ILLINOIS POLLUTION CONTROL BOARD
February 28, 1991

IN THE MATTER OF:	)	
	)	
GROUNDWATER QUALITY STANDARDS	)	R89-14, Docket A & B
(35 ILL. ADM. CODE 620)	)	(Rulemaking)

PROPOSED RULE FIRST NOTICE

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

On February 19, 1991 the Illinois Environmental Protection Agency ("Agency") filed an alternate proposal in this proceeding (PC #47). The Board today splits the docket in this proceeding and sends the Agency's new proposal to First Notice as Docket B. The Board's proposal published in the Illinois Register on November 2, 1990 (14 Ill. Reg. 17822, 17862) will remain under Docket A and will remain active.

It is to be noted that today's proposal is offered as filed by the Agency, without alteration by the Board other than as may have been occasioned by adapting the proposal to the Board's word processing system and for Illinois Register publication requirements.

The Board emphasizes that in taking this action, it today adopts no substantive position concerning the merits, either technical or economic, of the proposal or any of its facets.

The Board believes that sending the proposal to First Notice now maximizes the opportunity for public comment on the Agency's new proposal, while simultaneously assisting the most expeditious disposition of this matter. Towards these ends, the Board particularly requests comment on any aspect of the proposal. Interested persons should note the particulars regarding submission of public comments as presented in the Hearing Officer's Order of this same date.

The Board further notes that it has received post hearing comments, some of which pertain to the Agency's new proposal. The Board will consider these during First Notice on Docket B.

The Board hereby offers for First Notice the following additions to 35 Ill. Adm. Code: Subtitle F. The Clerk of the Board is directed to file these proposed amendments and rules with the Secretary of State.

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 (Ill. Rev. Stat. 1989, ch. 111 1/2, par. 7458).

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

NOTE: Capitalization denotes statutory language.

SUBPART A: GENERAL

Section 620.105 Purpose

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

Section 620.110 Definitions

The definitions of the Environmental Protection Act (Ill. Rev. Stat. 1989, ch. 111 1/2, par. 1001 et seq.) and the Groundwater Protection Act (Ill. Rev. Stat. 1989, ch. 111 1/2, pars. 7451 et seq.) apply to this Part unless otherwise provided. The following definitions also apply to this Part.

"Act" means the Environmental Protection Act (Ill. Rev. Stat. 1989, ch. 111 1/2, pars. 1001 et seq.).

"Agency" means the Illinois Environmental Protection Agency.

"AQUIFER" MEANS SATURATED (WITH GROUNDWATER) SOILS AND GEOLOGIC MATERIALS WHICH ARE SUFFICIENTLY PERMEABLE TO READILY YIELD ECONOMICALLY USEFUL QUANTITIES OF WATER TO WELLS, SPRINGS, OR STREAMS UNDER ORDINARY HYDRAULIC GRADIENTS. (Ill. Rev. Stat. 1989, ch. 111 1/2, par. 7453(b)

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

"Board" means the Illinois Pollution Control Board.

"Carcinogen" means a chemical, or complex mixture of closely related chemicals, which has been finally determined 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.

"COMMUNITY WATER SUPPLY" MEANS A PUBLIC SUPPLY WHICH SERVES OR IS INTENDED TO SERVE AT LEAST 15 SERVICE CONNECTIONS USED BY RESIDENTS OR REGULARLY SERVES AT LEAST 25 RESIDENTS. (Ill. Rev. Stat. 1989, ch. 111 1/2 par. 1003.05)

"CONTAMINANT" MEANS ANY SOLID, LIQUID, OR GASEOUS MATTER, ANY ODOR, OR ANY FORM OF ENERGY, FROM WHATEVER SOURCE. (Ill. Rev. Stat. 1989, ch. 111 1/2, par. 1003.06)

"Corrective action process" means those procedures and practices that may be imposed by a regulatory agency when a determination has been made that contamination of groundwater has taken place, and are necessary to address a potential or existing violation of the standards set forth in Subpart D.

