

ILLINOIS POLLUTION CONTROL BOARD  
September 6, 2001

IN THE MATTER OF: )  
)  
PROPOSED MTBE AND COMPLIANCE ) R01-14  
DETERMINATION AMENDMENTS TO ) (Rulemaking – Public Water Supply)  
GROUNDWATER QUALITY STANDARDS:)  
35 ILL. ADM. CODE 620 )

Proposed Rule. First Notice.

OPINION AND ORDER OF THE BOARD (by N.J. Melas, R.C. Flemal, E.Z. Kezelis)

On September 1, 2000, the Illinois Environmental Protection Agency (Agency) filed a proposal for rulemaking to amend the Board's Public Water Supply regulations at 35 Ill. Adm. Code 620. The proposal included the Agency's statement of reasons.<sup>1</sup> The proposed regulations would amend the Board's groundwater quality regulations to include methyl tertiary butyl-ether (MTBE). Specifically, the proposed regulations include a preventative response level in addition to Class I and Class II groundwater standards for MTBE. The proposed regulations would also clarify sampling procedures for certain existing drinking water supply wells.

By today's action, the Board proposes for first notice the Agency's proposed amendments (with minor modifications) pursuant to the Illinois Administrative Procedure Act. 5 ILCS 100/1-1 *et seq.* (2000). The proposed amendments will be published in the *Illinois Register*, whereupon a 45-day public comment period will begin during which interested persons may file public comments with the Board.

**PROCEDURAL HISTORY**

Two public hearings were held in this matter before Board Hearing Officer Joel Sternstein, Board Members, and Board staff. The first hearing was held on March 1, 2001 in Springfield. The Agency, represented by Deputy Counsel Stephen C. Ewart, presented witnesses Richard P. Cobb, P.G., Manager of the Groundwater Section in the Agency's Bureau of Water, and Agency toxicologist Dr. Thomas C. Hornshaw. Agency witness Gary P. King appeared at the first hearing only. The second hearing was held on April 5, 2001 in Chicago where Mr. Cobb and Dr. Hornshaw testified again.

The Board received two public comments in this proceeding. The first public comment was from Professor Craig Curtis at Bradley University in Peoria. Curtis submitted data from a web site listing county-by-county releases of MTBE both in Illinois and across the United States.

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<sup>1</sup> The Agency's statement of reasons will be cited as "Stat. of Reas. at \_\_\_\_," the transcript from the March 1, 2001 hearing will be cited as "Tr.1 at \_\_\_\_," the transcript for the April 5, 2001 hearing will be cited as "Tr.2 at \_\_\_\_," the exhibits will be cited as "Exh. \_\_ at \_\_\_\_," and public comments will be cited as "PC \_\_ at \_\_\_\_."

See Scorecard (visited March 5, 2001) <<http://www.scorecard.org>>; Tr.1 at 25, 28. The second public comment was from the Agency. It provided amended proposed definitions of “licensed professional engineer” and “licensed professional geologist” in addition to a technical review of exhibits 12 and 13.

### **BACKGROUND**

The Agency submits the proposed amendments in accordance with Section 8 of the Illinois Groundwater Protection Act (415 ILCS 55/8 (2000)) and in response to the Board’s request to continually update the groundwater standards. Tr.1 at 10; Exh. 1 at 1.

MTBE is a type of organic chemical known as an ether. MTBE has been widely used as an octane-enhancing additive to gasoline. It is an oxygenate that promotes more complete burning of gasoline, thereby reducing carbon monoxide and ozone levels. In the Clean Air Act of 1990, Congress mandated the use of reformulated gasoline in areas of the U.S. with high smog and ozone. Ethanol and MTBE are the primary oxygenates used in reformulated gasoline. Tr.1 at 12-13; Exh. 1 at 4; Stat. of Reas. at exh. 4, pp. 1, 5.

The source of MTBE contamination is often leaking underground storage tanks. MTBE is very soluble in water, and, as a result, is readily transported by groundwater away from a spill. MTBE does not readily adsorb to soil particles nor does it biodegrade easily. Although MTBE breaks down in the presence of sunlight, it does not break down readily in groundwater. Tr.1 at 13-15; Exh. 1 at 5-6; Stat. of Reas. at 2-3.

Some people can detect MTBE in drinking water by either taste or smell at concentrations as low as 20 to 40 parts per billion (ppb).<sup>2</sup> MTBE does not have a distinctive odor or taste, but it has been described as being similar to turpentine. Tr.1 at 12, 51-52; Exh. 1 at 4; Exh. 13 at iii; Stat. of Reas. at exh. 4 at 2.

