency rate for the constituent.

[c] The constituent meets the definition of a "carcinogen" in Section 620.110.

[d] The standard is based on beneficial use for watering livestock, per "*Water Quality Criteria*", by National Academy of Sciences, incorporated by reference in Section 620.125.

[e] The Class II standard is equal to the Class I groundwater quality standard.

[f] The standard is based on beneficial use for irrigation of crops, per "*Water Quality Criteria*", by National Academy of Sciences, incorporated by reference in Section 620.125.

[g] The standard is based on beneficial use for watering livestock and irrigation of crops, per "*Water Quality Criteria*", by National Academy of Sciences, incorporated by reference in Section 620.125.

[h] A treatment factor of 10 is applied to the Class I groundwater quality standard. The constituent's treatment efficiency is based on the effectiveness to treat the constituent in the groundwater at an 90% removal efficiency rate for the constituent.

~~Constituent~~	~~Standard (mg/L)~~
~~Antimony~~	~~0.024~~
~~Arsenic*~~	~~0.2~~
~~Barium~~	~~2.0~~
~~Beryllium~~	~~0.5~~
~~Cadmium~~	~~0.05~~
~~Chromium~~	~~1.0~~
~~Cobalt~~	~~1.0~~
~~Cyanide~~	~~0.6~~
~~Fluoride~~	~~4.0~~

~~Lead~~	~~0.1~~
~~Mercury~~	~~0.01~~
~~Nitrate as N~~	~~100.0~~
~~Perchlorate~~	~~0.0049~~
~~Thallium~~	~~0.02~~
~~Vanadium~~	~~0.1~~

~~*Denotes a carcinogen.~~

2) Except as provided in Section 620.450 or subsection (a)(3) or (e) of this Section, concentrations of the following chemical constituents must not be exceeded in Class II groundwater:

CASRN	Constituent	Standard (mg/L)[a,b]
7429-90-5	Aluminum	5[c]
7440-42-8	Boron	2[d]
16887-00-6	Chloride	200[e]
7440-50-8	Copper	0.5[c]
7439-89-6	Iron	5[e]
7439-96-5	Manganese	10[d]
7440-02-0	Nickel	2[d]
7440-14-4	Radium (combined 226+228)	5[f]
7782-49-2	Selenium	0.02[d]
7440-22-4	Silver	0.058[f]
14808-79-8	Sulfate	400[e]
	TDS (total dissolved solids)	1,200[e]
7440-66-6	Zinc	10[d]

Constituent Name and Groundwater Quality Standard Notations

[a] The standard units for radium (combined 226+228) is picocuries per liter (pCi/L).

[b] The inorganic groundwater quality standards are based on total metal analyses for the evaluation of human health effects.

[c] The standard is based on beneficial use for watering livestock and irrigation of crops, per "*Water Quality Criteria*", by National Academy of Sciences, incorporated by reference in Section 620.125.

[d] The standard is based on beneficial use for irrigation of crops, per "*Water Quality Criteria*", by National Academy of Sciences, incorporated by reference in Section 620.125.

[e] The standard is the 95% confidence concentration stated in the Agency's "*Integrated Water Quality Report and Section 303(d) List*", incorporated by reference in Section 620.125.

[f] The Class II standard is equal to the Class I groundwater quality standard.

~~Constituent~~	~~Standard (mg/L)~~
~~Boron~~	~~2.0~~
~~Chloride~~	~~200.0~~
~~Copper~~	~~0.65~~
~~Iron~~	~~5.0~~
~~Manganese~~	~~10.0~~
~~Nickel~~	~~2.0~~
~~Selenium~~	~~0.05~~
~~Total Dissolved Solids (TDS)~~	~~1,200.0~~
~~Sulfate~~	~~400.0~~
~~Zinc~~	~~10.0~~

3) The standards ~~standard~~ for any inorganic chemical constituent specified ~~listed~~ in subsection (a)(2) and ~~of this Section~~, ~~for~~ barium specified in subsection (a)(1) does not apply within fill material or within the upper 10 feet of parent material under fill material on a site not within the rural property class for which subsections (a)(3)(A) or (a)(3)(B) conditions are met. For ~~pH~~, the standard specified in subsection (d) does not apply to groundwater within fill material below 5 feet of land surface or within the upper 10 feet of parent material under ~~such~~ fill material on a site not within the rural property class for which subsections (a)(3)(A) or (a)(3)(B) conditions are met.~~:~~

A) Before~~Prior to~~ November 25, 1991, surficial characteristics have been altered by placing~~the placement of~~ the ~~such~~ fill material so as to impact the concentration of any parameter~~the parameters~~ (constituent or pH) specified in this ~~listed in~~ subsection (a)(3) ~~of this Section~~, and any on-site groundwater monitoring of ~~such~~ the parameter~~parameters~~ is available for review by the Agency.

B) On November 25, 1991, surficial characteristics are in the process of being altered by placing the~~the placement of such~~ fill material, ~~that proceeds~~ in a reasonably continuous manner to completion, so as to impact the concentration of any parameter (constituent or pH)

specified in thisthe parameters listed in subsection (a)(3) of this Section, and any on-site groundwater monitoring of the parametersuch parameters is available for review by the Agency.

4) For purposes of subsection (a)(3) of this Section, the term "fill material" means clean earthen materials, slag, ash, clean demolition debris, or other similar materials.

b) Organic Chemical Constituents

1) Except due to natural causes or as provided in Section 620.450 or subsection (b)(2) or (e) of this Section, concentrations of the following organic chemical constituents must not be exceeded in Class II groundwater:

CASRN	Constituent	Standard (mg/L)
83-32-9	Acenaphthene	1.2[a]
67-64-1	Acetone	3.5[b]
15972-60-8	Alachlor[c]	0.01[a]
116-06-3	Aldicarb	0.015[a]
120-12-7	Anthracene	6[a]
319-84-6	*alpha-BHC* (*alpha*-benzenehexachloride)[c]	0.00006[a]
71-43-2	Benzene[c]	0.025[a]
56-55-3	Benzo(a)anthracene[d]	0.0012[a]
205-99-2	Benzo(b)fluoranthene[d]	0.0012[a]
207-08-9	Benzo(k)fluoranthene[d]	0.012[a]
50-32-8	Benzo(a)pyrene[d]	0.002[e]
65-85-0	Benzoic acid	15[b]
78-93-3	2-Butanone (methyl ethyl ketone)	2.3[b]
1563-66-2	Carbofuran	0.2[a]
75-15-0	Carbon disulfide	1.9[a]
56-23-5	Carbon tetrachloride[c]	0.025[a]
12789-03-6	Chlordane[c]	0.01[a]
108-90-7	Chlorobenzene	0.5[a]
67-66-3	Chloroform[c]	0.35[a]
218-01-9	Chrysene[d]	0.12[a]
94-75-7	2,4-D (2,4-dichloroohenoxy acetic acid)	0.35[a]
75-99-0	Dalapon	2.0[e]
53-70-3	Dibenzo(a,h)anthracene[d]	0.0005[a]
96-12-8	1,2-Dibromo-3-	0.002[e]

	chloropropane[d]	
1918-00-9	Dicamba	0.12[b]
95-50-1	*o*-Dichlorobenzene (1,2-dichlorobenzene)	1.5[f]
106-46-7	*p*-Dichlorobenzene (1,4-dichlorobenzene)[c]	0.375[a]
75-71-8	Dichlorodifluoromethane	3.9[a]
75-34-3	1,1-Dichloroethane	3.9[a]
107-06-2	1,2-Dichloroethane[c]	0.025[a]
75-35-4	1,1-Dichloroethylene	0.035[a]
156-59-2	*cis*-1,2-Dichloroethylene	0.2[g]
156-60-5	*trans*-1.2-Dichloroethylene	0.5[a]
75-09-2	Dichloromethane (methylene chloride)[d]	0.025[a]
78-87-5	1,2-Dichloropropane[b]	0.025[a]
117-81-7	Di(2-ethylhexyl)phthalate[b]	0.06[e]
84-66-2	Diethyl phthalate	3.1[b]
84-74-2	Di-*n*-butyl phthalate	1.9[a]
99-65-0	1,3-Dinitrobenzene	0.001[b]
121-14-2	2,4-Dinitrotoluene[c]	0.005[a]
606-20-2	2,6-Dinitrotoluene[c]	0.005[a]
88-85-7	Dinoseb	0.07[e]
123-91-1	1,4-Dioxane (*p*-dioxane)[c]	0.00078[b]
145-73-3	Endothall	0.1[b]
72-20-8	Endrin	0.01[a]
100-41-4	Ethylbenzene[c]	1.0[h]
106-93-4	Ethylene dibromide (1,2-dibromoethane)[c]	0.0005[e]
206-44-0	Fluoranthene	0.75[a]
86-73-7	Fluorene	0.75[a]
58-89-9	*gamma*-HCH (*gamma*-hexachlorocyclohexane, lindane)[c]	0.001[a]
13252-13-6	HFPO-DA (hexafluoropropylene oxide dimer acid GenX)	0.000010[be]
2691-41-0	HMX (octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine)	3.9[a]
76-44-8	Heptachlor[c]	0.002[a]
1024-57-3	Heptachlor epoxide[c]	0.001[a]
77-47-4	Hexachlorocyclopentadiene	0.5[e]
193-39-5	Indeno(1,2,3-c,d)pyrene[d]	0.0012[a]
98-82-8	Isopropylbenzene (cumene)[c]	1.9[a]

93-65-2	MCPP (mecoprop)	0.1[b]
1634-04-4	MTBE (methyl tertiary-butyl ether)	0.5[e]
72-43-5	Methoxychlor	0.2[a]
90-12-0	1-Methylnaphthalene	1.35[a]
91-57-6	2-Methvlnaphthalene	0.075[a]
95-48-7	2-Methylphenol (*o*-cresol)	0.19[b]
91-20-3	Naphthalene	0.39[a]
98-95-3	Nitrobenzene	0.0077[b]
1336-36-3	PCBs (polychlorinated biphenyls as decachloro-biphenyl)[c]	0.0025[a]
375-73-5	PFBS (perfluorobutanesulfonic acid)	0.002[be]
355-46-4	PFHxS (perfluorohexanesulfonic acid)	0.000010[be]
375-95-1	PFNA (perfluorononanoic acid)	0.000010[be]
335-67-1	PFOA (perfluorooctanoic acid)[c]	0.000004[bcg]
1763-23-1	PFOS (perfluorooctanesulfonic acid)	0.000004[bc]
87-86-5	Pentachlorophenol	0.005[a]
108-95-2	Phenol	0.1[i]
1918-02-1	Picloram	5.0[e]
129-00-0	Pyrene	0.6[a]
121-82-4	RDX (hexahydro-l,3,5-trinitro-l,3,5-trianzine)	0.062[b]
122-34-9	Simazine	0.04[e]
100-42-5	Styrene	0.5[a]
118-96-7	TNT (2,4,6-trinitrotoluene)	0.039[a]
93-72-1	2,4,5-TP (silvex)	0.25[a]
127-18-4	Tetrachloroethylene[c]	0.025[a]
108-88-3	Toluene	2.5[f]
8001-35-2	Toxaphene[c]	0.015[a]
120-82-1	1,2,4-Trichlorobenzene	0.7[e]
71-55-6	1,1,1-Trichloroethane	1[a]
79-00-5	1,1,2-Trichloroethane	0.05[e]
79-01-6	Trichloroethylene[d]	0.025[a]
75-69-4	Trichlorofluoromethane	6[a]
99-35-4	1,3,5-Trinitrobenzene	2.3[a]
75-01-4	Vinyl chloride[d]	0.01[a]
1330-20-7	Xylenes	10[b]

Constituent Name and Groundwater Quality Standard Notations

[a] A treatment factor of 5 is applied to the Class I groundwater quality standard. The constituent's treatment efficiency is based on the effectiveness to treat the constituent in the groundwater at an 80% removal efficiency rate for the constituent.