"Cumulative impact area" means the area, including the coal mine area permitted under the Surface Coal Mining Land Conservation Act (Ill. Rev. Stat. 1989, ch. 96 1/2, pars. 7901.01 et seq., as amended) 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.

"Detect" or "detection" are defined as follows:

> "Method 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. (54 Fed. Reg. 22100); or
>
> "Method Quantitation Limit" or "MQL" means the minimum concentration of a substance that can be measured and reported. ("Test Methods for Evaluating Solid Wastes, Physical/ Chemical Methods," EPA Publication No. SW-846 (Third Edition, 1986, as amended by Revision I (December 1987))

"Department" means the Illinois Department of Energy and Natural Resources.

"GROUNDWATER" MEANS UNDERGROUND WATER 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. (Ill. Rev. Stat. 1989, ch. 111 1/2, par. 1003.64)

"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. (Ill. Rev. Stat. 1989, ch. 111 1/2, pars. 7451 et seq.)

"LOAEL" or "Lowest observable adverse effect level" means the lowest tested concentration of a chemical or substance which 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)

"NOAEL" or "No observable adverse effect level" means the highest tested concentration of a chemical or substance which 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. (Ill. Rev. Stat. 1989, ch. 111 1/2 par. 1003.05)

"Off-site" means any site that is not on-site.

"On-site" means the same or geographically contiguous property which may be divided by public or private right-of-way, 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 which he controls and to which the public does not have access is also considered on-site property.

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

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

"POTABLE" MEANS GENERALLY FIT FOR HUMAN CONSUMPTION IN ACCORDANCE WITH ACCEPTED WATER SUPPLY PRINCIPLES AND PRACTICES. (Ill. Rev. Stat. 1989, ch. 111 1/2, par. 7453(h))

"POTENTIAL PRIMARY SOURCE" MEANS ANY UNIT AT A FACILITY OR SITE NOT CURRENTLY SUBJECT TO A REMOVAL OR REMEDIAL ACTION WHICH: IS UTILIZED FOR THE TREATMENT, STORAGE, OR DISPOSAL OF ANY HAZARDOUS OR SPECIAL WASTE NOT GENERATED AT THE SITE; OR IS UTILIZED FOR THE DISPOSAL OF MUNICIPAL WASTE NOT GENERATED AT THE SITE, OTHER THAN LANDSCAPE WASTE AND CONSTRUCTION AND DEMOLITION

DEBRIS; OR IS 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. (Ill. Rev. Stat. 1989, ch. 111 1/2, par. 1003.59)

"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. (Ill. Rev. Stat. 1989, ch. 111 1/2, par. 1003.58)

"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, WHICH: IS 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 SUBSTANCES; 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 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 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". (Ill. Rev. Stat. 1989, ch. 111 1/2, par. 1003.60)

"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 as set forth in Section 620.125.

"Previously mined area" means land disturbed or affected by coal mining operations that was not reclaimed prior to February 1, 1983.

(Board Note: February 1, 1983, is the effective date of the Illinois permanent program regulations implementing the Surface Coal Mining Land Conservation and Reclamation Act (Ill. Rev. Stat. 1989, ch. 96 1/2, pars. 7901.1 et seq., as amended) as codified in 62 Ill. Adm. Code 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 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, 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 WHICH SERVE AT LEAST 15 SERVICE CONNECTIONS OR 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". (Ill. Rev. Stat. 1989, ch. 111 1/2 par. 1003.28)

"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, Department of Mines and Minerals, and the Office of State Fire Marshall.