Since 1994, 26 community water supplies (CWS) in Illinois have exhibited MTBE contamination in finished drinking water sampling results. The CWS’s are both inside and outside areas in which reformulated gasoline is mandated. Four CWS’s had to discontinue use of wells due to MTBE contamination. Tr.1 at 11-12, 46; Exh. 1 at 1-3; Stat. of Reas. at 5. Mr. Cobb testified that the Agency does not generally track MTBE contamination problems at private water wells because these wells are not yet tested for MTBE. Tr.1 at 50-51. King testified that the other 22 CWS’s where MTBE has been detected have not approached the Agency’s proposed preventative response number of 20 ppb. Tr.1 at 57.

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<sup>2</sup> During the hearings and in the exhibits, levels of MTBE in water were expressed in different units. For the sake of consistency and readability, the Board has converted all MTBE measurements to parts per billion, even though regulatory language sets MTBE measurements in terms of milligrams per liter (mg/L). 1 ppb is equivalent to 0.001 mg/L.

The proposed MTBE groundwater standards will serve as a basis for amendments to other proposed regulations currently pending before the Board. See Proposed Amendments to Tiered Approach to Correction Action Objectives (TACO): 35 Ill. Adm. Code 742, R00-19(C).

Governor George Ryan recently signed legislation that bans the use of MTBE in Illinois. Specifically, the “MTBE Elimination Act” prohibits the use, sale, distribution, blending, or manufacture of MTBE as a fuel additive in Illinois. P.A. 92-0132, eff. July 24, 2001. The ban starts on July 24, 2004.

### **MTBE STANDARDS**

The U.S. Environmental Protection Agency (USEPA) and various states have different positions regarding the basis for establishing MTBE standards. At the second hearing, the Board introduced two exhibits presenting positions from California and New Hampshire. (The Agency reviewed those exhibits in Public Comment Number 2.) Exhibit 12 is titled “Public Health Goals for Methyl Tertiary Butyl Ether (MTBE) in Drinking Water” and was prepared by the Office of Environmental Health Hazard Assessment, California Environmental Protection Agency (PHG Report). Exhibit 13 is titled “Draft Final Technical Support Document: Derivation of Proposed Primary and Secondary Drinking Water Standards for Methyl *tert*-Butyl Ether in NH Drinking Water Supplies” prepared by the New Hampshire Department of Health & Human Services, Office of Community and Public Health and GZA Geoenvironmental Inc. (New Hampshire Report). Tr.2 at 45-47.

The New Hampshire Report closely follows the methodology of the PHG Report and provides the same drinking water standard for MTBE. PC 2 at 6-7. Dr. Hornshaw said that, in discussions with officials in New York, he learned that New York’s enforceable standard was lowered from 50 ppb to 10 ppb. Toxicologists working on the enforceable standard in New York determined that MTBE is an animal carcinogen and a possible human carcinogen. These findings are similar to those in the PHG Report, but the New York toxicologists rounded the enforceable limit number. Tr.2 at 51-52, 55; PC 2 at 7.

Mr. Cobb testified that Wisconsin has a groundwater standard of 60 ppb and preventative action limit of 12 ppb. Mr. Cobb also identified the states with groundwater standards that are greater than 70 ppb. Tr.2 at 51-52, 55; Exh. 4.

The Board chooses to focus its discussion of MTBE standards on the Agency’s MTBE proposal, the California PHG Report, and a USEPA Drinking Water Advisory for MTBE (USEPA Advisory).

### **Agency Proposal**

The Agency proposes the addition of an MTBE Class I Potable Resource Groundwater standard and an MTBE Class II General Resource Groundwater standard. The Agency proposes a standard of 70 ppb for both classes. 35 Ill. Adm. Code 620.410, 620.420. In addition, the

Agency proposes a preventive response level for MTBE of 20 ppb. *See* 35 Ill. Adm. Code 620.301.

Mr. Cobb testified that the Class I standard of 70 ppb is based on a draft Agency health advisory (advisory) developed pursuant to 35 Ill. Adm. Code 620.605, and a review of other states' regulations. Mr. Cobb stated that the Class II standard is based on the capability of treatment technology to achieve the Class I standard. He noted that the Class II standard is also proposed at 70 ppb since treatment of MTBE is very difficult once it has dissolved into groundwater. Mr. Cobb also stated that the preventive response level for MTBE is based on its taste and odor threshold. Tr.1 at 23; Exh. 1 at 12; Stat. of Reas. at 6.

