

ILLINOIS POLLUTION CONTROL BOARD
August 11, 1994

IN THE MATTER OF:	)	
	)	
GROUNDWATER PROTECTION: AMENDMENTS	)	R93-27
TO GROUNDWATER QUALITY STANDARDS	)	(Rulemaking)
(35 ILL. ADM. CODE 620)	)	

Adopted Rule. Final Order.

OPINION AND ORDER OF THE BOARD (by R.C. Flemal):

By today's action the Board adopts certain amendments to its groundwater quality standards found at 35 Ill. Adm. Code 620. The impetus for these amendments is a proposal filed by the Illinois Environmental Protection Agency (Agency) under the general rulemaking provisions of Sections 27 and 28 of the Environmental Protection Act (Act) (415 ILCS 5/27-28).

The Board is charged under the Act to "determine, define and implement the environmental control standards applicable in the State of Illinois" (415 ILCS 5/5(b)). More generally, the Board's rulemaking charge is based on the system of checks and balances integral to Illinois environmental governance: the Board bears responsibility for the rulemaking and principal adjudicatory functions, whereas the Agency is responsible for carrying out the principal administrative duties, including proposal and administration of regulations.

The principal items in today's amendments are (1) addition of Class I and Class II groundwater quality standards for sixteen chemicals for which standards have not previously been promulgated, (2) amendment of certain preventive notification and response provisions, including listing of ten of the new sixteen chemicals there, and (3) making various amendments of a conforming nature. A full discussion of the amendments is presented below.

PROCEDURAL HISTORY

The Agency filed its initial proposal on October 18, 1993 and an addendum to the proposal on January 19, 1994. Hearings were held on February 10, 1994 in Chicago and on February 8, 1994 and February 23, 1994 in Springfield before hearing officer Michelle C. Dresdow. Testimony in support of the amendments was presented by Richard P. Cobb, Manager of the Agency's Groundwater Section of the Division of Public Water Supplies in the Bureau of Water and Dr. Thomas Hornshaw of the Agency's Office of Chemical Safety.

The rules were published for first notice at 18 Ill. Reg. 5113, April 1, 1994. The first notice public comment period expired on May 16, 1994.

Five public comments (PC) were received during the first notice comment period. In PC #1 Business and Professional People for the Public Interest, The McHenry County Defenders, Citizens for a Better Environment, and The Illinois Chapter of the Sierra Club, expressed support for the amendment at 620.302(b)(4).

Public comments #2 and #3, filed by the Administrative Code Division of the Office of the Secretary of State (Code Division) and by the Agency, respectively, recommended various amendments to the first notice proposal. Public comments #4 and #5, filed by Ciba Plant Protection (Ciba) and Waste Management, Inc. (WMI), recommended actions in regard to simazine and ethylene dibromide, respectively. The manner in which the Board has disposed of these various recommendations is discussed below.

On June 2, 1994 the Board adopted a second notice proposal. The second notice proposal was reviewed by the Joint Committee on Administrative Rules on July 19, 1994, at which time it voted a notice of no objection.

GROUNDWATER STANDARDS

Basis for Selection of Constituents

National Primary Drinking Water Standards were at the foundation of many of the groundwater standards set when Part 620 was initially adopted¹. The basic premise was then, and remains, that groundwater that is naturally potable should not be made nonpotable because of pollution. The maximum contaminant levels (MCLs) that constitute the National Primary Drinking Water Standards accordingly were used to set the standards that would define the potability of groundwater. The potability standards are the Class I groundwater standards.

At the time of its promulgation of the original list of groundwater standards, the Board observed that USEPA was then evaluating additional constituents for possible addition to the list of National Primary Drinking Water Standards. The Board accordingly observed that updates of the groundwater standards would be in order as new MCLs were promulgated.

New MCLs were promulgated by USEPA on July 17, 1992 (57 Fed. Reg. 31776). These are known as the "Phase V" drinking water standards. The Phase V standards constituted the Agency's

¹ In the Matter of: Groundwater Quality Standards (35 Ill. Adm. Code 620), R89-14(B), 127 PCB 53, November 7, 1991.

"first-cut" of constituents to be considered for new groundwater standards.

The Agency shortened the "first-cut" list by eliminating those constituents that have not been found in Illinois groundwater. This procedure allowed the list of twenty-three Phase V constituents to be reduced to fourteen. The same review, however, revealed the presence in Illinois groundwater of two additional constituents for which MCLs had been promulgated in the earlier Phase II² rulemaking, but for which no Illinois groundwater standards had yet been adopted. These two, ethylene dibromide and 1,2-dibromo-3-chloropropane, along with the fourteen Phase V constituents, comprise the constituents of interest in the instant rulemaking.