"REGULATED RECHARGE AREA" MEANS A COMPACT GEOGRAPHIC AREA, AS DETERMINED BY THE BOARD pursuant to Section 17.4 of the Act, THE GEOLOGY OF WHICH RENDERS A POTABLE RESOURCE GROUNDWATER PARTICULARLY SUSCEPTIBLE TO CONTAMINATION. (Ill. Rev. Stat. 1989, ch. 111 1/2 par. 1003.67)

"RESOURCE GROUNDWATER" MEANS GROUNDWATER THAT IS PRESENTLY BEING OR IN THE FUTURE CAPABLE OF BEING PUT

TO BENEFICIAL USE BY REASON OF BEING OF SUITABLE QUALITY. (Ill. Rev. Stat. 1989, ch. 111 1/2, par. 7453(j))

"SETBACK ZONE" MEANS A GEOGRAPHIC AREA, DESIGNATED PURSUANT TO THIS ACT, CONTAINING A POTABLE WATER SUPPLY WELL OR A POTENTIAL SOURCE OR POTENTIAL ROUTE HAVING A CONTINUOUS BOUNDARY, AND WITHIN WHICH CERTAIN PROHIBITIONS OR REGULATIONS ARE APPLICABLE IN ORDER TO PROTECT GROUNDWATERS. (Ill. Rev. Stat. 1989, ch. 111 1/2 par. 1003.61)

"Site" means any location, place, tract of land and facilities, including but not limited to buildings and improvements.

"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 UTILIZED ONLY FOR AGRICULTURAL PRODUCTION). (Ill. Rev. Stat. 1989, ch. 111 1/2, par. 1003.62)

"USEPA" or "U.S. EPA" means the United States Environmental Protection Agency.

Section 620.115 Prohibition

No person shall cause, threaten or allow a violation of the Act, the IGPA or regulations adopted by the Board thereunder, including but not limited to this Part.

Section 620.125 Incorporations by Reference

a) The Board incorporates the following material by reference:

1) ASTM. Available from: ASTM, 1916 Race Street, Philadelphia, Pa. 19103:

A) "Annual Book of ASTM Standards, Section 8 Plastics," Volume 08.04 (PCN): 01-080484-19.

2) EMSL. Available from Environmental Monitoring Systems Laboratory, Office of Research and Development, USEPA, Cincinnati, Ohio 45268, (513-569-7562):

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

   B) "Methods for the Determination of Organic Compounds in Drinking Water," EPA, EMSL, EPA-600/4-88/039 (Dec. 1988).

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

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

   B) "RCRA Groundwater Monitoring Technical Enforcement Guidance Document," EPA Publication No. OSWER-9950.1 (September 1986).

   C) "Test Methods for Evaluating Solid Wastes, Physical/Chemical Methods," EPA Publication No. SW-846 (Third Edition, 1986, as amended by Revision I (December 1987).

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

   E) 40 CFR 141, 142 and 143 (1990)

   F) 40 CFR 300 (1990)

   G) 54 Fed. Reg. 22062-22160 (May 22, 1989).

   H) 54 Fed. Reg. 3526-3597 (January 30, 1991).

4) USGS. Available from: Distribution Branch, United States Geological Survey, 604 South Pickett Street, Alexandria, VA 22304, (703-648-7411):

   A) "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.

Section 620.130 Exemption from General Use Standards and Public and Food Processing Water Supply Standards

Groundwater is not required to meet the general use standards and public and food processing water supply standards of 35 Ill. Adm. Code 302.Subparts B and C.

Section 620.135 Exclusion for Waters in Certain Man-Made Conduits

This Part does not apply to waters contained in man-made subsurface drains, tunnels, reservoirs, storm sewers, tiles or sewers.

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 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;

4) Class IV: Other Groundwater; or

b) A groundwater management zone in accordance with Section 620.250.

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 Test Method D2487-83);

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

4) Any geologic material which is capable of a sustained groundwater yield of 150 gallons per day or more from a thickness of 15 feet or less, using an appropriate test method.

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.

Section 620.220 Class II: General Resource Groundwater

Except as provided in Section 620.250, General Resource Groundwater is:

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

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

Section 620.230 Class III: Special Resource Groundwater

Except as provided in Section 620.250 and as determined by the Board pursuant to procedures set forth in Section 620.260, Special Resource Groundwater is groundwater of high value that is vulnerable to contamination and that is:

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

b) Vital for a particularly sensitive ecological system.