### **Agency Draft Health Advisory**

On June 9, 1994, the Agency's Office of Chemical Safety issued a draft advisory for MTBE pursuant to procedures at 35 Ill. Adm. Code 620 Subpart F. These procedures require the Agency to establish an advisory for any chemical detected in a CWS well if there is no existing standard and if the chemical is toxic or harmful to human health. The advisory was published in the July 1994 issue of the Board's *Environmental Register*. Exh. 1, att. 4, IEPA adv. Dr. Hornshaw testified that the advisory was never finalized because the Agency decided to wait for the outcome of USEPA's review of an Italian study<sup>3</sup> that raised the issue of whether MTBE is a human carcinogen. Dr. Hornshaw noted that, to his knowledge, USEPA has not yet completed its review of the Italian study. Tr.1 at 47.

The Board's groundwater quality regulations prescribe the procedures for developing health advisories for carcinogens and noncarcinogens. *See* 35 Ill. Adm. Code 620.605. The first step in derivation of a health advisory is to determine whether the chemical presents a carcinogenic hazard to humans. The Agency determined that there was insufficient evidence of carcinogenicity for MTBE. The Agency noted that while studies have shown that MTBE causes tumors in laboratory animals, the types of tumors found in rats and mouse cancer bioassays may not provide good evidence of a carcinogenic hazard to humans. Further, the Agency noted that USEPA has not yet made a final determination concerning the issue of whether MTBE presents a carcinogenic hazard to humans. As a result, the Agency used the method for determining a health advisory for noncarcinogens in accordance with Section 620.605(b)(1) of the Board's regulations. Exh. 1, att. 4, IEPA adv.; PC 2 at 3.

Since there was no USEPA Maximum Contaminant Level Goal for MTBE, the Agency used a method called the Human Threshold Toxicant Advisory Concentration to determine its draft health advisory based on a noncarcinogenic effects. The Agency accounted for uncertainties in the available research by using a safety factor of 10,000 and also used a per capita daily drinking water consumption level of 2 liters per day (l/d). Exh. 1, att. 4, IEPA adv. 35 Ill. Adm. Code 620, app. A.

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<sup>3</sup> B. Belpoggi, M. Soffritti, and C. Maltoni, *Methyl-Tertiary-Butyl Ether (MTBE) – A Gasoline Additive – Causes testicular and Lympho-Haematopoietic Cancers in Rats*. *Toxicology and Industrial Health*, Vol. 11, No. 2, 1995.

### **California's Drinking Water Maximum Contaminant Level for MTBE**

The California Department of Health Services (CDHS) adopted a primary drinking water maximum contaminant level (MCL) of 13 ppb for MTBE on April 17, 2000. CDHS claims that the MCL is protective of human health, and accounts for technical feasibility and economic reasonableness. The MCL is based on the PHG Report. PHG reports are strictly health-based standards that are developed for chemical contaminants using the best data available in scientific literature. The PHG of 13 ppb for MTBE is based on the information presented in a technical support report. Exh. 12.

The PHG Report has extensive information on MTBE, including: chemical profile; in-depth review of available data; dose response assessment; calculation of PHG; risk characterization; and other regulatory standards. The report has been peer reviewed by USEPA's Office of Water, the California EPA, the University of California at Berkeley, and San Diego State University. Tr.2 at 49; Exh. 12.

The PHG Report examined both the noncarcinogenic and carcinogenic effects of MTBE. Since the report deals with the effects of MTBE in drinking water, the primary focus was on oral studies. Due to lack of studies on carcinogenic / noncarcinogenic effects of MTBE in humans, the PHG Report examined the oral studies performed on animals. Exh. 12.

The Board notes that both the Agency and USEPA used a default adult drinking water consumption level of 2 l/d in determining MTBE limits. In contrast, the PHG Report used a value of 3 l/d. The 3 l/d value reflects drinking water consumption but also accounts for additional exposures via inhalation and dermal routes such as showering, bathing, flushing of toilets, washing clothes and dishes, and other domestic uses.

### **Carcinogenic Effects**

Due to the lack of studies on carcinogenic/noncarcinogenic effects of MTBE in humans, the PHG Report examined the oral studies in animals. Exh. 12 at 27. The PHG Report notes that these studies indicate statistically significant increases in incidence of testicular tumors in male rats, liver tumors in male and female rats, leukemia and lymphomas in female rats and renal tubular tumors in male rats. Exh. 12 at 27-60.