[b] The Agency's treatment efficiency determination demonstrates a treatment factor is not applicable for the constituent. The standard is equal to the Class I groundwater quality standard.

[c] The constituent meets the definition of a "carcinogen" in Section 620.110.

[d] The constituent meets the definition of a "mutagen" in Section 620.110.

[e] A treatment factor of 10 is applied to the Class I groundwater quality standard. The constituent's treatment efficiency is based on the effectiveness to treat the constituent in the groundwater at a 90% removal efficiency rate for the constituent.

[f] A treatment factor of 2.5 is applied to the Class I groundwater quality standard. The constituent's treatment efficiency is based on the effectiveness to treat the constituent in the groundwater at a 60% removal efficiency rate for the constituent.

[g] A treatment factor of 3 is applied to the Class I groundwater quality standard. The constituent's treatment efficiency is based on the effectiveness to treat the constituent in the groundwater at a 65% removal efficiency rate for the constituent.

[h] A treatment factor of 1.5 is applied to the Class I groundwater quality standard. The constituent's treatment efficiency is based on the effectiveness to treat the constituent in the groundwater at a 30% removal efficiency rate for the constituent.

[i] The standard is based on 35 Ill. Adm. Code 302.208.

~~Constituent~~	~~Standard (mg/L)~~
~~Acenaphthene~~	~~2.1~~
~~Acetone~~	~~6.3~~
~~Alachlor*~~	~~0.010~~
~~Aldicarb~~	~~0.015~~
~~Anthracene~~	~~10.5~~
~~Atrazine~~	~~0.015~~

~~Benzene*~~	~~0.025~~
~~Benzo(a)anthracene*~~	~~0.00065~~
~~Benzo(b)fluoranthene*~~	~~0.0009~~
~~Benzo(k)fluoranthene*~~	~~0.006~~
~~Benzo(a)pyrene*~~	~~0.002~~
~~Benzoic acid~~	~~28.0~~
~~2-Butanone (MEK)~~	~~4.2~~
~~Carbon Disulfide~~	~~3.5~~
~~Carbofuran~~	~~0.2~~
~~Carbon Tetrachloride*~~	~~0.025~~
~~Chlordane*~~	~~0.01~~
~~Chloroform*~~	~~0.35~~
~~Chrysene*~~	~~0.06~~
~~Dalapon~~	~~2.0~~
~~Dibenzo(a,h)anthracene*~~	~~0.0015~~
~~Dicamba~~	~~0.21~~
~~Dichlorodifluoromethane~~	~~7.0~~
~~1,1-Dichloroethane~~	~~7.0~~
~~Dichloromethane*~~	~~0.05~~
~~Di(2-ethylhexyl)phthalate*~~	~~0.06~~
~~Diethyl Phthalate~~	~~5.6~~
~~Di-n-butyl Phthalate~~	~~3.5~~
~~Dinoseb~~	~~0.07~~
~~Endothall~~	~~0.1~~
~~Endrin~~	~~0.01~~
~~Ethylene Dibromide*~~	~~0.0005~~
~~Fluoranthene~~	~~1.4~~
~~Fluorene~~	~~1.4~~
~~Heptachlor*~~	~~0.002~~
~~Heptachlor Epoxide*~~	~~0.001~~
~~Hexachlorocyclopentadiene~~	~~0.5~~
~~Indeno(1,2,3-cd)pyrene*~~	~~0.0022~~
~~Isopropylbenzene (Cumene)~~	~~3.5~~
~~Lindane (Gamma-Hexachloro-cyclophexane)~~	~~0.001~~
~~2,4-D~~	~~0.35~~
~~Ortho-Dichlorobenze~~	~~1.5~~
~~Para-Dichlorobenzene~~	~~0.375~~
~~1,2-Dibromo-3-Chloropropane*~~	~~0.002~~
~~1,2-Dichloroethane*~~	~~0.025~~
~~1,1-Dichloroethylene~~	~~0.035~~
~~cis-1,2-Dichloroethylene~~	~~0.2~~
~~Trans-1,2-Dichloroethylene~~	~~0.5~~
~~1,2-Dichloropropane*~~	~~0.025~~
~~Ehylbenzene~~	~~1.0~~

~~MCPP (Mecoprop)~~	~~0.007~~
~~Methoxychlor~~	~~0.2~~
~~2-Methylnaphthalene~~	~~0.14~~
~~2-Methylphenol~~	~~0.35~~
~~Methyl Tertiary-Butyl Ether (MTBE)~~	~~0.07~~
~~Monochlorobenzene~~	~~0.5~~
~~Naphthalene~~	~~0.22~~
~~P-Dioxane*~~	~~0.0077~~
~~Pentachlorophenol*~~	~~0.005~~
~~Phenols~~	~~0.1~~
~~Picloram~~	~~5.0~~
~~Pyrene~~	~~1.05~~
~~Polychlorinated Biphenyls (PCBs) (as decachloro-biphenyl)*~~	~~0.0025~~
~~alpha-BHC (alpha-Benzene hexachloride)*~~	~~0.00055~~
~~Simazine~~	~~0.04~~
~~Styrene~~	~~0.5~~
~~2,4,5-TP~~	~~0.25~~
~~Tetrachloroethylene*~~	~~0.025~~
~~Toluene~~	~~2.5~~
~~Toxaphene*~~	~~0.015~~
~~1,1,1-Trichloroethane~~	~~1.0~~
~~1,2,4-Trichlorobenzene~~	~~0.7~~
~~1,1,2-Trichloroethane~~	~~0.05~~
~~Trichloroethylene*~~	~~0.025~~
~~Trichlorofluoromethane~~	~~10.5~~
~~Vinyl Chloride*~~	~~0.01~~
~~Xylenes~~	~~10.0~~

~~* Denotes a carcinogen.~~

2) The standards for pesticide chemical constituents specified~~listed~~ in subsection (b)(1) ~~of this Section~~ do not apply to groundwater within 10 feet of the land surface if~~, provided that~~ the concentrations of the ~~such~~ constituents result from applying~~the application of~~ pesticides in a manner consistent with ~~the requirements of~~ the Federal Insecticide, Fungicide, and Rodenticide Act (7 U.S.C.~~USC~~ 136 et seq.) and the Illinois Pesticide Act [415 ILCS 60].

~~c) Explosive Constituents~~

~~Concentrations of the following explosive constituents must not exceed the Class II groundwater standard:~~

~~Constituent~~	~~Standard~~

	~~(mg/L)~~
~~1,3-Dinitrobenzene~~	~~0.0007~~
~~2,4-Dinitrotoluene*~~	~~0.0001~~
~~2,6-Dinitrotoluene*~~	~~0.00031~~
~~HMX (High Melting Explosive, Octogen)~~	~~1.4~~
~~Nitrobenzene~~	~~0.014~~
~~RDX (Royal Demolition Explosive, Cyclonite)~~	~~0.084~~
~~1,3,5-Trinitrobenzene~~	~~0.84~~
~~2,4,6-Trinitrotoluene (TNT)~~	~~0.014~~

~~*Denotes a carcinogen.~~

c~~d)~~ Complex Organic Chemical Mixtures

1) Concentrations of the following organic chemical constituents ~~of gasoline, diesel fuel, or heating fuel~~ must not be exceeded in Class II groundwater:

CASRN	Constituent	Standard (mg/L)
71-43-2	Benzene[a]	0.025[b]
	Total BETX	13.525[c]

Constituent Name and Groundwater Quality Standard Notations

[a] The constituent meets the definition of a "carcinogen" in Section 620.110.

[b] A treatment factor of 5 is applied to the Class I groundwater quality standard. The constituent's treatment efficiency is based on the effectiveness to treat the constituent in the groundwater at an 80% removal efficiency rate for the constituent.

[c] The standard is the total combined Class II standard of benzene, ethylbenzene, toluene, and xylenes.

~~Constituent~~	~~Standard (mg/L)~~
~~Benzene*~~	~~0.025~~
~~BETX~~	~~13.525~~

~~*Denotes a carcinogen~~

2) Atrazine and Metabolites

Concentration of the following chemical constituents must not be exceeded in Class II groundwater.

CASRN	Constituent	Standard (mg/L)
1912-24-9	Atrazine	0.015[a]
	Total Atrazine and Metabolites	0.015
6190-65-4	DEA (desethyl-atrazine)	
1007-28-9	DIA (desisopropyl-atrazine)	
3397-62-4	DACT (diaminochlorotriazine)	

Constituent Name and Groundwater Quality Standard Notations:

[a] A treatment factor of 5 is applied to the Class I groundwater quality standard. The constituent's treatment efficiency is based on the effectiveness to treat the constituent in the groundwater at an 80% removal efficiency rate for the constituent.

d)~~e)~~ pH

Except due to natural causes, a pH range of 6.5 - 9.0 units must not be exceeded in Class II groundwater ~~that is within 5 feet of the land surface~~.

e) No facility that is subject to 35 Ill. Adm. Code 811 or 814 must comply with any requirement or standard of those rules to the extent it incorporates or is otherwise based on any of the following constituents or their standards under this Section:

CASRN	**Constituent**
13252-13-6	HFPO-DA (hexafluoropropylene oxide dimer acid GenX)
375-73-5	PFBS (perfluorobutanesulfonic acid)
355-46-4	PFHxS (perfluorohexanesulfonic acid)
375-95-1	PFNA (perfluorononanoic acid)
335-67-1	PFOA (perfluorooctanoic acid)
1763-23-1	PFOS (perfluorooctanesulfonic acid)

(Source: Amended at 48 Ill. Reg. _____, effective _____)

Section 620.430 Groundwater Quality Standards for Class III: Special Resource Groundwater

Except due to natural causes, concentrations ~~Concentrations~~ of inorganic and organic chemical constituents and ranges of pH must not exceed the standards specified~~set forth~~ in Section 620.410. This prohibition does not apply to~~, except for:~~ ~~those~~

a) Chemical~~chemical~~ constituents for which the Board has adopted standards~~a standard~~ under ~~pursuant to~~ Section 620.260; or ~~and~~.

b) Class III Special Resource Groundwater established under Section 620.230(b) and depicted in the Environmental Register, but only at the dedicated nature preserves identified in this subsection (b), and only for the conditions at those preserves for which standards are specified in this subsection (b).