Section 620.240 Class IV: Other Groundwater

Except as provided in Section 620.250, Other Groundwater is:

a) Groundwater within the zone of attenuation as provided for a permitted landfill in 35 Ill. Adm. Code 811;

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

c) Groundwater which has been designated by the Board as an exempt aquifer pursuant to 35 Ill. Adm. Code 730.104; or

d) Groundwater which underlies a potential primary or secondary source, in which contaminants may be present, provided that:

1) The outermost edge is the closest practicable distance, but does not exceed a lateral distance of 25 feet from the edge of such potential source or the property boundary, whichever is less, and a depth of 15 feet from the bottom of such 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 in such groundwater.

e) Groundwater within a previously mined area, unless monitoring demonstrates that the groundwater is capable of beneficial use consistent with the standards as provided in Sections 620.410 or 620.420. In the event that such beneficial use is determined, groundwater within the previously mined area shall not be Class IV.

Section 620.250 Groundwater Management Zone

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

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

2) For which the owner or operator provides a written confirmation to the Agency that an equivalent corrective process is being undertaken in a timely and appropriate manner. Such confirmation shall be provided in a form as prescribed by the Agency.

b) A groundwater management zone is established upon concurrence by the Agency that the conditions as specified in subsection (a) are met. Typical actions which may take place within such zone include, but are not limited to, the following:

1) Containment of contaminants;

2) Treatment of contaminants; or

3) Use or exposure controls.

c) A groundwater management zone may be established for a period of time consistent with implementation of a process as described in subsection (a). In the event that restoration concentrations, as specified in

Section 620.450(a)(4)(B), remain in groundwater at the site following completion of such a process, the Agency shall review the on-going adequacy of controls and continued management at the site. Such review shall take place no less often than every 5 years and the results shall be presented in a written report.

d) A groundwater management zone shall expire upon appropriate documentation which confirms:

1) Attainment of applicable standards as set forth in Subpart D; or

2) Effectuation of enforceable measures that preclude human exposure to on-site restoration concentrations in groundwater.

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(e), 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, ch. 8, par. 331 et seq.).

SUBPART C: NONDEGRADATION PROVISIONS FOR APPROPRIATE GROUNDWATERS

Section 620.301 General Prohibition Against Use Impairment of Resource Groundwater

a) No person 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 such groundwater; or

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

b) Nothing in this Section shall prevent the establishment of a groundwater management zone pursuant to Section 620.250.

Section 620.302 Applicability of Notification Limitations and Preventive Response Activities

a) Notification limitations and preventive response as specified in Sections 620.305 through 620.310 shall apply to:

1) Class I groundwater, which is monitored by the persons listed in subsection (b), and is located within:

A) A setback zone;

B) A regulated recharge area;

C) 50 feet of the land surface; 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;

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).

Section 620.305 Notification Limitations and Procedures

a) Pursuant to groundwater quality monitoring as described in Section 620.302, a notification limitation shall apply to a specified groundwater whenever a contaminant:

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

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

b) When a notification limitation applies to groundwater which is monitored by a regulated entity for the subject contaminant, the owner or operator of the site shall confirm the detection by resampling the monitoring well. This resampling shall be made within 30 days of the date on which the first sample analyses are received. The owner or operator shall provide notice to the appropriate regulatory agency of the results of the resampling analysis within 30 days 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 notification limitation applies to groundwater which is monitored by a regulatory agency, such agency shall notify the owner or operator of the site where the detection has occurred. The owner or operator shall confirm the detection by resampling within 30 days of the date of the notice by the regulatory agency. The owner or operator shall provide notice to the regulatory agency of the results of the resampling analysis within 30 days 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 notice of a confirmed detection has been provided by an owner or operator pursuant to this Section, additional detections of the same contaminant do not require further notice, provided that the groundwater quality conditions are substantially

unchanged or that preventive response is underway for such contaminant.

Section 620.310 Preventive Response Activities

a) The following preventive assessment shall be undertaken:

1) If a notice 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 shall be resampled within 30 days of the date on which the first sample analyses are received. The results of each analysis shall be reported to the Agency within 90 days of the date of issuance of the notice.