Class I Standards

The numeric values of the new groundwater standards proposed today are, as is the case with the existing standards, dependent upon the classification of the groundwater. For Class I groundwater, which includes all of the State's "Potable Resource Groundwater", the proposed new groundwater standards are equal to the MCLs as adopted by the USEPA, as listed in Table I.

Table I: PROPOSED NEW GROUNDWATER STANDARDS

<u>Constituent</u>	<u>Class I (mg/L)</u>	<u>Class II (mg/L)</u>
Antimony	0.006	0.024
Beryllium	0.004	0.5
Thallium	0.002	0.02
Benzo(a)pyrene	0.0002	0.002
Dalapon	0.2	2.0
Dichloromethane	0.005	0.05
Di(2-ethylhexyl)phthalate	0.006	0.06
Dinoseb	0.007	0.07
Endothall	0.1	0.1
Ethylene Dibromide	0.00005	0.0005
Hexachlorocyclopentadiene	0.05	0.5
1,2-Dibromo-3-Chloropropane	0.0002	0.002
Picloram	0.5	5.0
Simazine	0.004	0.04
1,2,4-Trichlorobenzene	0.07	0.7
1,1,2-Trichloroethane	0.005	0.05

² Phase II standards were promulgated in January 1991 (56 Fed. Reg. 3528). The Phase II MCLs were considered by the Board during the Board's promulgation of the State's original groundwater standards in November 1991.

The Board will not here restate the justification for the numeric values of the individual standards. These are in each case the same as the justification for the MCLs. The interested person is directed to the January 30, 1991 and July 17, 1992 issues of the Federal Register and to Exhibit #3 of the instant record for a constituent-by-constituent analysis of the values at which USEPA has set the MCLs.

Class II Standards

The standards for Class II groundwaters are in most cases based on the capabilities of treatment technologies. Here, as in the original set of Class II groundwater standards, the most cost effective best available treatment (BAT) technologies are generally capable of removal of 90% of the contaminant. Thus, most of the proposed Class II standards are ten times the Class I standard.

Three exceptions to the 90%-BAT derivation of the proposed Class II standards are the two inorganic chemicals, antimony and beryllium, and the pesticide endothall.

For antimony the Agency proposed a standard based on a most cost effective BAT efficiency of 75%. USEPA has determined that coagulation/filtration (C/F) and reverse osmosis are BATs for antimony. (57 Fed. Reg. 31809, July 17, 1992.) C/F, which is the most cost effective of these, has a 75% removal efficiency for antimony. (Attachment II to R. Cobb Testimony.)

For beryllium the Agency proposed a Class II standard that is based on use of water for irrigation. The Agency observed that beryllium is toxic to plants and hence a more stringent beryllium standard is necessary to protect this use of groundwater.

The Class II standard for endothall is based on the manufacturer's label restriction that indicates that dosages greater than 0.3 mg/L will kill fish. Since groundwater often discharges into surface waters, the Agency believes, and the Board agrees, that protection of fish populations requires a more stringent Class II standard for endothall than would follow from simply applying a BAT-based multiplier to the Class II standard.

Simazine not a Carcinogen

As proposed by the Agency and as adopted by the Board at first notice the pesticide simazine, which is one of the chemicals for which groundwater standards are today adopted, had next to it an asterisk ("*") in the tables at 620.410(b) and 620.420(b). An asterisk is used in these tables to denote a carcinogen. A carcinogen is defined at 35 Ill. Adm. Code 620.10 (emphasis added):

"Carcinogen" means a chemical, or complex mixture of closely related chemicals, which has been listed or classified in the Integrated Risk Information System or as specified in a final rule adopted by USEPA in accordance with USEPA Guidelines for Carcinogenic Risk Assessment, incorporated by reference at Section 620.125, to be a group A, B₁, or B₂ carcinogen.

As was pointed out by both the Agency (PC #3) and Ciba (PC #4) subsequent to first notice, simazine is neither a group A nor group B carcinogen, and hence it should not have been designated a carcinogen at either 620.410(b) or 620.420(b). The Board rectified this matter for second notice.

Listing of Ethylene Dibromide

In PC #5 WMI contended that ethylene dibromide need not and should not be added to the list of chemicals for which standards are today adopted. WMI based this contention on the belief that ethylene dibromide has not been found in Illinois groundwater, and is not likely to occur because its primary use is as a fumigant for orchard trees. (Id.) In support of its position, WMI cited a March 1994 draft report "Illinois Generic State Management Plan for Pesticides in Groundwater", prepared by the Pesticide Subcommittee of the Interagency Coordinating Committee on Groundwater³.

The Pesticide Subcommittee's draft report indeed does not list ethylene dibromide as a chemical that has been detected in any rural, private water supply wells. However, ethylene dibromide has been found in public water supply wells in the State, as is a matter of record in the instant proceeding (Exh. 8 at p. 2). On this basis the Board has declined deleting ethylene dibromide from the amendments.