While carcinogenicity of MTBE was observed in a number of studies, the PHG Report notes that the mechanism by which MTBE induces tumors at multiple sites remains unknown. The report states that it is unclear whether MTBE itself plays a direct role in the observed tumorigenesis, or whether metabolism to one or more active metabolites is required. The report notes the two major metabolites of MTBE, formaldehyde and tertiary butyl alcohol, have both been shown to possess tumorigenic activity in animal studies. Exh. 12 at 60.

Based on the literature information, the PHG Report states that there is evidence for carcinogenicity of MTBE at multiple sites in both sexes of rat and mice in five of the six available studies. The report concluded that MTBE is a two-species, multi-strain, two-sex, two-route, and multi-site carcinogen. Exh. 12 at 64.

Thus, based on the conclusion that MTBE is carcinogenic, California adopted 13 ppb as the public health goal for MTBE. Had California determined that MTBE was not a carcinogen and had it used an adult drinking water consumption level of 2 l/d, the public health goal would have been 70 ppb – the same level that the Agency is proposing for Class I and Class II groundwater in Illinois. Exh. 12 at 88.

### **USEPA's MTBE Drinking Water Advisory**

USEPA issued its advisory in December 1997 pursuant to Section 102(b)(1)(F) of the Safe Drinking Water Act. Exh. 1, att. 4, USEPA adv. The USEPA advisory provides information and guidance to individuals and agencies concerned with potential risk from drinking water contaminants for which no regulations currently exist. While its advisories are not legally enforceable, USEPA recommends that they be used as guidelines. The USEPA MTBE advisory includes chemical profile and occurrence information, a detailed health effects analysis, information on organoleptic (taste and odor) properties, and characterization of hazard and dose response.

USEPA examined both carcinogenic and noncarcinogenic effects of MTBE by conducting a detailed literature review. USEPA found that there is very little data on the effects of MTBE in humans. Thus, USEPA relied on animal studies. Exh. 1, att. 4, USEPA adv. at 10-11.

USEPA states that these studies have limitations, such as a high mortality rate among the treated animals and limited reporting of pathology. Regarding the findings of Belpoggi *et al.* (see *supra* footnote 3), USEPA notes that it has not been able to obtain a detailed technical report of the bioassay to perform an independent in-depth review of the data. Exh. 1, att. 4, USEPA adv. at 17. USEPA stated in its advisory that the “weight of evidence indicates that MTBE is an animal carcinogen, and the chemical poses a carcinogenic potential to humans.” Exh. 1, att. 4, USEPA adv. at 26. However, USEPA does not have “high confidence” in any currently available study for determining cancer effects of MTBE. Exh. 1, att. 4, USEPA adv. at 27. Most importantly, USEPA has not yet officially classified MTBE as a carcinogen.

### **Organoleptic Properties**

USEPA provides guidance levels based on organoleptic characteristics associated with MTBE that provide adequate health protection. USEPA states that while a chemical's organoleptic characteristics cannot be used for developing primary drinking water standards, such characteristics are of concern. USEPA therefore provides advice on the organoleptic characteristics of MTBE. USEPA notes that the organoleptic thresholds vary significantly because of differences in individual sensitivity. Exh. 1, att. 4, USEPA adv. at 1-2, 27.

USEPA recommends keeping levels of MTBE contamination in the range of 20 to 40 ppb or below to protect consumer acceptance of a water resource. These levels would also provide a large margin of safety/exposure from adverse health effects. Exh. 1, att. 4, USEPA adv. at 1-2, 27.

### **Economic Feasibility/Technical Reasonableness**

The Agency claims that the addition of MTBE as a groundwater quality parameter would not change the Board's economic reasonableness and technical feasibility conclusions from the regulatory proceeding in which the Board's original groundwater regulations became effective – docket R89-14(B). Stat. of Reas. at 7.

In docket R89-14(B), the Board found that remediation costs associated with the groundwater standards “could be substantial.” However, the Board also stated that it was difficult to apply an economic analysis to a rule of general applicability – especially a regulation involving “varied conditions and unknown circumstances” such as R89-14(B). The Board also noted that the groundwater quality standards adopted in docket R89-14(B) did not create a new corrective action program but were instead implemented through other corrective action programs such as the underground storage tank regulations. Some of those corrective action programs already required cleanup to levels above the original groundwater standards. Groundwater Quality Standards, R89-14(B), slip op. at 24-25 (Nov. 7, 1991).