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) The Department of Public Health shall conduct a sanitary survey within 500 feet of the wellhead or

wellheads if a notice under Section 620.305(c) is provided by a non-community water supply or for multiple private water supply wells.

3) If a notice 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:

Constituent	Criteria (mg/l)
para-Dichlorobenzene	0.005
ortho-Dichlorobenzene	0.01
Ethylbenzene	0.03
Styrene	0.01
Toluene	0.04
Xylenes	0.02

ii) For a constituent other than those identified in subsections (a)(3)(A)(i) or (iii), 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, cadmium, chromium, cyanide, lead or mercury (except due to natural causes); or for aldicarb, atrazine, carbofuran, endrin, lindane (gamma-hexachlor cyclohexane), 2,4-D, 1,1-dichloroethylene, cis-1,2-dichloroethylene, trans-1,2-dichloroethylene, methoxychlor, monochlorobenzene, 2,4,5-TP (Silvex) and 1,1,1-trichloroethane.

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

Constituent	Criterion (mg/l)
Benzene	0.005
BETX	0.095

(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 exceedance 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 as 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) Based on the considerations in subsection (a)(3) as well as other relevant factors, the appropriate regulatory agency shall determine whether a preventive response shall be undertaken at a site.

c) After completion of preventive response pursuant to authority of an appropriate regulatory agency, the concentration of a contaminant in groundwater shall not exceed 50 percent of the applicable numerical standard in Subpart D.

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.

SUBPART D: GROUNDWATER QUALITY STANDARDS

Section 620.401 Applicability

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

Section 620.405 General Prohibition Against Violations of Groundwater Quality Standards

No person shall cause, threaten or allow the release of any contaminant to groundwater so as to cause a groundwater quality standard set forth in this Subpart to be exceeded.

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 shall not be exceeded in Class I groundwater:

Constituent	Units	Standard
Arsenic	mg/l	0.05
Barium	mg/l	2
Cadmium	mg/l	0.005
Chloride*	mg/l	200
Chromium	mg/l	0.1
Copper	mg/l	5
Cyanide	mg/l	0.2
Fluoride	mg/l	4.0
Iron*	mg/l	5
Lead	mg/l	0.05
Manganese	mg/l	0.15
Mercury	mg/l	0.002
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
Total Dissolved Solids (TDS)*	mg/l	1,200

*Denotes standards that apply only in aquifers.

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 shall not be exceeded in Class I groundwater:

Constituent	Standard (mg/l)
Alachlor*	0.002
Aldicarb	0.003
Atrazine	0.003
Benzene*	0.005
Carbofuran	0.04
Carbon Tetrachloride*	0.005
Chlordane*	0.002
Endrin	0.002
Heptachlor*	0.0004
Heptachlor Epoxide*	0.0002
Lindane (Gamma-Hexachlor cyclohexane)	0.0002
2,4-D	0.07
ortho-Dichlorobenzene	0.6
para-Dichlorobenzene	0.075
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
Polychlorinated Biphenyls (PCB's)(as decachloro-biphenyl)*	0.0005
Styrene	0.1
2,4,5-TP (Silvex)	0.05
Tetrachloroethylene*	0.005
Toluene	1
Toxaphene*	0.003
1,1,1-Trichloroethane	0.2
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 shall not be exceeded in Class I groundwater:

Constituent	Standard (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 shall not be exceeded in Class I groundwater.