1) The following standards apply for Pautler Cave Nature Preserve and Stemler Cave Nature Preserve (Environmental Register, May 2005, No.~~Num.~~ 611), Fogelpole Cave Nature Preserve (Environmental Register, May 2003, No.~~Num.~~ 587), and Armin Krueger Speleological Nature Preserve (Environmental Register, December 2009, No.~~Num.~~ 666):

Chloride	20 mg/L
pH	range of 7.0-9.0 Standard Units

2) The following standard applies for Cotton Creek Marsh Nature Preserve and Spring Grove Fen Nature Preserve (Environmental Register, July 2012, No.~~Num~~ 697):

Chloride	45 mg/L

(Source: Amended at 48 Ill. Reg. _____, effective _____)

Section 620.440 Groundwater Quality Standards for Class IV: Other Groundwater

a) Except as provided in subsection (b) ~~or~~ (c), (d), or (e), Class IV: Other Groundwater standards are equal to the existing concentrations of constituents in groundwater.

b) For groundwater within a zone of attenuation as defined in 35 Ill. Adm. Code Part 810.103 and clarified, as applicable, by 35 Ill. Adm. Code 811.320(c) ~~as provided in 35 Ill. Adm. Code 811 and 814~~, the standards specified in Section 620.420 must not be exceeded. This prohibition does not apply to any~~, except for~~ concentrations of contaminants within leachate released from a permitted unit.

c) For groundwater within a previously mined area, the standards specified ~~set forth~~

in Section 620.420 must not be exceeded, except the standards are the existing concentrations for ~~concentrations of~~ TDS, chloride, iron, manganese, sulfates, pH, 1,3-dinitrobenzene, 2,4-dinitrotoluene, 2,6-dinitrotoluene, HMX (octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine ~~high melting explosive, octogen~~), nitrobenzene, RDX (hexahydro-1,3,5-trinitro-1,3,5-triazine royal ~~demolition explosive, cyclonite~~), 1,3,5-trinitrobenzene, and ~~or~~ TNT (2,4,6-trinitrotoluene ~~(TNT~~). ~~For concentrations of TDS, chloride, iron, manganese, sulfates, pH, 1,3-dinitrobenzene, 2,4-dinitrotoluene, 2,6-dinitrotoluene, HMX, nitrobenzene, RDX, 1,3,5-trinitrobenzene, or 2,4,6-trinitrotoluene (TNT), the standards are the existing concentrations.~~

d) For groundwater regulated under Part 845, the groundwater protection standard (GWPS) under Section 845.600 must not be exceeded for any constituent with a GWPS under Section 845.600. For any constituent that does not have a GWPS under Section 845.600, the groundwater quality standards (GWQS) of Sections 620.410, 620.420, 620.430 or 620.440(b) and (c) apply.

e) Nothing in this Section limits underground injection in compliance with an underground injection control program administered by the Agency under the Act, by the Department of Natural Resources, Office of Oil and Gas Resource Management under the Illinois Oil and Gas Act [225 ILCS 725], or by USEPA under the federal UIC regulations [40 CFR 144].

(Source: Amended at 48 Ill. Reg. _____, effective _____)

Section 620.450 Alternative Groundwater Quality Standards

a) Groundwater Quality Restoration Standards

1) Subsections (a)(3) and (a)(4)(B) apply to all released ~~Any~~ chemical constituents~~constituent~~ in groundwater within a groundwater management zone (GMZ) that are the ~~is~~ subject of the GMZ approved under Section 620.250(c)(2)~~to this Section~~.

2) Subsection (a)(4)(A) applies ~~Except as provided in subsections (a)(3) or (a)(4), the standards as specified in Sections 620.410, 620.420, 620.430, and 620.440 apply~~ to all released ~~any~~ chemical constituents ~~constituent~~ in groundwater within a three-dimensional region formerly encompassed by a GMZ that were the subject of the GMZ approved under Section 620.250(c)(2)~~groundwater management zone~~.

3) Before the Agency issues a written determination approving the demonstration of the site owner or operator under Section 620.250(d)(1) or (d)(2)~~Prior to completion of a corrective action described in Section 620.250(a)~~, none of the standards ~~as~~ specified in Section ~~Sections~~ 620.410, 620.420, 620.430, or ~~and~~ 620.440 apply to ~~are not applicable to~~ any ~~such~~

released chemical constituent if the owner or operator performs and complies with the schedule for all parts of the GMZ, ~~provided that the initiated action proceeds in a timely and appropriate manner~~.

4) After the Agency issues a written determination approving the demonstration of the site owner or operator under Section 620.250(d)(1) or (d)(2)~~completion of a corrective action as described in Section 620.250(a)~~, the standard for each ~~such~~ released chemical constituent is:

A) The standard specified ~~as set forth~~ in Section 620.410, 620.420, 620.430, or 620.440~~,~~ if the concentration of the constituent, as determined by groundwater monitoring, ~~of such constituent~~ is less than or equal to the standard for the applicable ~~appropriate~~ class of groundwater specified~~set forth~~ in one of those Sections; or

B) The concentration of the constituent, as determined by groundwater monitoring, if the ~~such~~ concentration exceeds the standard for the otherwise applicable ~~appropriate~~ class of groundwater specified ~~set forth~~ in Section 620.410, 620.420, 620.430, or 620.440 ~~for such constituent,~~ and:

i) To the extent practicable, the exceedance ~~exceedence~~ has been minimized and beneficial use, as appropriate for the otherwise applicable class of groundwater, has been returned; and

ii) Any threat to public health or the environment has been minimized.

5) The Agency must ~~shall~~ develop and maintain a list ~~listing~~ of all concentrations derived under ~~pursuant to~~ subsection (a)(4)(B). For each concentration, the list must identify~~, identifying~~ the location of the ~~each~~ corresponding GMZ. On its website (https://epa.illinois.gov), the ~~The~~ Agency must post ~~make~~ the ~~This~~ list ~~shall be made available to the public~~ and, at least ~~be updated periodically, but no less frequently than~~ semi-annually, update it. In addition, at least annually, the ~~The~~ Agency must submit ~~publish~~ the list to the Board for publication~~This listing shall be published~~ in the Environmental Register ~~at least annually~~.

b) Coal Reclamation Groundwater Quality Standards

1) Any inorganic chemical constituent or pH in groundwater, within an underground coal mine, or within the cumulative impact area of groundwater for which the hydrologic balance has been disturbed from a permitted coal mine area under ~~pursuant to~~ the Surface Coal Mining Land

Conservation and Reclamation Act [225 ILCS 720] and 62 Ill. Adm. Code 1700 through 1850, is subject to this subsection (b)~~Section~~.

2) Before~~Prior to~~ completion of reclamation at a coal mine, the standards ~~as~~ specified in Sections 620.410(a) and (e), 620.420(a) and (e), 620.430, and 620.440 do ~~are~~ not apply~~applicable~~ to inorganic constituents and pH.

3) After completion of reclamation at a coal mine, the standards ~~as~~ specified in Sections 620.410(a) and (e), 620.420(a), 620.430, and 620.440 apply ~~are applicable~~ to inorganic constituents and pH, except:

A) The concentration of total dissolved solids (TDS) must not exceed:

i) The post-reclamation concentration of TDS or 3000 mg/L, whichever is less, for groundwater within the permitted area; or

ii) The post-reclamation concentration of TDS ~~must not exceed the post-reclamation concentration~~ or 5000 mg/L, whichever is less, for groundwater in underground coal mines and in permitted areas reclaimed after surface coal mining if the Illinois Office of Mines and Minerals, Department of Natural Resources ~~Department of Mines and Minerals~~ and the Agency have determined that no significant resource groundwater existed before ~~prior to~~ mining (62 Ill. Adm. Code 1780.21(f) and (g)).~~; and~~

B) The concentration of ~~For~~ chloride, iron, manganese, and sulfate, must not exceed the post-reclamation concentration within the permitted area ~~must not be exceeded~~.

C) ~~For~~ pH must not exceed~~,~~ the post-reclamation concentration within the permitted area in ~~must not be exceeded within~~ Class I: Potable Resource Groundwater described ~~as specified~~ in Section 620.210(a)(4).

D) The concentration of ~~For~~ 1,3-dinitrobenzene, 2,4-dinitrotoluene, 2,6-dinitrotoluene, HMX (octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine ~~high melting explosive, octogen~~), nitrobenzene, RDX (hexahydro-1,3,5-trinitro-1,3,5-triazine ~~royal demolition explosive, cyclonite~~), 1,3,5-trinitrobenzene, and TNT (2,4,6-trinitrotoluene ~~(TNT~~) must not exceed~~,~~ the post-reclamation concentration within the permitted area ~~must not be exceeded~~.

4) A refuse disposal area (not contained within the area from which

overburden has been removed) is subject to the inorganic chemical constituent and pH requirements of:

A) 35 Ill. Adm. Code 302.Subparts B and C, except due to natural causes, for an ~~such~~ area that began operating ~~was placed into operation~~ after February 1, 1983, and before November 25, 1991~~the effective date of this Part~~, if ~~provided that~~ the groundwater is a present or a potential source of water for public or food processing;

B) Section 620.440(c) for an ~~such~~ area that began operating ~~was placed into operation~~ before ~~prior to~~ February 1, 1983, and has remained in continuous operation since that date; or

C) Subpart D ~~of this Part~~ for an ~~such~~ area that begins operating ~~is placed into operation~~ on or after November 25, 1991~~the effective date of this Part~~.

5) For a refuse disposal area (not contained within the area from which overburden has been removed) that began operating ~~was placed into operation~~ before ~~prior to~~ February 1, 1983, and is modified after that date to include additional area, this subsection (b) ~~Section~~ applies to the area that complies with ~~meets the requirements of~~ subsection (b)(4)(C) and the following applies to the additional area:

A) 35 Ill. Adm. Code 302.Subparts B and C, except due to natural causes, for an ~~such~~ additional refuse disposal area began operating ~~that was placed into operation~~ after February 1, 1983, and before November 25, 1991~~the effective date of this Part~~, if ~~provided that~~ the groundwater is a present or ~~a~~ potential source of water for public or food processing; and

B) Subpart D for an ~~such~~ additional area began operating ~~that was placed into operation~~ on or after November 25, 1991~~the effective date of this Part~~.

6) A coal preparation plant (not ~~located~~ in an area from which overburden has been removed) that ~~which~~ contains slurry material, sludge, or other precipitated process material~~,~~ is subject to the inorganic chemical constituent and pH requirements of:

A) 35 Ill. Adm. Code 302.Subparts B and C, except due to natural causes, for a ~~such~~ plant began operating ~~that was placed into operation~~ after February 1, 1983, and before November 25, 1991~~the effective date of this Part~~, if ~~provided that~~ the groundwater

is a present or a potential source of water for public or food processing;

B) Section 620.440(c) for a ~~such~~ plant began operating before ~~that was placed into operation prior to~~ February 1, 1983, and has remained in continuous operation since that date; or

C) Subpart D for a ~~such~~ plant that begins operating~~is placed into operation~~ on or after November 25, 1991~~the effective date of this Part~~.

7) For a coal preparation plant (not ~~located~~ in an area from which overburden has been removed) that ~~which~~ contains slurry material, sludge, or other precipitated process material, ~~that~~ began operating before ~~was placed into operation prior to~~ February 1, 1983, and is modified after that date to include additional area, this subsection (b)~~Section~~ applies to the area that complies with ~~meets the requirements of~~ subsection (b)(6)(C) and the following applies to the additional area:

A) 35 Ill. Adm. Code 302.Subparts B and C, except due to natural causes, for an ~~such~~ additional area that began operating~~was placed into operation~~ after February 1, 1983, and before November 25, 1991~~the effective date of this Part~~, if ~~provided that~~ the groundwater is a present or ~~a~~ potential source of water for public or food processing; and

B) Subpart D for an ~~such~~ additional area began operating ~~that was placed into operation~~ on or after November 25, 1991~~the effective date of this Part~~.

c) Groundwater Quality Standards for Specified ~~Certain~~ Groundwater Subject to a No Further Remediation Letter under the Site Remediation Program (35 Ill. Adm. Code ~~Part~~ 740). While a No Further Remediation Letter is in effect for a region formerly encompassed by a GMZ ~~groundwater management zone~~ established under 35 Ill. Adm. Code 740.530, the applicable groundwater quality standards for the specified "contaminants of concern", as defined in 35 Ill. Adm. Code 740.120, within that ~~such~~ area are ~~shall be~~ the groundwater objectives ~~Groundwater Objectives groundwater objectives~~ achieved as documented in the approved Remedial Action Completion Report.