MISCELLANEOUS AMENDMENTS

Incorporation by Reference: Sections 620.125, 620.510, and 620.605

Pursuant to today's amendments, the Federal Register reference to the Phase V final rule is incorporated by reference. Citation to the incorporated reference is also added to the Health Advisory provisions at Section 620.605. These amendments conform use of the Phase V final rule to the structure used for the Phase II final rule.

³ WMI cites another report, "Initial Evaluation: Impacts of Pesticides on Groundwater in Illinois. Report to the Illinois Legislature, January 1990". However, this report was not included with the WMI comment.

In its first notice public comment (PC #3) the Agency observed that the reference "Test Methods for Evaluating Solid Wastes, Physical/Chemical Methods" was now available in a final, updated edition, and recommended amending the citation to reflect this latest edition. The Board adopted this amendment for second notice.

In its first notice public comment (PC #3) the Agency also recommended adding citation to incorporations by reference at 620.501(b). Section 620.501 had not been proposed for amendment at first notice. Although the Board normally does not propose to amend at second notice a section that it had not proposed to amend at first notice, the Board found reason at second notice to accept the Agency's recommendation. The citations at issue are generally available and generally consulted by persons who must comply with this Section 620.510. The added citations, by providing additional acceptable sources of sampling and analytical protocol, thereby assist persons who are responsible for assessing compliance, and hence assist with compliance itself. The type of change here is also identical to the type of change proposed at first notice to Section 620.605(b)(1): that is, an updated incorporation by reference.

Typographical Error: Section 620.210

The definition of potable resource (Class I) groundwater as adopted in November 1991 contains at Section 620.120(a)(3) a reference to fractured carbonate that is "15 feet of more in thickness". The Agency observes, and the Board agrees, that this reference should read "15 feet or more in thickness". Today's amendment corrects that error.

Cross Reference/Statute Citation at Section 620.260

As originally adopted, Section 620.260(a) contains a cross reference to 620.240(b). The Agency observes, and the Board agrees, that this cross reference makes sense and is consistent with the other cross references at 620.260(a) only if the reference is to the whole of Section 620.240, rather than just 620.240(b). This matter is corrected today by deleting the "(b)".

Preventive Notice and Response: Sections 620.310 and 620.410

In the R89-14(B) regulatory proceeding, the Agency proposed and the Board established certain preventive notice and preventive response levels for toxic heavy metals, the common organic and petrochemical contaminants, and contaminants identified as carcinogens at Section 620.410(b). As adopted, the application of the preventive notice and preventive response regulation is limited to those persons who conduct groundwater monitoring pursuant to some other State or federal regulatory program. In addition, preventive notice and preventive response

is associated only with the high-quality, high-use groundwater, Class I and Class III groundwater.

At the time that the Agency proposed, and the Board adopted, these preventive notification provisions, those owners and operators of facilities that were conducting groundwater monitoring pursuant to a federal or State judicial or administrative order were not explicitly included in the provisions. The Agency now believes that facilities conducting groundwater monitoring under the supervision of a judicial or administrative order should be subject to the preventive notification and preventive response provisions.

The Agency also proposed that the Board amend its existing preventive notification and preventive response levels of Subsection 620.310(a)(3)(A) to include those constituents under consideration today that would require early alert upon detection and response considerations under Subpart C of 35 Ill. Adm. Code 620. There are ten constituents accordingly added to 620.310(A)(3)(A) today. These are: beryllium, thallium, dalapon, dinoseb, endothall, picloram, simazine, 1,2,4-trichlorobenzene, 1,1,2-trichloroethane, and hexachlorocyclopentadiene.

The Agency had originally and by PC #3 proposed that thirteen constituents be added at Section 620.310(a)(3)(A). However, it was not recognized by the Board, or otherwise brought to the Board's attention, until immediately prior to today's final action that three of the Agency's thirteen constituents [benzo(a)pyrene, di(2-ethylhexyl)phthalate, and dichloromethane] were not present in either the first or second notice drafts of 620.310. Time has accordingly passed on any opportunity to add these three constituents to 620.310 in the instant docket. The Board anticipates that this matter can be redressed in a subsequent Board proceeding.

Spelling Corrections: Sections 620.310, 620.410, and 620.420

The Agency observed that the chemical name for the pesticide Lindane, gamma-hexachlorocyclohexane, is misspelled (second "o" is missing) in its use throughout Part 620. The Agency further observed that decachloro-biphenyl is misspelled ("h" and "e" reversed) at Section 620.410(b). The Agency recommended, and the Board today adopts, correction of these misspellings.