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 shall not be exceeded in Class II groundwater:

Constituent	Standard (mg/l)
Arsenic	0.2
Barium	2
Cadmium	0.05
Chromium	1
Cobalt	1
Cyanide	0.6
Fluoride	4.0
Lead	0.1
Mercury	0.01
Nitrate as N	100

2) Except as provided in Section 620.450 or subsection (a)(3) or (d), concentrations of the following chemical constituents shall not be exceeded within an aquifer which is 10 feet or more from the land surface:

Constituent	Standard (mg/l)
Boron	2.0
Chloride	200
Copper	0.5
Iron	5
Manganese	10
Nickel	2

Selenium	0.02
Total Dissolved Solids (TDS)	1,200
Sulfate	400
Zinc	10

3) For a site within the industrial property class, any concentration of an inorganic chemical constituent listed in subsection (a)(1) or (a)(2) shall not apply to groundwater within fill material or within the upper 5 feet of parent material under fill material that was placed on such a site prior to the effective date of this Part and for which:

A) On-site surficial characteristics have been altered by the placement of such fill material so as to cause the concentration as specified in subsection (a)(1), (a)(2), or (e) to be exceeded;

B) The placement of such fill material does not cause any concentration as specified in subsection (a)(1), (a)(2), or (e) to be exceeded off-site; and

C) The existing on-site concentration, as determined by groundwater monitoring and documented, of such chemical constituent is not exceeded after the effective date of this Part.

4) For purposes of subsection (a)(3), the term "fill material" means 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 shall not be exceeded in Class II groundwater:

Constituent	Standard (mg/l)
Alachlor*	0.010
Aldicarb	0.015
Atrazine	0.015
Benzene*	0.025
Carbofuran	0.2

Carbon Tetrachloride*	0.025
Chlordane*	0.01
Endrin	0.01
Heptachlor*	0.002
Heptachlor Epoxide*	0.01
Lindane (Gamma-Hexachlor cyclohexane)	0.0002
2,4-D	0.35
ortho-Dichlorobenzene	1.5
para-Dichlorobenzene	0.375
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
Polychlorinated Biphenyls (PCB's)(as decachloro-biphenyl)*	0.0025
Styrene	0.5
2,4,5-TP	0.25
Tetrachloroethylene*	0.025
Toluene	2.5
Toxaphene*	0.015
1,1,1-Trichloroethane	1.0
Trichloroethylene*	0.025
Vinyl Chloride*	0.01
Xylenes	10

*Denotes a carcinogen.

2) For a site used for agricultural crop production, the standards for pesticide chemical constituents listed in subsection (b)(1) shall not apply to groundwater within 5 feet of the land surface or the mature root zone, whichever is greater, but not to exceed 10 feet from 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. 1989, ch. 5, pars. 801 et seq.).

d) Complex Organic Chemical Mixtures

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

Constituent	Standard (mg/l)
Benzene*	0.025
BETX	13.525

*Denotes a carcinogen.

e) pH

Except due to natural causes, a pH range of 6.5 - 9.0 units shall not be exceeded in Class II groundwater of 10 feet or more from the land surface. This requirement shall apply only in aquifers.

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

Specific standards for Class III: Special Resource Groundwater will be established by the Board in accordance with procedures set forth in Section 620.260.

Section 620.440 Groundwater Quality Standards for Class IV: Other Groundwater

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

b) For groundwater within a zone of attenuation for a permitted landfill, the standards specified in Section 620.420 shall not be exceeded, except for concentrations of contaminants within leachate discharged from a permitted unit.

c) For groundwater within a previously mined area, the standards set forth in Section 620.420 shall not be exceeded, except for concentrations of TDS, chloride, iron, manganese, or sulfates. For concentrations of TDS, chloride, iron, manganese, or sulfates, the standards are the existing concentrations.

Section 620.450 Alternative Groundwater Quality Standards

a) Groundwater Quality Restoration Standards

1) Any chemical constituent in groundwater within a groundwater management zone is subject to this Section.

2) 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 shall apply to any chemical constituent in groundwater within a groundwater management zone.

3) Prior to completion of a process described in Section 620.250(a), the standards as specified in Sections 620.410, 620.420, 620.430, and 620.440 are not applicable to such released chemical constituent, provided that the initiated action proceeds in a timely and appropriate manner.