(Source: Amended at 48 Ill. Reg. _____, effective _____)

SUBPART E: GROUNDWATER MONITORING AND ANALYTICAL PROCEDURES

Section 620.505 Compliance Determination

a) Except as this Part provides otherwise, compliance ~~Compliance~~ with the standards of this Part at a site is to be determined as follows:

1) For a structure (e.g., buildings), at the closest practicable~~practical~~ distance beyond the outermost edge of ~~for~~ the structure.

2) For groundwater that underlies a potential primary or secondary source, the outermost edge as specified in Section 620.240(e)(1).

3) For groundwater that underlies a coal mine refuse disposal area, a coal combustion waste disposal area, or an impoundment that contains sludge, slurry, or precipitated process material at a coal preparation plant, the outermost edge as specified in Section 620.240(f)(1) or the location of monitoring wells in existence as of November 25, 1991, ~~the effective date of this Part~~ on a permitted site.

4) For a groundwater management zone, as specified in a corrective action process.

5) For groundwater, any point where monitoring is conducted using a water well~~,~~ or a monitoring well that meets one of the following conditions:

A) For a potable water supply well if: ~~geologic~~

i) Geologic logs exist for this well; ~~or geologic~~

ii) Geologic logs in the immediate 1,000-foot area of this well are representative of the hydrogeologic materials encountered by this well as determined by a licensed professional geologist or a licensed professional engineer; or ~~a~~

iii) A WHPA has been delineated outside of an applicable setback zone of a community water well or well field in compliance ~~accordance~~ with the "Guidance Document for Groundwater Protection Needs Assessments~~,~~" ~~incorporated by reference at Section 620.125,~~ and "The Illinois Wellhead Protection Program," incorporated by reference in~~at~~ Section 620.125.

B) For a potable water supply well other than a community water supply well, a construction report has been filed with the Department of Public Health for the~~such~~ potable well, or the~~such~~ well has been located and constructed (or reconstructed) to meet

the Illinois Water Well Construction Code [415 ILCS 30] and 77 Ill. Adm. Code 920.

C) For a potable water supply well that was constructed before ~~prior to~~ August 20, 1965, the well ~~enactment of the Illinois Water Well Construction Code [415 ILCS 30], and~~ meets ~~all of~~ the following criteria:

i) Construction must be done in a manner that will enable the collection of groundwater samples that represent in situ groundwater conditions;

ii) Casings and screens must be made from durable material resistant to expected chemical or physical degradation that do not interfere with the quality of groundwater samples being collected; and

iii) The annular space opposite the screened section of the well (i.e., the space between the bore hole and well screen) must be filled with gravel or sand if necessary to collect groundwater samples. The annular space above and below the well screen must be sealed to prevent migration of water from adjacent formations and the surface to the sampled depth.

D) For a community water supply well, the ~~such~~ well has been permitted by the Agency~~,~~ or ~~has been~~ constructed in compliance~~accordance~~ with 35 Ill. Adm. Code 602.115.

E) For a water well other than a potable water supply well (e.g., a livestock watering well or an irrigation well), a construction report has been filed with the Department of Public Health or the Office of Mines and Minerals in the Department of Natural Resources for the~~such~~ well, or the ~~such~~ well has been located and constructed (or reconstructed) to meet the Illinois Water Well Construction Code [415 ILCS 30] and 35 Ill. Adm. Code 920.

F) For a monitoring well, the ~~such~~ well meets the following requirements:

i) Construction must be done in a manner that will enable the collection of groundwater samples;

ii) Casings and screens must be made from durable material resistant to expected chemical or physical degradation that

do not interfere with the quality of groundwater samples being collected; and

iii) The annular space opposite the screened section of the well (i.e., the space between the bore hole and well screen) must be filled with gravel or sand if necessary to collect groundwater samples. The annular space above and below the well screen must be sealed to prevent migration of water from adjacent formations and the surface to the sampled depth.

6) Monitoring must~~shall~~ not be conducted for compliance determinations under~~pursuant to~~ subsection (a) ~~of this Section~~:

A) Using ~~For~~ a water well that is:

i) Less than 15 feet in total depth from the land surface,

ii) bored or dug,

iii) constructed of permeable materials (e.g., cement, tile, stone, or brick), and

iv) 36 inches or more in diameter.

B) Using ~~For~~ a water well with water quality problems due to damaged well-construction ~~well construction~~ materials or poorly designed ~~poorly-designed~~ well construction;

C) Using~~For~~ a water well in a basement or pit; or

D) Using water-well ~~For water well~~ water from a holding tank.

b) For a spring, compliance with this Subpart must~~shall~~ be determined at the point of emergence.

(Source: Amended at 48 Ill. Reg. _____, effective _____)

Section 620.510 Monitoring and Analytical Requirements

a) Representative Samples
A representative sample must ~~shall~~ be taken from locations as specified in Section 620.505.

b) Sampling and Analytical Procedures

1) Samples must be collected in compliance~~accordance~~ with the procedures specified ~~set forth~~ in the documents pertaining to groundwater monitoring and analysis ~~"Methods for Chemical Analysis of Water and Wastes," "Methods for the Determination of Inorganic Substances in Environmental Samples," "Methods for the Determination of Metals in Environmental Samples," "Methods for the Determination of Organic Compounds in Drinking Water," "Methods for the Determination or Organic Compounds in Drinking Water, Supplement I," "Methods for the Determination of Organic Compounds in Drinking Water, Supplement II," "Methods for the Determination of Organic Compounds in Drinking Water, Supplement III," "Methods for the Determination of Organic and Inorganic Compounds in Drinking Water," "Prescribed Procedures for Measurement of Radioactivity in Drinking Water," "Procedures for Radiochemical Analysis of Nuclear Reactor Aqueous Solutions," "Radiochemical Analytical Procedures for Analysis of Environmental Samples," "Radiochemistry Procedures Manual," "Practical Guide for Ground Water Sampling," "Test Methods for Evaluating Solid Wastes, Physical/Chemical Methods" (SW-846), 40 CFR 136, appendix B, 40 CFR 141.80, 40 CFR 141.61, and 40 CFR 141.62, "Techniques of Water Resources Investigations of the United States Geological Survey, Guidelines for Collection and Field Analysis of Ground Water Samples for Selected Unstable Constituents," "Practical Guide for Ground Water Sampling," "Techniques of Water Resources Investigations of the United States Geological Survey, Guidelines for Collection and Field Analysis of Ground Water Samples for Selected Unstable Constituents,"~~ incorporated by reference in ~~at~~ Section 620.125 or other procedures adopted by the appropriate regulatory agency.

2) Groundwater elevation in a groundwater monitoring well must be determined and recorded when necessary to determine the gradient.

3) Except as specified in other regulations, statistical methods used to determine naturally occurring groundwater quality background concentrations of contaminants must be conducted in compliance with "Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, (March 2009 Unified Guidance)", incorporated by reference in Section 620.125, for use with prediction limits and all other statistical tests, including confidence limits and control charts.

4)~~3)~~ The analytical methodology used for analyzing ~~the analysis of~~ constituents specified in Subparts C and D must comply ~~be consistent~~ with ~~both of~~ the following:

A) The methodology must have ~~an~~ LLOQ or LCMRL ~~PQL~~ at or

below the preventive response level~~levels~~ of Subpart C or the groundwater standard of ~~set forth in~~ Subpart D, whichever applies~~is applicable~~; and

B) "Methods for Chemical Analysis of Water and Wastes~~,~~", "Methods for the Determination of Inorganic Substances in Environmental Samples~~,~~", "Methods for the Determination of Metals in Environmental Samples~~,~~", "Methods for the Determination of Organic Compounds in Drinking Water~~,~~", "Methods for the Determination of Organic Compounds in Drinking Water, Supplement I~~,~~", "Methods for the Determination of Organic Compounds in Drinking Water, Supplement II~~,~~", "Methods for the Determination of Organic Compounds in Drinking Water, Supplement III~~,~~", "Methods for the Determination of Organic and Inorganic Compounds in Drinking Water~~,~~", "Prescribed Procedures for Measurement of Radioactivity in Drinking Water~~,~~", "Procedures for Radiochemical Analysis of Nuclear Reactor Aqueous Solutions~~,~~", "Radiochemical Analytical Procedures for Analysis of Environmental Samples~~,~~", "Radiochemistry Procedures Manual~~,~~", "Practical Guide for Ground Water Sampling~~,~~", "Test Methods for Evaluating Solid Wastes, Physical/Chemical Methods" (SW-846), 40 CFR 136, appendix B, 40 CFR 141.80, 40 CFR 141.61, and 40 CFR 141.62, "Techniques of Water Resources Investigations of the United States Geological Survey, Guidelines for Collection and Field Analysis of Ground Water Samples for Selected Unstable Constituents~~,~~", "Practical Guide for Ground-Water Sampling", "Techniques of Water Resources Investigations of the United States Geological Survey, Guidelines for Collection and Field Analysis of Ground-Water Samples for Selected Unstable Constituents", or other procedures incorporated by reference in~~at~~ Section 620.125.

C) When sampling for Hexafluoropropylene oxide dimer acid (HFPO-DA), Perfluorobutanesulfonic acid -(PFBS), -Perfluorohexanesulfonic- acid -(PFHxS), -Perfluorononanoic -acid -(PFNA), Perfluorooctanoic acid (PFOA), Perfluorooctanesulfonic acid (PFOS), the incorporations by reference in 620.125 that are applicable for sample collection, preservation, storage and analysis are:

"Standard Test Method for Determination of Per- and Polyfluoroalkyl Substances in Water, Sludge, Influent, Effluent, and Wastewater by Liquid Chromatography

Tandem Mass Spectrometry (LC/MS/MS) ASTM D7979-20.

U.S. EPA, Office of Ground Water and Drinking Water, Standards and Risk Management Division. "Method 533: Determination of Per- and Polyfluoroalkyl Substances in Drinking Water by Isotope Dilution Anion Exchange Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry," November 2019. https://www.epa.gov/sites/default/files/2019-12/documents/method-533-815b19020.pdf.

c) Reporting Requirements
Groundwater ~~At a minimum, groundwater~~ monitoring analytical results must include information, procedures, and techniques for:

1) Sample collection (including ~~but not limited to~~ name of sample collector, time and date of the sample, method of collection, and identification of the monitoring location);

2) Sample preservation and shipment (including ~~but not limited to~~ field quality control);

3) Analytical procedures (including ~~but not limited to~~ the MDL, LLOQ, or LCMRL ~~method detection limits and the PQLs~~); and

4) Chain of custody control.