Class I Standard for polychlorinated biphenyls: Section 620.410

The Agency observed that the MCL for polychlorinated biphenyls (PCBs) is 0.0005 mg/L, but that the Class I groundwater standard for PCBs at Section 620.410 is listed at 0.005 mg/L. The Agency contends, and the Board agrees, the 0.005 mg/L is a typographical error undetected at the time of adoption of the PCB groundwater standard. Today's amendments correct that error.

Citations to Statutory Provisions: Authority Note and Sections 620.260 and 620.420

The Authority Note and two sections that the Agency proposed for amendment contain references to the Illinois Statutes. In each case the existing citation was to the old Revised Statutes. The Board today updates these citations by adding the Illinois Compiled Statutes citation.

Code Division Modifications

Code Division in PC #2 observed that there were several typographical errors in the text of the first notice proposal. The Board corrected the errors for second notice. It is to be noted that none of these changes constituted an amendment of the existing text of the groundwater regulations, but rather that each was a correction of an error present only in the first notice text.

ORDER

The Board directs that the following amendments be submitted to the Secretary of State for final notice pursuant to Section 6 of the Illinois Administrative Procedure Act.

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

PART 620
GROUNDWATER QUALITY

SUBPART A: GENERAL

Section	
620.105	Purpose
620.110	Definitions
620.115	Prohibition
620.125	Incorporations by Reference
620.130	Exemption from General Use Standards and Public and Food Processing Water Supply Standards
620.135	Exclusion for Underground Water in Certain Man-Made Conduits

SUBPART B: GROUNDWATER CLASSIFICATION

Section	
620.201	Groundwater Designations
620.210	Class I: Potable Resource Groundwater
620.220	Class II: General Resource Groundwater
620.230	Class III: Special Resource Groundwater
620.240	Class IV: Other Groundwater

- 620.250 Groundwater Management Zone
- 620.260 Reclassification of Groundwater by Adjusted Standard

SUBPART C: NONDEGRADATION PROVISIONS FOR
APPROPRIATE GROUNDWATERS

- Section
- 620.301 General Prohibition Against Use Impairment of Resource Groundwater
- 620.302 Applicability of Preventive Notification and Preventive Response Activities
- 620.305 Preventive Notification Procedures
- 620.310 Preventive Response Activities

SUBPART D: GROUNDWATER QUALITY STANDARDS

- Section
- 620.401 Applicability
- 620.405 General Prohibitions Against Violations of Groundwater Quality Standards
- 620.410 Groundwater Quality Standards for Class I: Potable Resource Groundwater
- 620.420 Groundwater Quality Standards for Class II: General Resource Groundwater
- 620.430 Groundwater Quality Standards for Class III: Special Resource Groundwater
- 620.440 Groundwater Quality Standards for Class IV: Other Groundwater
- 620.450 Alternative Groundwater Quality Standards

SUBPART E: GROUNDWATER MONITORING AND ANALYTICAL PROCEDURES

- Section
- 620.505 Compliance Determination
- 620.510 Monitoring and Analytical Requirements

SUBPART F: HEALTH ADVISORIES

- Section
- 620.601 Purpose of a Health Advisory
- 620.605 Issuance of a Health Advisory
- 620.610 Publishing Health Advisories
- 620.615 Additional Health Advice for Mixtures of Similar-Acting Substances

- 620.Appendix A Procedures for Determining Human Threshold Toxicant Advisory Concentration for Class I: Potable Resource Groundwater

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

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

620.Appendix D Confirmation of an Adequate Corrective Action Pursuant to 35 Ill. Adm. Code 620.250 (a)(2).

AUTHORITY: Implementing and authorized by Section 8 of the Illinois Groundwater Protection Act and Section 27 of the Illinois Environmental Protection Act (Ill. Rev. Stat. 1991, ch. 111 1/2, par. 7458 and 1027) [415 ILCS 55/8 and 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. _____, effective _____.

NOTE: Capitalization denotes statutory language.

SUBPART A: GENERAL

Section 620.125 Incorporations by Reference

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

ASTM. American Society for Testing and Materials, 1976 Race Street, Philadelphia, Pa. 19103 (215) 299-5585

"Standard Practice for Description and Identification of Soils (Visual Manual Procedure)" D2488-84

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

Maximum Contaminant Level Goals and National Primary Drinking Water Regulations for Lead and Copper; Final Rule, 56 Fed. Reg. 26460-26564 (June 7, 1991).

National Primary Drinking Water Regulations, Final Rule, 56 Fed. Reg. 3526-3597 (January 30, 1991).

National Primary Drinking Water Regulations, Final Rule, 57 Fed. Reg. 31776-31849 (July 17, 1992).

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

NCRP. National Council on Radiation Protection, 7910 Woodmont Ave., Bethesda, MD (301) 657-6252

"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.