The Board noted that the economic impact study (EcIS) in docket R89-14(B) did not attempt to quantify the benefits of those regulations. The Board acknowledged that one benefit could be the savings from not having to obtain an alternate water supply to replace a contaminated water supply. The Board held that “although the benefits currently cannot be quantified, they are thereby no less real or substantial.” Groundwater Quality Standards, R89-14(B), slip op. at 26 (Nov. 7, 1991).

There were no comments on the decision of the Department of Commerce and Community Affairs not to perform an EcIS for docket R01-14. Tr.2 at 9.

MTBE is generally difficult and expensive to remove from groundwater using conventional treatment technologies. Mr. Cobb testified that treatment technologies such as chlorination and exposure to ultraviolet radiation do not degrade MTBE. Reverse osmosis has not been extensively studied as a treatment option for MTBE but would be cost prohibitive even if it were proven to be effective. Granular activated carbon (GAC) is cost effective only for low concentrations of MTBE but may be effective as a secondary treatment technology. Air stripping is more cost effective than GAC. However, the cost effectiveness of air stripping is reduced if the exhaust gas stream containing MTBE has to be treated if the air stripping unit is in a non-attainment area. GAC and air stripping for removal of MTBE are approximately 40 to 80% more expensive than using these technologies to remove benzene or other organic chemicals. Tr.1 at 15-21, 36; Exh. 1 at 7-10; Stat. of Reas. at 3, 8.

At hearing, Mr. Cobb discussed the estimated costs of MTBE treatment options for the East Alton CWS. A pump, treat, and discharge base system would have increased annual costs for the East Alton CWS by 15.7%. Adding an air stripper to the base system would have increased costs by 34.1%. Adding a GAC system to the base system would have increased costs by 137.1%. Adding both an air stripper and GAC to the base system would have increased costs by 297.7%. Establishing a new well field would have increased annual costs by 39.8% and establishing an alternate treated water supply would increase costs by 113.6%. Mr. Cobb stressed that prevention of MTBE releases would alleviate costly MTBE treatment options. Tr.1

at 30-34; Tr.2 at 41; Exh. 3. East Alton ultimately chose air stripping as the primary remediation method. Tr.1 at 31-33.

The Agency claims that not adopting standards for MTBE would have a significant adverse economic impact on groundwater resources in Illinois. The Agency also does not foresee adverse economic impacts from either the proposed MTBE standards or the compliance determination amendments (*see below*). Stat. of Reas. at 7-8.

There was little information in the record on the cost of treating MTBE to different standards (for example, the difference in cost of reducing MTBE concentration to a level of 70 ppb as opposed to reducing it to 20 ppb).

### Discussion

In determining how best to proceed to first notice with the MTBE standard, the Board finds that it is presented with the fundamental decision of whether to propose a standard based on non-carcinogenic or carcinogenic effects. The numeric value of a proposed standard is essentially fixed by a set of protocols and equations.

The Agency's proposal typifies a standard based on non-carcinogenic effects. The Agency has chosen not to use a carcinogenic endpoint as the basis for its proposal in part because it defers to the USEPA regarding the carcinogenic properties of MTBE, and partly because it has been faced with the need to make decisions in the absence of a USEPA position. Dr. Hornshaw noted that the Agency needed to come up with regulatory values because there had been detections of MTBE at CWS's across Illinois. He testified, "[w]e didn't have the luxury of saying we can't do this because the data is weak. We had to come up with a value to tell the owners of the public water supply whether their water was okay to drink or whether they should get a new supply." Tr.1 at 42. The Board agrees with the Agency that Illinois does not have the luxury of waiting when 26 CWS's have already shown signs of MTBE contamination.

The Agency assumes that USEPA will promulgate a standard based on cancer as an endpoint, even though it has yet to do so. A USEPA policy document on MTBE regulation indicates that it may take USEPA until the year 2010 or longer to promulgate an MCL for MTBE.<sup>4</sup> Dr. Hornshaw acknowledged that both California and New York have determined a standard on their own. He predicted that more and more states will adopt their own MTBE standards even if USEPA does not because detections of MTBE are becoming more prevalent. Tr.2 at 49-50, 56-57.