4) After completion of a process as described in Section 620.250(a) under which the maximum practicable restoration of beneficial use, as appropriate for the class of groundwater, has been achieved and any threat to public health or the environment has been minimized, the standard for such released chemical constituent is:

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

B) The restoration concentration, if such concentration exceeds the concentration for the appropriate class set forth in Section 620.410, 620.420, 620.430, or 620.440 for such constituent.

5) The Agency shall develop and maintain a listing of restoration concentrations as derived pursuant to subsection (a)(4)(B). This list shall be made available to the public and be updated periodically, but no less frequently than semi-annually. This listing shall be published in the Environmental Register.

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 pursuant to the Surface Coal Mining Land Conservation and Reclamation Act (Ill. Rev. Stat. 1989, ch. 96 1/2,

pars. 7901.1 et seq., as amended) and 62 Ill. Adm. Code 1700 through 1850, is subject to this Section. This Section shall not apply to:

A) A refuse disposal area that is not contained within the area from which overburden has been removed. This Section shall apply to a refuse disposal area that was placed in operation prior to February 1, 1983, and:

i) Has remained in continuous operation since that date; or

ii) Is modified after February 1, 1983, to include additional area, in which case this Section shall not apply to the additional area but shall apply to the area that meets the requirements of subsection (b)(1)(A)(i).

B) A coal preparation plant which contains slurry material, sludge or other precipitated process material. This Section shall apply to such a plant that was placed in operation prior to February 1, 1983, and:

i) Has remained in continuous operation since that date; or

ii) Is modified after February 1, 1983, to include additional area, in which case this Section shall not apply to the additional area but shall apply to the area that meets the requirements of subsection (b)(1)(B)(i).

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

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

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

i) The post-reclamation concentration or 3000 mg/l, whichever is less, for

groundwater within the permitted area; or

ii) The post-reclamation concentration of TDS shall 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 Department of Mines and Minerals and the Agency have determined that no significant resource groundwater existed prior to mining; and

B) For chloride, iron, manganese and sulfate, the post-reclamation concentration within the permitted area shall not be exceeded.

SUBPART E: GROUNDWATER MONITORING AND ANALYTICAL PROCEDURES

Section 620.505 Compliance Procedures

a) Compliance with standards at a site shall be determined as follows:

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

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

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

b) Compliance with this Part shall be determined at any point at which groundwater monitoring is conducted using any water well or monitoring well that meets the following conditions:

1) For a potable well other than a community water supply well, a construction report has been filed with the Department of Public Health for such potable well, or such well has been located and constructed (or reconstructed) to meet the Illinois Water Well Construction Code (Ill. Rev. Stat. 1989, ch. 111 1/2, pars. 116.111 et seq., as amended) and 35 Ill. Adm. Code 920.

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

3) For a water well other than a potable water 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 Department of Mines and Minerals for such well, or such well has been located and constructed (or reconstructed) to meet the Illinois Water Well Construction Code (Ill. Rev. Stat. 1989, ch. 111 1/2, pars. 116.111 et seq., as amended) and 35 Ill. Adm. Code 920.

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

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

B) 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

C) 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.

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

Section 620.510 Monitoring and Analytical Requirements

a) Representative Samples

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

b) Sampling and Analytical Procedures

1) Samples shall be collected in accordance with the procedures set forth in the documents listed in Section 620.125(a) or other procedures adopted by the appropriate 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 E must be consistent with both of the following:

A) The methodology must have a PQL at or below the groundwater standard set forth in Subparts C or the corrective action levels of Subpart E, whichever is applicable; and

B) The methodology must be consistent with methodologies contained in the documents listed in Section 620.125(a).

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.

SUBPART F: HEALTH ADVISORIES

Section 620.601 Purpose of a Health Advisory

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

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

1) A hazardous substance or pesticide; or

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

b) Determining whether the community water supply is taking its raw water from the "best available source which is economically reasonable and technologically possible" as mandated under 35 Ill. Adm. Code 604.501(a).

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

d) Evaluating mixtures of chemical substances.