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

"Methods for Chemical Analysis of Water and Wastes," EPA Publication No. EPA-600/4-79-020, (March 1983), Doc. No. PB 84-128677

"Methods for the Determination of Organic Compounds in Drinking Water", EPA, EMSL, EPA-600/4-88/039 (Dec. 1988), Doc. No. PB 89-220461

"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 Wastes, Physical/Chemical Methods", EPA Publication No. SW-846 (Third Edition, 1986, as amended by Revision I, Final Update I, July 1992~~(December 1987)~~, Doc. No. PB 89-148076

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 (1981).

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

(Source: Amended at 18 Ill. Reg. ____, effective _____)

SUBPART B: GROUNDWATER CLASSIFICATION

Section 620.210 Class I: Potable Resource Groundwater

Except as provided in Sections 620.230, 620.240, or 620.250, Potable Resource Groundwater is:

- a) Groundwater located 10 feet or more below the land surface and within:
 - 1) The minimum setback zone of a well which serves as a potable water supply and to the bottom of such well;
 - 2) Unconsolidated sand, gravel or sand and gravel which is 5 feet or more in thickness and that contains 12 percent or less of fines (i.e. fines which pass through a No. 200 sieve tested according to ASTM Standard Practice D2488-84, incorporated by reference at Section 620.125);
 - 3) Sandstone which is 10 feet or more in thickness or fractured carbonate which is 15 feet ~~o~~for more in thickness; or
 - 4) Any geologic material which is capable of a:
 - A) Sustained groundwater yield, from up to a 12 inch borehole, of 150 gallons per day or more from a thickness of 15 feet or less; or
 - B) Hydraulic conductivity of 1×10^{-4} cm/sec or greater using one of the following test methods or its equivalent:
 - i) Permeameter;
 - ii) Slug test; or
 - iii) Pump test.
- b) Any groundwater which is determined by the Board pursuant to petition procedures set forth in Section 620.260, to be capable of potable use.

(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 18 Ill. Reg. ____, effective _____)

Section 620.260 Reclassification of Groundwater by Adjusted Standard

Any person may petition the Board to reclassify a groundwater in accordance with the procedures for adjusted standards specified in Section 28.1 of the Act and 35 Ill. Adm. Code 106.Subpart G. In any proceeding to reclassify specific groundwater by adjusted standard, in addition to the requirements of 35 Ill. Adm. Code 106.Subpart G, and Section 28.1(c) of the Act, the petition 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 as set forth in Sections 620.210(b), 620.220(b), 620.230, or 620.240(b);
- b) Whether the proposed change or use restriction is necessary for economic or social development, by providing information including, but not limited to, the impacts of the standards on the regional economy, social benefits such as loss of jobs or closing of facilities, and economic analysis contrasting the health and environmental benefits with 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 therein, including endangered or threatened species of plant, fish or wildlife listed pursuant to the Endangered Species Act, 16 U.S.C. 1531 et seq., or the Illinois Endangered Species Protection Act (Ill. Rev. Stat. 1989~~91~~91, ch. 8, para. 331 et seq.). [415 ILCS 10]

(Source: Amended at 18 Ill. Reg. ____, effective _____)

SUBPART C: NONDEGRADATION PROVISIONS FOR
APPROPRIATE GROUNDWATERS

Section 620.302 Applicability of Preventive Notification and
Preventive Response Activities

- a) Preventive notification and preventive response as specified in Sections 620.305 through 620.310 applies to:
 - 1) Class I groundwater under Section 620.210(a)(1), (a)(2), or (a)(3) which is monitored by the persons listed in subsection (b); or
 - 2) Class III groundwater which is monitored by 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 for which groundwater quality monitoring must be performed pursuant to State or Federal law or regulation (e.g. Sections 106 and 107 of the Comprehensive Environmental Response, Compensation and Liability Act~~7~~ (42 U.S.C. 9601, et seq.); Sections 3004 and 3008 of the Resource Conservation and Recovery Act~~7~~ (42 U.S.C. 6901, et seq.); Sections 4(g), 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~~7~~);^u
 - 2) An owner or operator of a public water supply well who conducts groundwater quality monitoring; ~~or~~

- 3) A state agency which 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 Conservation, Department of Mines and Minerals, Department of Agriculture, Office of State Fire Marshall or Department of Energy and Natural Resources); or
 - 4) An owner or operator of a facility that conducts groundwater quality monitoring pursuant to State or federal judicial or administrative order.
- c) If a contaminant exceeds a standard 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 18 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 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) shall, within 30 days of the date of issuance of such notice, sample each water well or monitoring well for the contaminant identified in the notice if the contaminant or material containing such contaminant is or has been stored, disposed, 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 of the date on which the first sample analyses are received. If a contaminant identified under Section 620.305(a) is detected by the resampling, preventive notification must be given as 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 shall:
- i) Conduct a well site survey pursuant to Section 17.1(d) of the Act, if such a survey has not been previously conducted within the last 5 years; and
 - ii) Identify those sites or activities which represent a hazard to the continued availability of groundwaters for public use unless a groundwater protection needs assessment has been prepared pursuant to Section 17.1 of the Act.
- 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 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 in Subpart D has not been exceeded:
- A) The appropriate regulatory agency shall determine if any of the following occurs for Class I: Potable Resource Groundwater:
 - i) The levels set forth below are exceeded or are changed for pH:

<u>Constituent</u>	<u>Criterion</u> (mg/l)
para-Dichlorobenzene	0.005
ortho-Dichlorobenzene	0.01
Ethylbenzene	0.03
Phenols	0.001
Styrene	0.01
Toluene	0.04
Xylenes	0.02

- ii) A statistically significant increase occurs above background (as determined

pursuant to other regulatory procedures (e.g., 35 Ill. Adm. Code 616, 724, 725 or 811)) for arsenic, beryllium, cadmium, chromium, cyanide, lead or mercury or thallium (except due to natural causes); or for aldicarb, atrazine, carbofuran, dalapon, dinoseb, endrin, endothall, hexachlorocyclopentadiene, lindane (gamma-hexachlorocyclohexane), 2,4-D, 1,1-dichloroethylene, cis-1,2-dichloroethylene, trans-1,2-dichloroethylene, methoxychlor, monochlorobenzene, picloram, simazine, 2,4,5-TP (Silvex), 1,2,4-trichlorobenzene, 1,1,2-trichloroethane, and 1,1,1-trichloroethane.

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

<u>Constituent</u>	<u>Criterion</u> (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) The appropriate agency shall determine if, for Class III: Special Resource Groundwater, the levels as determined by the Board are exceeded.
- C) 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 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) The appropriate regulatory agency shall consider actions necessary to minimize the degree and extent of contamination.
- b) The appropriate regulatory agency shall determine whether a preventative response must be undertaken based on relevant factors including, but not limited to, the considerations in subsection (a)(3).
- c) After completion of preventive response pursuant to authority of an appropriate regulatory agency, the concentration of a contaminant listed in subsection (a)(3)(A) in groundwater may exceed 50 percent of the applicable numerical standard in Subpart D only if the following conditions are met:
- 1) The 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 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 18 Ill. Reg. ____, effective _____)

SUBPART D: GROUNDWATER QUALITY STANDARDS

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:

<u>Constituent</u>	<u>Units</u>	<u>Standard</u>
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<u>Antimony</u>	<u>mg/L</u>	<u>0.006</u>
Arsenic	mg/L	0.05
Barium	mg/L	2
<u>Beryllium</u>	<u>mg/L</u>	<u>0.004</u>
Boron	mg/L	2
Cadmium	mg/L	0.005
Chloride	mg/L	200
Chromium	mg/L	0.1
Cobalt	mg/L	1
Copper	mg/L	0.65
Cyanide	mg/L	0.2
Fluoride	mg/L	4.0
Iron	mg/L	5
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
Radium-226	pCi/L	20
Radium-228	pCi/L	20
Selenium	mg/L	0.05
Silver	mg/L	0.05
Sulfate	mg/L	400
<u>Thallium</u>	<u>mg/L</u>	<u>0.002</u>
Total Dissolved		
Solids (TDS)	mg/L	1,200
Zinc	mg/L	5

b) Organic Chemical Constituents

Except due to natural causes or as provided in Section 620.450 or subsection (c), concentrations of the following organic chemical constituents must not be exceeded in Class I groundwater:

<u>Constituent</u>	<u>Standard</u> (mg/L)
Alachlor*	0.002
Aldicarb	0.003
Atrazine	0.003
Benzene*	0.005
<u>Benzo(a)pyrene*</u>	<u>0.0002</u>
Carbofuran	0.04
Carbon Tetrachloride*	0.005
Chlordane*	0.002
<u>Dalapon</u>	<u>0.2</u>
<u>Dichloromethane*</u>	<u>0.005</u>
<u>Di(2-ethylhexyl)phthalate*</u>	<u>0.006</u>
<u>Dinoseb</u>	<u>0.007</u>
<u>Endothall</u>	<u>0.1</u>
Endrin	0.002