The California PHG Report typifies a standard based on carcinogenic effects. The Agency stated:

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<sup>4</sup> See Rachel Sakata, *A Drinking Water Standard for MTBE? The Ifs and Whens of Establishing an MCL*, USEPA Office of Ground Water and Drinking Water, L.U.S.T.Line, Bulletin 33 (Oct. 1999) <[http://www.epa.gov/swrust1/mtbe/mtbe\\_mcl.pdf](http://www.epa.gov/swrust1/mtbe/mtbe_mcl.pdf)>.



It should be noted that the approach used by the California toxicologists is consistent with the guidelines published by USEPA for cancer risk assessment, and in instances where scientific judgement was required, there is a full discussion of the various options and why a particular option was chosen. PC 2 at 6.

The Board finds that both the Agency's proposal and the California PHG have been well-researched and carefully analyzed. However, we find that it would be more prudent to follow the Agency's proposal that is based on the non-carcinogenic effects of MTBE. The definition of "carcinogen" at Section 620.110 of the Board's regulations is limited to those compounds that USEPA has identified as carcinogens either through its Integrated Risk Information System (IRIS) or its rulemaking authority. Currently, USEPA has not identified MTBE as a carcinogen either in IRIS or by rulemaking.

If the Board were to adopt California's regulatory limit of 13 ppb, it would do so based on California's classification of MTBE as a carcinogen. Such action would not be consistent with the definition of carcinogen at Section 620.110. At hearing, Dr. Hornshaw indicated that the Agency generally waits until USEPA identifies a compound as a carcinogen before it identifies a compound as a carcinogen. Tr.2 at 49-50.

Furthermore, for the sake of consistency with respect to regulatory compliance, the Board is using a similar rationale for determining groundwater standards in this docket as it is for determining cleanup standards in the docket Proposed Amendments to Tiered Approach to Corrective Action Objectives (TACO): 35 Ill. Adm. Code 742, R00-19(C) which we are also proposing for first notice today. The definition of carcinogen at Part 742 of the Board's regulations is broader than the definition at Section 620.110, but it is also stricter in that the Board must abide by the dictates of the definition in recognizing a compound as a carcinogen.

The definition of carcinogen at Part 742 is nearly identical to the definition at Section 58.2 of the Act:

"Carcinogen" means a contaminant that is classified as a Category A1 or A2 Carcinogen by the American Conference of Governmental Industrial Hygienists; or a Category 1 or 2A/2B carcinogen by the World Health Organization's International Agency for Research on Cancer; or a "Human carcinogen" or "Anticipated Human Carcinogen" by the United States Department of Health and Human Service National Toxicological Program; or a Category A or B1/B2 Carcinogen by the United States Environmental Protection Agency in Integrated Risk Information System or a Final Rule issued in a Federal Register notice by the USEPA.

The Board has determined that neither the American Conference of Governmental Industrial Hygienists, the World Health Organization, nor the United States Department of Health and Human Services have yet classified MTBE as a carcinogen that falls under the specific categories in the definition above. However, the Board will track both USEPA and these organizations to see if they eventually determine that MTBE is a carcinogen. The Board

may then propose revisions to these MTBE groundwater quality standards if MTBE is found to be a carcinogen.

Again for the sake of consistency with respect to regulatory compliance, we propose that the definition of carcinogen at Part 742 of the Board's regulations/Section 58.2 of the Act replace the existing definition at Part 620 of the Board's regulations. Since none of the organizations listed in the definition at Part 742 have yet classified MTBE as a carcinogen in accordance with the definition above, the Board's finding regarding the regulatory limits for MTBE in groundwater in this docket will not change.

The Board finds that the Agency properly proposed a level of 20 ppb MTBE as a trigger for preventative response activities at Section 620.310 of the Board's regulations. We agree with the Agency that MTBE's organoleptic properties should serve as a basis for the 20 ppb trigger.

The Board finds that the costs of remediation for MTBE are quite significant. However, we must balance these considerations with the safety of drinking water supplies and the costs of changing water supplies if a water supply becomes contaminated. The Board places a very high value on the safety of drinking water supplies and finds that safety must be paramount in this matter. We also recognize that the costs of bringing a new water supply online for a community may be more expensive than remediating a contaminated water supply.

## **PROTECTION FOR DRINKING WATER SUPPLY WELLS**

### **Agency Proposal**

The amendments also add criteria to further clarify conditions for drinking water supply wells that can be used to collect representative groundwater samples. The proposed amendments allow a licensed professional engineer or a licensed professional geologist to use adjacent geological information and well construction information common to sand point wells. Stat. of Reas. at 7.