(Source: Amended at 48 Ill. Reg. _____, effective _____)

SUBPART F: HEALTH ADVISORIES

Section 620.601 Purpose of a Health Advisory

This Subpart establishes procedures for issuing ~~the issuance of~~ a Health Advisory that specifies ~~sets forth~~ guidance levels that, in the absence of standards in ~~under~~ Section 620.410, must be considered by the Agency in:

a) Establishing groundwater cleanup or action levels when ~~whenever~~ there is a release or substantial threat of a release of:

1) A hazardous substance or pesticide; or

2) Any other ~~Other~~ contaminant that represents a significant hazard to public health or the environment.

b) Determining whether a ~~the~~ community water supply is taking its raw water from a site or source in compliance ~~consistent~~ with the siting and source water requirements of 35 Ill. Adm. Code 604.200~~611.114 and 611.115~~.

c) Developing Board rulemaking proposals for new or revised numerical standards.

d) Evaluating mixtures of chemical substances.

(Source: Amended at 48 Ill. Reg. _____, effective _____)

Section 620.605 Issuance of a Health Advisory

a) The Agency must ~~shall~~ issue a Health Advisory for a chemical substance if ~~all of~~ the following conditions are met:

1) A community water supply well is sampled and the chemical ~~a~~ substance is detected and confirmed by resampling;

2) There is no standard in ~~under~~ Section 620.410 for the ~~such~~ chemical substance; and

3) The chemical substance is toxic or harmful to human health according to the procedures specified in ~~of~~ Appendix A, B, or C.

b) The Health Advisory must contain a general description of the characteristics of the chemical substance, the potential adverse health effects, and a guidance level to be determined as follows:

1) If disease or functional impairment is caused due to a physiological mechanism for which ~~where~~ there is a threshold dose below which no damage occurs, the guidance level for the chemical ~~any such~~ substance is ~~shall be~~ the Maximum Contaminant Level Goal (MCLG)~~,~~ adopted by USEPA for the ~~such~~ substance, 40 CFR 136, appendix B, 40 CFR 141.80, 40 CFR 141.61, and 40 CFR 141.62, incorporated by reference in ~~at~~ Section 620.125.

2) If there is no MCLG for the chemical substance, the guidance level is either the Human Threshold Toxicant Advisory Concentration or the Human Nonthreshold Toxicant Advisory Concentration for the ~~such~~ substance as determined in compliance ~~accordance~~ with Appendix A, whichever is less, unless the lower concentration ~~for such substance~~ is less than the substance's lowest appropriate LLOQ ~~PQL~~ specified in "Test Methods for Evaluating Solid Wastes, Physical/Chemical Methods", EPA Publication No. SW-846 (SW-846), incorporated by reference in ~~at~~

Section 620.125, or the substance's lowest appropriate LCMRL specified in the drinking water methods incorporated by reference in Section 620.125 ~~for the substance~~.

3) If the concentration for the chemical ~~such~~ substance under subsection (b)(2) is less than its ~~the~~ lowest appropriate LLOQ or LCMRL~~PQL for the substance specified in SW-846, incorporated by reference at Section 620.125~~, the guidance level is the lowest appropriate LLOQ or LCMRL~~PQL~~.

~~2) If the chemical substance is a carcinogen, the guidance level for any such chemical substance is the one-in-one-million cancer risk concentration, unless the concentration for such substance is less than the lowest appropriate PQL specified in "Test Methods for Evaluating Solid Wastes, Physical/Chemical Methods," EPA Publication No. SW-846 (SW-846), incorporated by reference at Section 620.125 for such substance. If the concentration for such substance is less than the lowest appropriate PQL for the substance specified in SW-846, the guidance level is the lowest appropriate PQL. The one-in-one-million cancer risk concentration, the Human Nonthreshold Toxicant Advisory Concentration (HNTAC), shall be determined according to the following equation:~~

$$\frac{HNTAC}{(mg/L)} = \frac{TR \times BW \times AT \times 365\ days/year}{SFo \times IR \times EF \times ED}$$

~~Where:~~

~~TR = Target Risk = 1.0E-06~~
~~BW = Body Weight = 70 kg~~
~~AT = Averaging Time = 70 years~~
~~SFo = Oral Slope Factor = Chemical-specific~~
~~IR = Daily Water Ingestion Rate = 2 liters/day~~
~~EF = Exposure Frequency = 350 days/year~~
~~ED = Exposure Duration = 30 years~~

(Source: Amended at 48 Ill. Reg. _____, effective _____)

Section 620.610 Publishing Health Advisories

a) The Agency mustshall publish the full text of each Health Advisory upon issuance and make the document available to the public.

b) The Agency must~~shall~~ publish and make available to the public, at intervals of not more than 6 months, a comprehensive and up-to-date summary list of all Health Advisories.

(Source: Amended at 48 Ill. Reg. _____, effective _____)

Section 620.615 Additional Health Advice for Mixtures of Similar-Acting Substances

a) The Agency must determine the need for additional health advice appropriate to site-specific conditions ~~shall be determined by the Agency~~ when mixtures of chemical substances are detected and ~~, where~~ two or more of the chemical substances are similar-acting in their toxic or harmful physiological effect on the same specific organ or organ system.

b) If mixtures of similar-acting chemical substances are present, the procedure for evaluating the mixture of the ~~such~~ substances is specified in ~~accordance with~~ Appendices A, B, and C.

(Source: Amended at 48 Ill. Reg. _____, effective _____)

Section 620.APPENDIX A Procedures for Determining Human ~~Threshold~~ Toxicant Advisory Concentrations~~Concentration~~ for Class I: Potable Resource Groundwater

a) Calculating the Human ~~Threshold~~ Toxicant Advisory Concentration for Noncancer Effects

If~~For those substances for which~~ USEPA has not adopted a Maximum Contaminant Level Goal (MCLG) for a substance, the Human Threshold Toxicant Advisory Concentration for the substance is calculated as follows:

$$HTTAC = \frac{RSC \bullet ADE}{W}$$

~~HTTAC = RSCxADE~~
~~W~~

Where:

HTTAC = Human Threshold Toxicant Advisory Concentration in milligrams per liter (mg/L);

RSC = Relative contribution of the amount of the exposure to a chemical via drinking water when compared to the total exposure to that chemical from all sources. Valid chemical-specific data must ~~shall~~ be used if available. If valid chemical-specific data are not available, a value of 20% (= 0.20) must be used;

ADE = Acceptable Daily Exposure of substance in milligrams per day (mg/d) as determined under ~~pursuant to~~ subsection (b); and

W = Per capita daily water consumption for a child (0-6 years of age, equal to 0.78 ~~2~~ liters per day (L/d).

b) Procedures for Determining Acceptable Daily Exposures for Class I: Potable Resource Groundwater

1) The Acceptable Daily Exposure (ADE) represents the maximum amount of a threshold toxicant in milligrams per day (mg/d) that,~~, which~~ if ingested daily by a child from 0-6 years of age, ~~for a lifetime~~ results in no adverse effects ~~to humans~~. Subsections (b)(2) through (b)(6) list, in prescribed order, methods for determining the ADE in Class I: Potable Resource Groundwater.

2) If the noncancer toxicity value of a substance has been derived and presented in milligrams per kilogram per day (mg/kg/day), the ADE of the substance equals the product of multiplying the toxicity value by 15 kilograms (kg), which is the assumed average weight of a child 0 to 6 years of age. ~~For those substances for which the USEPA has derived a Verified Oral Reference Dose for humans, USEPA's Reference Dose given in milligrams per kilogram per day (mg/kg/d), as determined in accordance with methods provided in National Primary and Secondary Drinking Water Regulations, 40 CFR 136, appendix B, 40 CFR 141.80, 40 CFR 141.61, and 40 CFR 141.62, incorporated by reference at Section 620.125, must be used. The ADE equals the product of multiplying the Reference Dose by 70 kilograms (kg), which is the assumed average weight of an adult human.~~

3) If the oral reference dose of a substance is not available, the ADE of the substance equals the value of the most sensitive Point of Departure (POD) as determined by Benchmark Dose Modeling or the NOAEL/LOAEL approach consistent with current USEPA RfD guidance, followed by the derivation of a Human Equivalent Dose (HED) using physiologically based pharmacokinetic (PBPK) modeling or Dose Adjustment Factor (DAF), then divided by the total Uncertainty Factor (UF) and modifying factor (MF), if applicable. The value is then multiplied by 15 kg (the

assumed average weight of a child 0-6 years of age). The equation is as follows:

$$ADE = \frac{POD}{UF} \bullet 15kg$$

~~For those substances for which a no observed adverse effect level for humans (NOAEL-H) exposed to the substance has been derived, the ADE equals the product of multiplying one-tenth of the NOAEL-H given in milligrams of toxicant per kilogram of body weight per day (mg/kg/d) by the average weight of an adult human of 70 kilograms (kg). If two or more studies are available, the lowest NOAEL-H must be used in the calculation of the ADE.~~

4) Uncertainty Factors must be applied to the Point of Departure (POD) in increments of 1, 3, or 10, not to exceed a total UF of 10,000, and must be used consistent with USEPA guidance. A composite UF of 3 and 10 must be expressed as 30. A composite UF of 3 and 3 must be expressed as 10. UFs may be used to account for the following:

A) Interspecies Variability

B) Intraspecies Variability

C) Lowest Observable Adverse Effects Level (LOAEL) to No Observerd Adverse Effects Level (NOAEL) Uncertainty

D) Database Deficiencies

E) Subchronic to Chronic Duration

~~For those substances for which only a lowest observed adverse effect level for humans (LOAEL-H) exposed to the substance has been derived, one-tenth the LOAEL-H must be substituted for the NOAEL-H in subsection (b)(3).~~

~~5) For those substances for which a no observed adverse effect level has been derived from studies of mammalian test species (NOAEL-A) exposed to the substance, the ADE equals the product of multiplying 1/100 of the NOAEL-A given in milligrams toxicant per kilogram of test species weight per day (mg/kg/d) by the average weight of an adult human of 70 kilograms (kg). Preference will be given to animal studies having High Validity, as defined in subsection (c), in the order listed in that subsection. Studies having a Medium Validity must be considered if no studies having~~

~~High Validity are available. If studies of Low Validity must be used, the ADE must be calculated using 1/1000 of the NOAEL-A having Low Validity instead of 1/100 of the NOAEL-A of High or Medium Validity, except as described in subsection (b)(6). If two or more studies among different animal species are equally valid, the lowest NOAEL-A among animal species must be used in the calculation of the ADE. Additional considerations in selecting the NOAEL-A include:~~

~~A)~~ ~~If the NOAEL-A is given in milligrams of toxicant per liter of water consumed (mg/L), prior to calculating the ADE the NOAEL-A must be multiplied by the average daily volume of water consumed by the mammalian test species in liters per day (L/d) and divided by the average weight of the mammalian test species in kilograms (kg).~~

~~B)~~ ~~If the NOAEL-A is given in milligrams of toxicant per kilogram of food consumed (mg/kg), prior to calculating the ADE, the NOAEL-A must be multiplied by the average amount in kilograms of food consumed daily by the mammalian test species (kg/d) and divided by the average weight of the mammalian test species in kilograms (kg).~~

~~C)~~ ~~If the mammalian test species was not exposed to the toxicant each day of the test period, the NOAEL-A must be multiplied by the ratio of days of exposure to the total days of the test period.~~