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 nationally accepted guidelines.

b) The Health Advisory shall 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 shall be the

Maximum Contaminant Level Goal ("MCLG") adopted by USEPA for such substance. If there is no MCLG for the substance, the guidance level shall be 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 Section 620.125 for the substance. If the concentration for such substance is less than the lowest appropriate PQL specified in Section 620.125 for the substance, the guidance level is the lowest PQL.

2) If the chemical substance is a carcinogen, the guidance level for any such chemical substance shall be the lowest appropriate PQL specified in Section 620.125 for such substance.

Section 620.610 Publishing Health Advisories

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

b) The Agency 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.

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

a) The need for additional health advice appropriate to site-specific conditions shall be determined by the Agency when mixtures of chemical substances are detected, 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 level for such substances shall be determined in accordance with Appendices A, B, and C.

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

a) Calculating the Human Threshold Toxicant Advisory Concentration

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

HTTAC = (ADE/WH) x RSC

Where:
- HTTAC = Human Threshold Toxicant Advisory Concentration in milligrams per liter
- ADE = Acceptable Daily Exposure of substance in milligrams per day (mg/d) as determined pursuant to subsection (b).
- WH = Per capita daily water consumption equal to 2 liters per day (1/d)
- 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 shall be used if available. If valid chemical-specific data are not available, a value of 20% (=0.20) shall be used.

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) which if ingested daily 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) 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) shall 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) 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 shall be used in the calculation of the ADE.

4) 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 shall 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 shall be considered if no studies having High Validity are available. If studies of Low Validity must be used, the ADE shall 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 shall 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 shall 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 shall 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 approximately 10 percent of the test species' lifespan, and a well-defined NOAEL.

B) Supporting studies which reinforce the conclusions of a study of Medium Validity may be considered to raise 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 which 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 should not fall below 20 percent per dose per sex at 18 months for mice and 24 months for rats), but which otherwise satisfy the standards for a High Validity Study;

C) Data from animal subchronic or chronic studies in which a Lowest Observable Adverse Effect Level (LOAEL) is determined, but which

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 (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 set forth in subsection (c)(1) or (c)(2).

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 determining the maximum amount of similar-acting substances which may be present as a mixture in Class I: Potable Resource Groundwaters for the protection of human health. 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 which 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 (for example, PCBs or technical grade chlordane).

c) The following substances listed in Section 620.410 are mixtures of similar acting substances:

1) Mixtures of ortho-Dichlorobenzene and para-Dichlorobenzene. The Hazard Index ("HI") for such mixtures shall be 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 shall be 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 will be considered when determining health based standards for Class I: Potable Resource Groundwater. This is done by 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 shall be calculated as follows:

HI = [A]/ALB + [B]/ALB + . . . [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 substances which are considered to have a threshold mechanism of toxicity, the acceptable level is:

1) The standards listed in Section 620.410; or

2) 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.

f) For substances which are carcinogens, the acceptable level is:

1) The standards listed in Section 620.410; or

2) For those substances for which standards have not been established under Section 620.410, the lowest appropriate PQL of USEPA-approved analytical methods for each substance.

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

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

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

a) Substances shall be considered similar-acting if:

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

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

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

c) Substances which are components of a complex mixture of related compounds which are produced as commercial products (for example, PCBs or technical grade chlordane) shall not be considered mixtures, as defined in Appendix B. Such complex mixtures shall be considered to be equivalent to a single substance. In such a case, the Human Threshold Toxicant Advisory Concentration may be derived for threshold effects of the complex mixture, using the procedures described in Appendix A, if valid toxicological or epidemiological data are available for the complex mixture. If the complex mixture is a carcinogen, the Health Advisory Concentration shall be the lowest appropriate PQL of USEPA-approved analytical methods.

IT IS SO ORDERED.

Board Member B. Forcade concurred.

I, Dorothy M. Gunn, Clerk of the Illinois Pollution Control Board, hereby certify that the above Order was adopted on the 28th day of February, 1991, by a vote of 6-0.

Dorothy M. Gunn

Dorothy M. Gunn, Clerk
Illinois Pollution Control Board