The genesis behind the Agency's proposal at Section 602.505 is the appellate court case People v. Stonehedge, Inc., 288 Ill. App. 3d 318, 680 N.E.2d 497 (2d Dist. 1997). The appellate court did not allow the use of samples from drinking water supply wells for compliance determinations even though, the Agency claims, the drinking water wells were representative of the geology of the area.

At the second hearing, the Agency presented Exhibits 8 through 11, including maps of defendant Stonehedge's property and the surrounding area. Mr. Cobb testified that these exhibits prove that the Stonehedge case was a very clear-cut case of groundwater contamination. Mr. Cobb said that the Agency could not successfully prosecute a groundwater standards enforcement case in Stonehedge due to restrictions on the type of monitoring that the Agency conducted. He explained that defendant Stonehedge kept a very large (50,000 pounds by one estimate) uncovered road salt pile that the Agency alleged was a secondary source of groundwater contamination. Elevated levels of chlorides were detected in private wells near the uncovered salt pile after rainfalls. Although the state limit for chlorides in Class I and II groundwater is 200 mg/L, monitoring at some of the wells detected levels of chlorides as high as

4,500 mg/L. By way of comparison, Mr. Cobb testified that seawater has a chloride level of 10,000 mg/L. Tr.2 at 19, 21-22, 25-26, 28, 30, 35-37; Exh. 10.

The Agency also discussed sand point wells. Sand point wells are similar to monitoring wells. Mr. Cobb described them as steel casing with a point on the end that is very small in diameter and very shallow – about 20 to 50 feet deep. He testified that sand point wells do a “good job” of monitoring groundwater but that under the current regulations they do not qualify as a way to determine compliance with groundwater standards. Tr.2 at 32-33. The Agency’s proposal allows sand point wells to be used for compliance determinations under certain conditions delineated at 35 Ill. Adm. Code 620.505(a)(5)(C), and the Agency also has proposed limitations for the use of sand point wells at 35 Ill. Adm. Code 620.505(a)(6). Tr.2 at 34-35.

### **Related Definitions**

The Agency stated that it has proposed definitions for “licensed professional engineer” and “licensed professional geologist” to match the definitions that it has proposed in dockets R01-26 and R01-27. See Tr.1 at 65; PC 2 at 2.

### **Discussion**

Under the current Board regulations, a well can only be used for compliance determinations if a construction report has been filed with the Department of Public Health or if the well meets the Illinois Water Well Construction Code (Well Code) statute and regulations. 415 ILCS 30/1 (2000); 77 Ill. Adm. Code 920. The argument in Stonehedge centered on whether the wells in question met the requirements of the Well Code. The appellate court found there was no evidence that the wells used for compliance determinations in Stonehedge met the requirements of the Well Code. As a result, the groundwater samples collected from those wells could not be used to determine if the groundwater in those wells was contaminated and if the contamination came from defendant Stonehedge’s road salt Stonehedge, 288 Ill. App. 3d at 324-26; 680 N.E.2d at 502-03.

The Agency’s proposal expands the list of drinking water supply wells that can be used for compliance determinations. It includes wells that have geologic logs. It also includes wells in an affected area with a geologic log if the area is suitable as determined by a licensed professional geologist or licensed professional engineer.

The regulations also, as stated above, allow for sand point wells to be used for compliance determinations, although there are limits on the type of sand point wells that can be used.

After examining the record in this matter, especially the Stonehedge decision, the Board agrees with the Agency’s modifications to the rules for wells used in compliance determinations.

With respect to the definitions of licensed professional engineer and licensed professional geologist, the Board has chosen to match, as closely as possible, the statutory definitions. The wording that the Board has chosen for the definitions is very similar to the wording that the

Agency proposed and is also very similar to the definitions proposed in dockets R01-26 and R01-27.

### **CONCLUSION**

The Board finds that the Agency's proposal for MTBE groundwater regulatory limits has been well-researched and carefully analyzed based on MTBE's noncarcinogenic effects. We therefore propose an MTBE standard of 70 ppb (0.07mg/L) for Class I and Class II groundwater and a preventative response level of 20 ppb (0.02 mg/L) in Illinois for first notice. The Board also proposes changing the definition of "carcinogen" in Part 620 of the Board's regulations to match the definition of "carcinogen" at Part 742 of the Board's regulations.