~~D)~~ ~~If more than one equally valid NOAEL-A is available for the same mammalian test species, the best available data must be used.~~

~~6)~~ ~~For those substances for which a NOAEL-A is not available but the lowest observed adverse effect level (LOAEL-A) has been derived from studies of mammalian test species exposed to the substance, one-tenth of the LOAEL-A may be substituted for the NOAEL-A in subsection (b)(5). The LOAEL-A must be selected in the same manner as that specified in subsection (b)(5). One-tenth the LOAEL-A from a study determined to have Medium Validity may be substituted for a NOAEL-A in subsection (b)(3) if the NOAEL-A is from a study determined to have Low Validity, or if the toxicity endpoint measured in the study having the LOAEL-A of Medium Validity is determined to be more biologically relevant than the toxicity endpoint measured in the study having the NOAEL-A of Low Validity.~~

c) Procedures for Establishing Validity of Data from Animal Studies

1) High Validity Studies

A) High validity studies use a route of exposure by ingestion or gavage, and are based upon:

i) Data from animal carcinogenicity studies with a minimum of 2 dose levels and a control group, 2 species, both sexes, with 50 animals per dose per sex, and at least 50 percent survival at 15 months in mice and 18 months in rats and at least 25 percent survival at 18 months in mice and 24 months in rats;

ii) Data from animal chronic studies with a minimum of 3 dose levels and a control group, 2 species, both sexes, with 40 animals per dose per sex, and at least 50 percent survival at 15 months in mice and 18 months in rats and at least 25 percent survival at 18 months in mice and 24 months in rats, and a well-defined NOAEL; or

iii) Data from animal subchronic studies with a minimum of 3 dose levels and control, 2 species, both sexes, 4 animals per dose per sex for non-rodent species or 10 animals per dose per sex for rodent species, a duration of at least 5% of the test species' lifespan, and a well-defined NOAEL.

B) Supporting studies thatwhich reinforce the conclusions of a study of Medium Validity may be considered to raise the such a study to High Validity.

2) Medium Validity Studies
Medium validity studies are based upon:

A) Data from animal carcinogenicity, chronic, or subchronic studies in which minor deviations from the study design elements required for a High Validity Study are found, but thatwhich otherwise satisfy the standards for a High Validity Study;

B) Data from animal carcinogenicity and chronic studies in which at least 25 percent survival is reported at 15 months in mice and 18 months in rats (a lesser survival is permitted at the conclusion of a longer duration study, but the number of surviving animals mustshould not fall below 20 percent per dose per sex at 18 months for mice and 24 months for rats), but thatwhich otherwise satisfy the standards for a High Validity Study;

C) Data from animal subchronic or chronic studies in that which a

Lowest Observable Adverse Effect Level (LOAEL) is determined, but thatwhich otherwise satisfy the standards for a High Validity Study; or

D) Data from animal subchronic or chronic studies which have an inappropriate route of exposure (e.g.for example, intraperitoneal injection or inhalation) but which otherwise satisfy the standards for a High Validity Study, with correction factors for conversion to the oral route.

3) Low Validity Studies
Low validity studies are studies not meeting the standards specifiedset forth in subsection (c)(1) or (c)(2).

d) Calculating a Human Nonthreshold Toxicant Advisory Concentration (HNTAC) for Cancer Risk

The Human Nonthreshold Toxicant Advisory Concentration (HNTAC) is calculated as follows:

1) If USEPA has designated a chemical as a "mutagen", the HNTAC of the chemical is calculated as follows:

$$HNTAC = \frac{TR \bullet \left(AT \bullet 365 \frac{days}{year}\right)}{SF_o \bullet IFWM_{adj}}$$

Where:

HNTAC	=	Human Nonthreshold Toxicant Advisory Concentration, equal to milligrams per liter (mg/L)
TR	=	Target Cancer Risk, equal to one-in-one million cancer risk (1E-06)
AT	=	Averaging Time, equal to 70 years
SF_o	=	Oral Slope Factor (chemical-specific), equal to $(mg/kg\text{-}day)^{-1}$
$IFWM_{adj}$	=	Age-Adjusted Mutagenic Drinking Water Ingestion Rate, equal to 1,019.0 liters per kilogram (L/kg)

2) If USEPA has not designated a chemical as a "mutagen", the HNTAC of the chemical is calculated as follows:

$$HNTAC = \frac{TR \bullet \left(AT \bullet 365 \frac{days}{year}\right)}{SF_o \bullet IFW_{adj}}$$

Where:

HNTAC	=	Human Nonthreshold Toxicant Advisory Concentration, equal to milligrams per liter (mg/L)
TR	=	Target Cancer Risk, equal to one-in-one million cancer risk (1E-06)
AT	=	Averaging Time, equal to 70 years
SF_o	=	Oral Slope Factor (chemical-specific), equal to $(mg/kg\text{-}day)^{-1}$
$IFWM_{adj}$	=	Age-Adjusted Mutagenic Drinking Water Ingestion Rate, equal to 327.95 liters per kilogram (L/kg)

(Source: Amended at 48 Ill. Reg. _____, effective _____)

Section 620.APPENDIX B Procedures for Determining Hazard Indices for Class I: Potable Resource Groundwater for Mixtures of Similar-Acting Substances

a) This appendix describes procedures for evaluating mixtures of similar-acting substances thatwhich may be present in Class I: Potable Resource Groundwaters. Except as provided otherwise in subsection (c), subsections (d) through (h) describe the procedure for determining the Hazard Index for mixtures of similar-acting substances.

b) For the purposes of this appendix, a "mixture" means two or more substances which are present in Class I: Potable Resource Groundwater thatwhich may or may not be related either chemically or commercially, but which are not complex mixtures of related isomers and congeners which are produced as commercial products (e.g.for example, PCBs or technical grade chlordane).

c) The following substances specified listed in Section 620.Appendix E Section 620.410 are similar-acting mixtures of similar acting substances.:

1) Mixtures of ortho-Dichlorobenzene and para-Dichlorobenzene. The Hazard Index (HI) for such mixtures is determined as follows:

HI = [ortho-Dichlorobenzene]/0.6 + [para-Dichlorobenzene]/0.075

2) Mixtures of 1,1-Dichloroethylene and 1,1,1-trichloroethane. The Hazard Index (HI) for such mixtures is determined as follows:

~~HI = [1,1-Dichloroethylene]/0.007 + [1,1,1-trichloroethane]/0.2~~

d) When two or more substances occur together in a mixture, the additivity of the toxicities of some or all of the substances must~~will~~ be considered when determining health-based standards for Class I: Potable Resource Groundwater. This is done by using ~~the use of~~ a dose addition model with the development of a Hazard Index for the mixture of substances with similar-acting toxicities. This method does not address synergism or antagonism. Guidelines for determining when the dose addition of similar-acting substances is appropriate are presented in Appendix C. The Hazard Index is calculated as follows:

$$HI = [A]/ALA + [B]/ALB + \ldots [I]/ALI$$

Where:

HI	=	Hazard Index, unitless.
[A], [B], [I]	=	Concentration of each similar-acting substance in groundwater in milligrams per liter (mg/L).
ALA, ALB, ALI	=	The acceptable level of each similar-acting substance in the mixture in milligrams per liter (mg/L).

e) For a substance with ~~substances that are considered to have~~ a threshold mechanism of toxicity, the substance's acceptable level in subsection (d) is:

1) The substance's standard specified ~~standards listed~~ in Section 620.410; or

2) The substance's ~~For those substances for which standards have not been established in Section 620.410, the~~ Human Threshold Toxicant Advisory Concentration (HTTAC) as determined in Appendix A, if the substance has no standard specified in Section 620.410.

f) For a carcinogenic substance~~substances that are carcinogens~~, the substance's acceptable level in subsection (d) is:

1) The substance's standard specified~~standards listed~~ in Section 620.410; or

2) If a substance has not standard specified in~~For those substances for which standards have not been established under~~ Section 620.410, the substance's one-in-one-million cancer risk concentration, unless that ~~the~~ concentration ~~for such substance~~ is less than the substance's lowest appropriate LLOQ ~~PQL~~ specified in "Test Methods for Evaluating Solid Wastes, Physical/Chemical Methods~~,~~", EPA Publication No. SW-846, incorporated by reference in~~at~~ Section 620.125, or the substance's lowest appropriate

LCMRL specified in the drinking water methods incorporated by reference in Section 620.125.~~,~~ If the concentration of the substance is less than its ~~in which case the guidance level of the substance is its in which case the~~ lowest appropriate LLOQ or LCMRL, the acceptable level of the substance is its lowest appropriate LLOQ or LCMRL ~~PQL shall be the acceptable level~~.

g) Because~~Since~~ the assumption of dose addition is most properly applied to substances that induce the same effect by similar modes of action, a separate Hazard Index ~~HI~~ must be generated for each toxicity endpoint of concern.

h) In addition to meeting the individual substance objectives, a Hazard Index must be less than or equal to 1 for a mixture of similar-acting substances.

(Source: Amended at 48 Ill. Reg. _____, effective _____)

Section 620.APPENDIX C Guidelines for Determining When Dose Addition of Similar-Acting Substances in Class I: Potable Resource Groundwaters is Appropriate

a) Substances must be considered similar-acting if:

1) The substances have the same target in an organism (e.g.~~for example~~, the same organ, organ system, receptor, or enzyme); or~~.~~

2) The substances have the same mode of toxic action. These actions may include, for example, central nervous system depression, liver toxicity, and ~~or~~ cholinesterase inhibition.

b) Substances that have fundamentally different mechanisms of toxicity (threshold toxicants vs. carcinogens) must not be considered similar-acting. However, carcinogens that~~which~~ also cause a threshold toxic effect must~~should~~ be considered in a mixture with other similar-acting substances having the same threshold toxic effect. In that case, an acceptable level of~~such a case, an Acceptable Level for~~ the carcinogen must be derived for its threshold effect, using the procedures specified~~described~~ in Appendix A.

c) Substances that~~which~~ are components of a complex mixture of related compounds ~~which are~~ produced as commercial products (e.g.~~for example~~, PCBs or technical grade chlordane) are not mixtures, as defined in Appendix B. These~~Such~~ complex mixtures are equivalent to a single substance. In that~~such a~~ case, the Human Threshold Toxicant Advisory Concentration must~~may~~ be derived for threshold effects of the complex mixture, using the procedures specified~~described~~ in Appendix A, if valid toxicological or epidemiological data are available for the complex mixture. If the complex mixture is a carcinogen, the Human Nonthreshold Toxicant~~Health~~ Advisory Concentration is the one-in-one-million

cancer risk concentration, calculated from methods located at Appendix A. The guidance level is either the Human Threshold Toxicant Advisory Concentration or Human Nonthreshold Toxicant Advisory Concentration, whichever is less, unless the lower concentration ~~for such substance~~ is less than the substance's lowest appropriate LLOQ ~~PQL~~ specified in "Test Methods for Evaluating Solid Wastes, Physical/Chemical Methods~~,~~", EPA Publication No. SW-846, incorporated by reference in~~at~~ Section 620.125, or the substance's lowest appropriate LCMRL specified in the drinking water methods incorporated by reference in~~at~~ Section 620.125. ~~for the substance,~~ If the concentration is less than its ~~in which case the~~ lowest appropriate LLOQ or LCMRL~~PQL~~, the guidance level is the lowest appropriate LLOQ or LCMRL~~shall be the Health Advisory Concentration~~.