<u>Ethylene Dibromide*</u>	0.00005
Heptachlor*	0.0004
Heptachlor Epoxide*	0.0002
<u>Hexachlorocyclopentadiene</u>	0.05
Lindane (Gamma-Hexachloro cyclohexane)	0.0002
2,4-D	0.07
ortho-Dichlorobenzene	0.6
para-Dichlorobenzene	0.075
<u>1,2-Dibromo-3-Chloropropane*</u>	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
Methoxychlor	0.04
Monochlorobenzene	0.1
Pentachlorophenol*	0.001
Phenols	0.1
<u>Picloram</u>	0.5
Polychlorinated Biphenyls (PCB's) (as decachloro-biphenyl)*	0.0005
<u>Simazine</u>	0.004
Styrene	0.1
2,4,5-TP (Silvex)	0.05
Tetrachloroethylene*	0.005
Toluene	1
Toxaphene*	0.003
1,1,1-Trichloroethane	0.2
<u>1,1,2-Trichloroethane</u>	0.005
<u>1,2,4-Trichlorobenzene</u>	0.07
Trichloroethylene*	0.005
Vinyl Chloride*	0.002
Xylenes	10

*Denotes a carcinogen.

c) Complex Organic Chemical Mixtures

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

<u>Constituent</u>	<u>Standard</u> (mg/L)
Benzene*	0.005
BETX	11.705

*Denotes a carcinogen.

d) pH

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

e) 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 shall not exceed a dose equivalent to the total body 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 shall not exceed 4 mrem/year in Class I groundwater except due to natural causes.
- 2) Except for the radionuclides listed in subsection (e)(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 accordance with the procedure set forth in NCRP Report Number 22, incorporated by reference at in 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 shall not be exceeded in Class I groundwater:

<u>Constituent</u>	<u>Critical Organ</u>	<u>Standard (Pci/l)</u>
Tritium	Total body	20,000
Strontium-90	Bone marrow	8

(Source: Amended at 18 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 (d), concentrations of the following chemical constituents must not be exceeded in Class II groundwater:

<u>Constituent</u>	<u>Standard</u> (mg/L)
<u>Antimony</u>	<u>0.024</u>
Arsenic	0.2
Barium	2
<u>Beryllium</u>	<u>0.5</u>
Cadmium	0.05
Chromium	1
Cobalt	1
Cyanide	0.6
Fluoride	4.0
Lead	0.1
Mercury	0.01
Nitrate as N	100
<u>Thallium</u>	<u>0.02</u>

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

<u>Constituent</u>	<u>Standard</u> (mg/L)
Boron	2.0
Chloride	200
Copper	0.65
Iron	5
Manganese	10
Nickel	2
Selenium	0.05
Total Dissolved Solids (TDS)	1,200
Sulfate	400
Zinc	10

- 3) The standard for any inorganic chemical constituent listed in subsection (a)(2), for barium, or for pH does not apply to groundwater within fill material or within the upper 10 feet of parent material under such fill material on a site not within the rural property class for which:
- A) Prior to the effective date of this Part, surficial characteristics have been altered by the placement of such fill material so as to impact the concentration of the parameters listed in subsection (a)(3), and any on-site

groundwater monitoring of such parameters is available for review by the Agency.

B) On the effective date of this Part, surficial characteristics are in the process of being altered by the placement of such fill material, which proceeds in reasonably continuous manner to completion, so as to impact the concentration of the parameters listed in subsection (a)(3), and any on-site groundwater monitoring of such parameters is available for review by the Agency.

4) For purposes of subsection (a)(3), 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 (d), concentrations of the following organic chemical constituents must not be exceeded in Class II groundwater:

<u>Constituent</u>	<u>Standard</u> (mg/L)
Alachlor*	0.010
Aldicarb	0.015
Atrazine	0.015
Benzene*	0.025
<u>Benzo(a)pyrene*</u>	<u>0.002</u>
Carbofuran	0.2
Carbon Tetrachloride*	0.025
Chlordane*	0.01
<u>Dalapon</u>	<u>2.0</u>
<u>Dichloromethane*</u>	<u>0.05</u>
<u>Dichloromethane</u>	<u>0.05</u>
<u>Di(2-ethylhexyl)phthalate*</u>	<u>0.06</u>
<u>Dinoseb</u>	<u>0.07</u>
<u>Endothall</u>	<u>0.1</u>
Endrin	0.01
<u>Ethylene Dibromide*</u>	<u>0.0005</u>
Heptachlor*	0.002
Heptachlor Epoxide*	0.001
<u>Hexachlorocyclopentadiene</u>	<u>0.5</u>
Lindane (Gamma-Hexachloro cyclohexane)	0.001
2,4-D	0.35
ortho-Dichlorobenzene	1.5

para-Dichlorobenzene	0.375
<u>1,2-Dibromo-3-Chloropropane*</u>	<u>0.002</u>
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
Ethylbenzene	1.0
Methoxychlor	0.2
Monochlorobenzene	0.5
Pentachlorophenol*	0.005
Phenols	0.1
<u>Picloram</u>	<u>5.0</u>
Polychlorinated Biphenyls (PCB's) (as decachloro-biphenyl)*	0.0025
<u>Simazine</u>	<u>0.04</u>
Styrene	0.5
2,4,5-TP	0.25
Tetrachloroethylene*	0.025
Toluene	2.5
Toxaphene*	0.015
1,1,1-Trichloroethane	1.0
<u>1,2,4-Trichlorobenzene</u>	<u>0.7</u>
<u>1,1,2-Trichloroethane</u>	<u>0.05</u>
Trichloroethylene*	0.025
Vinyl Chloride*	0.01
Xylenes	10

*Denotes a carcinogen.