(Source: Amended at 48 Ill. Reg. _____, effective _____)

Section 620.APPENDIX D Information Required for Groundwater Management Zone Application under ~~Confirmation of an Adequate Corrective Action Pursuant to~~ 35 Ill. Adm. Code 620.250(b) ~~(a)(2)~~and Corrective Action Process Completion Certification under 35 Ill. Adm. Code 620.250(d)

Within any class of groundwater, ~~Pursuant to 35 Ill. Adm. Code 620.250(a) if an owner or operator provides a written confirmation to the Agency that an adequate corrective action, equivalent to a corrective action process approved by the Agency, is being undertaken in a timely and appropriate manner, then~~ a groundwater management zone (GMZ) may be established as a three-dimensional region containing groundwater being managed to mitigate impairment caused by a ~~the~~ release of one or more contaminants that is subject to a corrective action process approved by the Illinois Environmental Protection Agency (Agency). ~~from a site~~. See 35 Ill. Adm. Code 620.250(a). A GMZ cannot be established before the site owner or operator submits a GMZ application to the Agency under 35 Ill. Adm. Code 620.250(b). A GMZ is not established until the Agency issues a written approval of the GMZ, including its corrective action process, under 35 Ill. Adm. Code 620.250(c)(2). ~~This document provides the form in which the written confirmation is to be submitted to the Agency.~~

When an owner or operator completes the Agency-approved corrective action, the owner or operator must submit to the Agency appropriate documentation under 35 Ill. Adm. Code 620.250(d), including the information required for a corrective action process completion certification. A GMZ is terminated when the Agency issues a written determination to that effect under 35 Ill. Adm. Code 620.250(c)(2)(i), (c)(2)(ii), (d)(1), or (f).

Note 1. Parts I, ~~and~~ II, and III of this Appendix D specify the information required for the GMZ application that the owner or operator submits ~~are~~ to ~~be submitted to~~ the Agency~~IEPA at the time that the facility claims the alternative groundwater standards~~. See 35 Ill. Adm. Code 620.250(b). Part IV of this Appendix D specifies the information required for ~~III is to be submitted at~~ the corrective action completion certification that the owner or operator submits to the Agency. See 35 Ill. Adm. Code 620.250(d). The owner or operator is neither required to use the

form specified in Part I, II, III, or IV of this Appendix D nor precluded from including information in addition to that required by this Appendix D. See 35 Ill. Adm. Code 620.250(b)(2), (b)(3), (d).~~of the site investigation~~. ~~At the completion of the corrective process, a final report is to be filed which includes the confirmation statement included in Part IV.~~

Note 2. The issuance of a permit by the Agency's ~~IEPA's~~ Division of Air Pollution Control or Water Pollution Control for a treatment system does not imply that the Agency has approved any ~~the~~ corrective action process ~~process~~.

Note 3. Parts I, II, and III of this Appendix D are ~~A GMZ application is~~ not for use in establishing a GMZ under the Site Remediation Program (35 Ill. Adm. Code 740). See 35 Ill. Adm. Code 620.250(h). ~~If the release is subject to a corrective action process that requires the submittal of more information to the Agency to establish a GMZ than that specified in Parts I, II, and III of this Appendix D, the owner or operator must include the additional information with its GMZ application. See 35 Ill. Adm. Code 620.250(b)(2). In addition, if the release is subject to a corrective action process that requires the information specified in Parts I, II, and III of this Appendix D to be submitted to the Agency in a different form than a GMZ application (e.g., plan, agreement, report, permit application), the owner or operator must submit the informaiton in that form. See 35 Ill. Adm. Code 620.250(b)(3). If the facility is conducting a cleanup of a unit which is subject to the requirements of the Resource Conservation and Recovery Act (RCRA) or the 35 Ill. Adm. Code 731 regulations for Underground Storage Tanks, this confirmation process is not applicable and cannot be used.~~

Note 4. If the GMZ would extend off-site, the GMZ application must include each off-site ~~affected~~ property owner's written permission to the establishment of the GMZ on its property. If effectively implementing the off-site portion of the GMZ requires accessing an off-site property, the GMZ application must also include the off-site property owner's written permission for that access. If the applicable written permission or permissions from an off-site property owner are ~~is~~ not obtained—whether permission to establish the GMZ off-site, access the off-site property, or both-- the GMZ will not include that off-site property. See 35 Ill. Adm. Code 620.250(b)(1).

Note 5. If a response ~~the answers~~ to any item in this Appendix D requires additional ~~of these questions require~~ explanation or clarification, provide it ~~such~~ in an attachment to the submittal~~this document~~.

Part I. Facility Information

Facility Name _____

Facility Address _____

County _____

Standard Industrial Code (SIC) _____

1. Provide a general description of the type of industry and~~,~~ the facility's location and size, as well as the products manufactured and raw materials used at ~~location and size of the facility~~.

2. What specific units (operating or closed) are present at the facility that ~~which~~ are or were used to manage waste, hazardous waste, hazardous substances, or petroleum? Include units regardless of whether they are considered sources of groundwater contamination.

	YES	NO
Landfill	_____	_____
Surface Impoundment	_____	_____
Land Treatment	_____	_____
Spray Irrigation	_____	_____
Waste Pile	_____	_____
Incinerator	_____	_____
Storage Tank (above ground)	_____	_____
Storage Tank (underground)	_____	_____
Container Storage Area	_____	_____
Injection Well	_____	_____
Water Treatment Units	_____	_____
Septic Tanks	_____	_____
French Drains	_____	_____
Transfer Station	_____	_____
Other Units (~~please~~ describe)		
_____	_____	_____
_____	_____	_____

3. Provide an extract from a USGS topographic or county map showing the location of the site. Provide ~~and~~ a more detailed scaled map of the facility identifying ~~with~~ each ~~waste management~~ unit checked "yes" ~~identified~~ in item~~Question~~ 2 and each ~~or~~ known or ~~/~~suspected release source ~~clearly identified~~. Map scale must be specified and the Township, Range, and Section ~~location~~ of the facility must be provided ~~with respect to Township, Range and Section~~. Also provide engineering drawings showing the facility and units at the facility.

4. Has the facility ever conducted operations that~~which~~ involved the generation, manufacture, processing, transportation, treatment, storage, or handling of "hazardous substances" as defined by the Illinois Environmental Protection Act?

Yes ___No ___ If the answer to this question is "yes", generally describe these operations.

5. Has the facility ever generated, stored, or treated "hazardous waste" as defined by the Resource Conservation and Recovery Act (RCRA)? Yes___ No ___If the answer to this question is "yes", generally describe these operations.

6. Has the facility ever conducted operations that ~~which~~ involved the processing, storage, or handling of petroleum? Yes ___No ____If the answer to this question is "yes", generally describe these operations.

7. Has the facility ever held any of the following permits?

   a. Permits for any waste storage, waste treatment or waste disposal operation. Yes ___ No ___ If the answer to this question is "yes", identify the IEPA permit number or numbers.

   b. Interim Status under RCRA ~~the Resources Conservation and Recovery Act~~ (filing of a RCRA Part A application). Yes ___ No ___ If the answer to this question is "yes", attach a copy of the last approved RCRA Part A application.

   c. RCRA Part B permits~~Permits~~. Yes ___ No ___ If the answer to this question is "yes", identify the permit log number or numbers.

8. Has the facility ever conducted the closure of a RCRA hazardous waste management unit? Yes ___ No ___

9. Have any of the following State or federal government actions taken place for a release at the facility?

   a. Written notification regarding known, suspected or alleged contamination at~~on or emanating from~~ the property (e.g., a Notice under~~pursuant to~~ Section 4(q) or Section 31(a) or (b) of the Illinois Environmental ~~Environment~~ Protection Act)? Yes ___ No ___ If the answer to this question is "yes", identify notice's ~~the~~ caption and date of issuance.

   b. Consent Decree or Order under RCRA, the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), ~~EPAct~~ Section 22.2 of the Illinois Environmental Protection Act (State Superfund), or ~~EPAct~~ Section 21(f) of the Illinois Environmental Protection Act (State RCRA). Yes ___ No ___

   c. If either item 9(a) or 9(b) is ~~of Items a or b were~~ answered ~~by checking~~ "yes", is the notice, order, or decree still in effect? Yes ___ No ___

10. Provide a statement of the classification or classifications of groundwater at the facility.

    Class I _____ Class II ____ Class III _____ Class IV _____
    If more than one Class applies, explain.

11. What ~~groundwater~~ classification will the groundwater within the proposed groundwater management zone ~~facility~~ be subject to at the completion of the remediation?

    Class I ____ Class II ___ Class III ____ Class IV ____
    If more than one Class applies, ~~please~~ explain.

12~~11~~. Describe the circumstances under which the release to groundwater was identified.

Based on my inquiry of those persons directly responsible for gathering the information, I certify that the information submitted is, to the best of my knowledge and belief, true and accurate.

Facility Name	Signature of Owner/Operator
Location of Facility	Name of Owner/Operator
EPA Identification Number	Date

Part ~~PART~~ II: Release Information

1. Identify the chemical constituents released ~~release~~ to the groundwater. Attach additional documents as necessary.

Chemical Description	Chemical Abstract No.

2. Describe how the site will be investigated to determine the source or sources of the release.

3. Describe how groundwater will be monitored to determine the rate and extent of the release, and whether the release has migrated off-site.

4. Has the release been contained on-site ~~at the facility~~?

5. Describe the groundwater monitoring network and groundwater and soil sampling protocols in place at the facility.

6. Provide the schedule for investigating the extent of the release ~~investigation~~ and for monitoring.

7. Describe the laboratory quality assurance program used~~utilized~~ for the investigation.

8. Provide ~~a summary of~~ the results of available soil testing and groundwater monitoring associated with the release, along with a summary of those results ~~at the facility~~. Include~~The summary or results should provide~~ the following information: dates of sampling; types of samples taken (soil or water); locations and depths of samples; monitoring well construction details with well logs; sampling and analytical methods; analytical laboratories used; chemical constituents for which analyses were performed; analytical detection limits; and concentrations of chemical constituents in parts per million or "ppm" (levels below detection must~~should~~ be identified as non-detect or "ND").

9. Provide scaled drawings identifying the horizontal and vertical boundaries of the proposed groundwater management zone.

Based on my inquiry of those persons directly responsible for gathering the information, I certify that the information submitted is, to the best of knowledge and belief, true and accurate and confirm that the actions identified in this submittal ~~herein~~ will be performed ~~undertaken~~ in compliance ~~accordance~~ with the schedule in this submittal~~set forth herein~~.

Facility Name	Signature of Owner/Operator
Location of Facility	Name of Owner/Operator
EPA Identification Number	Date

Part III: Remedy Selection Information

1. Describe the selected remedy and why it was chosen. Include a description of the fate and transport of contaminants with the selected remedy over time.

2. Describe other remedies that~~which~~ were considered and why they were rejected.

3. Will waste, contaminated soil, or contaminated groundwater be removed from the site during ~~in the course of~~ this remediation? Yes ___ No ___ If the answer to this question is "yes", where will the contaminated material be taken?

4. Describe how the selected remedy will accomplish the maximum practicable~~practical~~ restoration of beneficial use of groundwater.

5. Describe how the selected remedy will minimize any threat to public health or the environment.

6. Describe how the selected remedy will result in compliance with the ~~applicable groundwater~~ standards for the applicable class or classes of groundwater. Include the results of groundwater contaminant transport modeling or calculations showing how the selected remedy will achieve compliance with these standards.

7. Provide a schedule for design, construction, and operation of the remedy, including dates for the start and completion.

8. Describe how the remedy will be operated and maintained.

9. Have any of the following permits been issued for the remediation?

   a. Construction or operating ~~Operating~~ permit from the Agency's Division of Water Pollution Control. Yes __ No ___ If the answer to this question is "yes", identify the permit number or numbers.

   b. Land treatment permit from the Agency's Division of Water Pollution Control. Yes ___ No ___ If the answer to this question is "yes", identify the permit number or numbers.

   c. Construction or operating ~~Operating~~ permit from the Agency's Division of Air Pollution Control. Yes ___ No ___ If the answer to this question is "yes", identify the permit number or numbers.

10. How will groundwater within the proposed groundwater management zone ~~at the facility~~ be monitored after ~~following~~ completion of the remedy to ensure compliance with the ~~that the groundwater~~ standards for the applicable class or classes of groundwater~~have been attained~~?

Based on my inquiry of those persons directly responsible for gathering the information, I certify that the information submitted is, to the best of my knowledge and belief, true and accurate and confirm that the actions identified in this submittal ~~herein~~ will be performed ~~undertaken~~ in compliance ~~accordance~~ with the schedule in this submittal~~set forth herein~~.

Facility Name	Signature of Owner/Operator
Location of Facility	Name of Owner/Operator
EPA Identification Number	Date

Part~~PART~~ IV: Corrective Action Process Completion Certification

This certification must accompany documentation that ~~which~~ includes soil and groundwater monitoring data demonstrating ~~successful~~ completion of the corrective action~~process described in Parts I-III~~.

Facility Name _____

Facility Address _____

_____

County _____

Standard Industrial Code (SIC) _____

Date _____

Based on my inquiry of those persons directly responsible for gathering the information, I certify that the ~~an adequate~~ corrective action ~~equivalent to a corrective action process~~ approved by the Illinois Environmental Protection Agency~~,~~ has been completed ~~undertaken~~ and ~~that~~ the following ~~restoration~~ concentrations of released chemical constituents remain in groundwater within the groundwater management zone~~are being met~~:

Chemical Name	Chemical Abstract No.	Concentration (mg/L)

Facility Name	Signature of Owner/Operator

Location of Facility	Name of Owner/Operator
EPA Identification Number	Date

(Source: Amended at 48 Ill. Reg. _____, effective _____)

Section 620.APPENDIX E Similar-acting Substances

620.TABLE A Similar-acting Noncarcinogenic Constituents

Cholinesterase Inhibition

116-06-3	Aldicarb
1563-66-2	Carbofuran

Circulatory System

15972-60-8	Alachlor
7440-36-0	Antimony
1912-24-9	Atrazine
71-43-2	Benzene
94-75-7	2,4-D (2,4-dichlorophenoxy acetic acid)
121-14-2	2,4-Dinitrotoluene
206-44-0	Fluoranthene
86-73-7	Fluorene
98-95-3	Nitrobenzene
122-34-9	Simazine
100-42-5	Styrene
79-01-6	Trichloroethylene
99-35-4	1,3,5-Trinitrobenzene
7440-66-6	Zinc

Decreased Body Weight

75-71-8	Dichlorodifluoromethane
84-66-2	Diethyl phthalate
95-48-7	2-Methylphenol (*o*-cresol)
91-20-3	Naphthalane
7440-02-0	Nickel
108-95-2	Phenol
122-34-9	Simazine
71-55-6	1,1,1-Trichloroethane
1330-20-7	Xylenes

Developmental

7429-90-5	Aluminum
50-32-8	Benzo(a)pyrene
7440-42-8	Boron
78-93-3	2-Butanone (methyl ethyl ketone)
75-15-0	Carbon disulfide
78-87-5	1,2-Dichloropropane
84-66-2	Diethyl phthalate

88-85-7	Dinoseb
7439-93-2	Lithium
375-73-5	PFBS (perfluorobutanesulfonic acid)
375-95-1	PFNA (perfluorononanoic acid)
1763-23-1	PFOS (perfluorooctanesulfonic acid)
335-67-1	PFOA (perfluorooctanoic acid)

Endocrine System

106-93-4	Ethylene dibromide (1,2-dibromoethane)
120-82-1	1,2,4-Trichlorobenzene

Gastrointestinal System

7440-41-7	Beryllium
7440-50-8	Copper
145-73-3	Endothall
77-47-4	Hexachlorocyclopentadiene
7439-89-6	Iron
1634-04-4	MTBE (methyl tertiary-butyl-ether)

Immune System

156-60-5	*trans*-1,2-Dichloroethylene
58-89-9	*gamma*-HCH (*gamma*-hexachlorocyclohexane, lindane)
7487-94-7	Mercury (mercuric chloride)
76-44-8	Heptachlor
355-46-4	PFHxS (perfluorohexanesulfonic acid)
375-95-1	PFNA (perfluorononanoic acid)
1763-23-1	PFOS (perfluorooctanesulfonic acid)
335-67-1	PFOA (perfluorooctanoic acid)

Kidney

7440-39-3	Barium
7440-43-9	Cadmium
94-75-7	2,4-D (2,4-dichlorophenoxy acetic acid)
75-99-0	Dalapon
75-34-3	1,1-Dichloroethane
107-06-2	1,2-Dichloroethane
156-59-2	*cis*-1,2-Dichloroethylene
123-91-1	1,4-Dioxane (*p*-dioxane)
206-44-0	Fluoranthene
98-82-8	Isopropylbenzene (cumene)
7439-93-2	Lithium
93-65-2	MCPP (mecoprop)

7487-94-7	Mercury (mercuric chloride)
7439-98-7	Molybdenum
129-00-0	Pyrene
108-88-3	Toluene
7440-62-2	Vanadium

Liver

83-32-9	Acenaphthene
319-84-6	*alpha*-BHC (*alpha*-benzene hexachloride)
56-23-5	Carbon Tetrachloride
12789-03-6	Chlordane
108-90-7	Chlorobenzene
67-66-3	Chloroform
94-75-7	2,4-D (2,4-dichlorophenoxy acetic acid)
106-46-7	*p*-Dichlorobenzene (1,4-dichlorobenzene)
75-35-4	1,1-Dichloroethylene
75-09-2	Dichloromethane (methylene chloride)
117-81-7	Di(2-ethylhexyl)phthalate
121-14-2	2,4-Dinitrotoluene
123-91-1	1,4-Dioxane (*p*-dioxane)
72-20-8	Endrin
100-41-4	Ethylbenzene
106-93-	Ethylene dibromide (1,2-dibromoethane)
206-44-0	Fluoranthene
13252-13-6	HFPO-DA (hexafluoropropylene oxide dimer acid, GenX)
2691-41-0	HMX (octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine)
1024-57-3	Heptachlor Epoxide
1634-04-4	MTBE (methyl tertiary-butyl ether)
87-86-5	Pentachlorophenol
1918-02-1	Picloram
100-42-5	Styrene
118-96-7	TNT (2,4,6-trinitrotoluene)
93-72-1	2,4,5-TP (silvex)
75-01-4	Vinyl Chloride

Lungs

90-12-0	1-Methylnaphthalene
91-57-6	2-Methylnaphthalene

Mortality

84-74-2	Di-*n*-butyl phthalate
1330-20-7	Xylenes

Nervous System

67-64-1	Acetone
121-14-2	2,4-Dinitrotoluene
72-20-8	Endrin
7439-93-2	Lithium
7439-96-5	Manganese
95-48-7	2-Methylphenol (*o*-cresol)
121-82-4	RDX (hexahydro-1,3,5-trinitro- l,3,5-triazine)
127-18-4	Tetrachloroethylene

Reproductive System

1912-24-9	Atrazine
96-12-8	1,2-Dibromo-3-chloropropane
1563-66-2	Carbofuran
75-15-0	Carbon disulfide
143-33-9	Cyanide
1918-00-9	Dicamba
106-93-4	Ethylene dibromide (1,2-dibromoethane)
7439-93-2	Lithium
72-43-5	Methoxychlor

Skin

7440-38-2	Arsenic
7440-22-4	Silver
7440-28-0	Thallium

Spleen

99-65-0	1,3-Dinitrobenzene
606-20-2	2,6-Dinitrotoluene
99-35-4	1,3,5-Trinitrobenzene

Thyroid

7440-48-4	Cobalt
14797-73-0	Perchlorate
355-46-4	PFHxS (perfluorohexanesulfonic acid)
375-73-5	PFBS (perfluorobutanesulfonic acid)
8001-35-2	Toxaphene

Whole Body

120-12-7	Anthracene
7440-36-0	Antimony
65-85-0	Benzoic Acid

95-50-1	--Dichlorobenzene (1,2-dichlorobenzene)
206-44-0	Fluoranthene
7782-49-2	Selenium
79-00-5	1,1,2-Trichloroethane
75-69-4	Trichlorofluoromethane

(Source: Amended at 48 Ill. Reg. _____, effective _____)

Section 620.APPENDIX E Similar-acting Substances

620.TABLE B Similar-acting Carcinogenic Constituents

Circulatory System

71-43-2	Benzene
107-06-2	1,2-Dichloroethane
106-93-4	Ethylene dibromide (1,2-dibromoethane)

Gastrointestinal System

56-55-3	Benzo(a)anthracene
205-99-2	Benzo(b)fluoranthene
207-08-9	Benzo(k)fluoranthene
50-32-8	Benzo(a)pyrene
218-01-9	Chrysene
53-70-3	Dibenzo(a,h)anthracene
106-93-4	Ethylene dibromide (1,2-dibromoethane)
193-39-5	Indeno(1,2,3-c,d)pyrene

Kidney

67-66-3	Chloroform
96-12-8	1,2-Dibromo-3-chloropropane (dibromochloropropane)
121-14-2	2,4-Dinitrotoluene
606-20-0	2,6-Dinitrotoluene
100-41-4	Ethylbenzene
79-01-6	Trichloroethylene

Liver

319-84-6	*alaha*-BHC (*alaha*-benzene hexachloride)
56-23-5	Carbon tetrachloride
12789-03-6	Chlordane
106-46-7	*p*-Dichlorobenzene (1,4-dichlorobenzene)
75-09-2	Dichloromethane (methylene chloride)
78-87-5	1,2-Dichloropropane
117-81-7	Di(2-ethylhexyl)phthalate
121-14-2	2,4-Dinitrotoluene
606-20-0	2,6-Dinitrotoluene
123-91-1	1,4-Dioxane (*p*-dioxane)
58-89-9	*gamma-HCH* (*gamma* -hexachlorocyclohexane, lindane)
76-44-8	Heptachlor
1024-57-3	Heptachlor epoxide
1336-36-3	PCBs (polychlorinated biphenyls as decachloro-biphenyl)
335-67-1	PFOA (perfluorooctanoic acid)

87-86-5	Pentachlorophenol
127-18-4	Tetrachloroethylene
8001-35-2	Toxaphene
79-01-6	Trichloroethylene
75-01-4	Vinyl Chloride

Mammary Gland

121-14-2	2,4-Dinitrotoluene
606-20-0	2,6-Dinitrotoluene

(Source: Added at 48 Ill. Reg. _____, effective _____)