- 2) The standards for pesticide chemical constituents listed in subsection (b)(1) do not apply to groundwater within 10 feet of the land surface, provided that the concentrations of such constituents result from the application of pesticides in a manner consistent with the requirements of the Federal Insecticide, Fungicide and Rodenticide Act (7 U.S.C. 136 et seq.) and the Illinois Pesticide Act (Ill. Rev. Stat. 198991, ch. 5, pars. 801 et seq.) [415 ILCS 60].

c) Complex Organic Chemical Mixtures

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

<u>Constituent</u>	<u>Standard</u> (mg/L)
Benzene*	0.025
BETX	13.525

*Denotes a carcinogen.

d) 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.

(Source: Amended at 18 Ill. Reg. ____, effective ____)

SUBPART E: GROUNDWATER MONITORING AND ANALYTICAL PROCEDURES

Section 620.510 Monitoring and Analytical Requirements

a) Representative Samples

A representative sample must be taken from locations as specified in Section 620.505.

b) Sampling and Analytical Procedures

- 1) Samples must be collected in accordance with the procedures set forth in the documents pertaining to groundwater monitoring and analysis, "Methods for Chemical Analysis of Water and Wastes", "Methods for the Determination of Organic Compounds in Drinking Water", "Practical Guide for Ground-Water Sampling", "Test Methods for Evaluating Solid Wastes, Physical/Chemical Methods" (SW-846), 56 Fed. Reg. 3526-3597, 56 Fed. Reg. 26460-26564, 57 Fed. Reg. 31776-31849, "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 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) The analytical methodology used for the analysis of constituents in Subparts C and D must be consistent with both of the following:
 - A) The methodology must have a PQL at or below the preventive response levels of Subpart C or the groundwater standard set forth in Subpart D, whichever is applicable; and

- B) The methodology must be consistent with methodologies contained in "Methods for Chemical Analysis of Water and Wastes", "Methods for the Determination of Organic Compounds in Drinking Water", "Practical Guide for Ground-Water Sampling", "Test Methods for Evaluating Solid Wastes, Physical/Chemical Methods" (SW-846), "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 at Section 620.125.

c) Reporting Requirements

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 method detection limits and the PQLs); and
- 4) Chain of custody control.

(Source: Amended at 18 Ill. Reg. ____, effective _____)

SUBPART F: HEALTH ADVISORIES

Section 620.605 Issuance of a Health Advisory

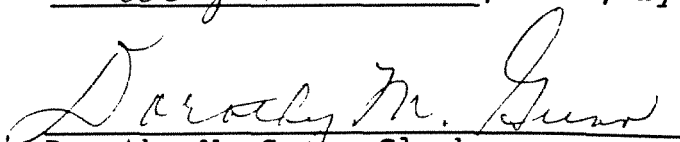
- a) The Agency shall issue a Health Advisory for a chemical substance if all of the following conditions are met:
- 1) A community water supply well is sampled and a substance is detected and confirmed by resampling;
 - 2) There is no standard under Section 620.410 for such chemical substance; and

- 3) The chemical substance is toxic or harmful to human health according to the procedures 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 there is a threshold dose below which no damage occurs, the guidance level for any such substance is the Maximum Contaminant Level Goal ("MCLG"), adopted by USEPA for such substance, 56 Fed. Reg. 26460-26564, ~~and~~ 56 Fed. Reg. 3526-3597, and 57 Fed. Reg. 31776-31849, incorporated by reference at Section 620.125. If there is no MCLG for the substance, the guidance level is the Human Threshold Toxicant Advisory Concentration for such substance as determined in accordance with Appendix A, 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 the substance. If the concentration for such substance is less than the lowest appropriate PQL for the substance specified in SW-846, incorporated by reference at Section 620.125, the guidance level is the lowest appropriate PQL.
 - 2) If the chemical substance is a carcinogen, the guidance level for any such chemical substance is the lowest appropriate PQL specified in SW-846, incorporated by reference at Section 620.125 for such substance.

(Source: Amended at 18 Ill. Reg. ____, effective ____)

IT IS SO ORDERED.

I, Dorothy M. Gunn, Clerk of the Illinois Pollution Control Board, hereby certify that the above opinion and order was adopted on the 17th day of August, 1994, by a vote of 6-0.


Dorothy M. Gunn, Clerk
Illinois Pollution Control Board