We find merit with the Agency's proposal regarding wells used in compliance determinations. The Board submits, for first notice, the Agency's modifications for the regulations regarding wells used in compliance determinations. The Board replaces the Agency's proposed definitions for "licensed professional engineer" and "licensed professional geologist" with the definitions of these terms that are already found respectively in the Act and the Professional Geologist Licensing Act.

### **ORDER**

The Board proposes for first notice the following amendments to 35 Ill. Adm. Code 620. The Clerk of the Board is directed to file these proposed amendments 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

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

SOURCE: Adopted in R89-14(B) at 15 Ill. Reg. 17614, effective November 25, 1991; amended in R89-14(C) at 16 Ill. Reg. 14667, effective September 11, 1992; amended at 18 Ill. Reg. 14084, effective August 24, 1994; amended in R96-10 at 21 Ill. Reg. 6518, effective May 8, 1997; amended in R97-11 at 21 Ill. Reg. 7869, effective July 1, 1997; amended in R01-14 at 25 Ill. Reg. \_\_\_\_\_, effective \_\_\_\_\_.

#### SUBPART A: GENERAL

##### Section 620.110 Definitions

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

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

"Agency" means the Illinois Environmental Protection Agency.

~~"AQUIFER" MEANS SATURATED (WITH GROUNDWATER) SOILS AND GEOLOGIC MATERIALS WHICH ARE SUFFICIENTLY PERMEABLE TO READILY YIELD ECONOMICALLY USEFUL QUANTITIES OF WATER TO WELLS, SPRINGS, OR STREAMS UNDER ORDINARY HYDRAULIC GRADIENTS. "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. [415 ILCS 55/3(b)](Section 3(b) of the IGPA).~~

"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, that 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, B<sub>1</sub>, or B<sub>2</sub> carcinogen.~~ *"Carcinogen" means a contaminant that is classified as a Category A1 or A2 Carcinogen by the American Conference of Governmental Industrial Hygienists; or a Category 1 or 2A/2B carcinogen by the World Health Organization's International Agency for Research on Cancer; or a "Human carcinogen" or "Anticipated Human Carcinogen" by the United States Department of Health and Human Service National Toxicological Program; or a Category A or B1/B2 Carcinogen by the United States Environmental Protection Agency in Integrated Risk Information System or a Final Rule issued in a Federal Register notice by the USEPA.* [415 ILCS 5/58.2]

~~"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~~ *"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.* [415 ILCS 5/3.05](Section 3.05 of the Act)

~~"CONTAMINANT" MEANS ANY SOLID, LIQUID, OR GASEOUS MATTER, ANY ODOR, OR ANY FORM OF ENERGY, FROM WHATEVER SOURCE~~ *"Contaminant" means any solid, liquid, or gaseous matter, any odor, or any form of energy, from whatever source.* [415 ILCS 5/3.06](Section 3.06 of the Act)

"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 and ~~Reclamation~~ Reclamation Act [225 ILCS 720] and 62 Ill. Adm. Code 1700 through 1850, within which impacts resulting from the proposed operation may interact with the impacts of all anticipated mining on surface water and groundwater systems.

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

"Method Detection Limit" or "MDL" ~~that which~~ means the

minimum concentration of a substance that can be measured as reported with 99 percent confidence that the true value is greater than zero, pursuant to 56 Fed. Reg. 3526-3597, incorporated by reference at Section 620.125; or  
 "Method Quantitation Limit" or "MQL" ~~that which~~ means the minimum concentration of a substance that can be measured and reported pursuant to "Test Methods for Evaluating Solid Wastes, Physical/ Chemical Methods", incorporated by reference at Section 620.125.

"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~~ *"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.* [415 ILCS 5/3.64] ~~(Section 3.64 of the Act)~~

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

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

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

*"Licensed Professional Engineer" or "LPE" means a person, corporation, or partnership licensed under the laws of the State of Illinois to practice professional engineering. [415 ILCS 5/57.2]*

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



"NOAEL" or "No observable adverse effect level" means the highest tested concentration of a chemical or substance ~~that~~<sup>which</sup> 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~~  
"Non-community water supply" means a public water supply that is not a community water supply. [415 ILCS 5/3.05](Section 3.05)

"Off-site" means not on-site.

"On-site" means on the same or geographically contiguous property ~~that~~<sup>which</sup> 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 ~~that~~<sup>which</sup> he controls and ~~that~~<sup>to which</sup> the public does not have access to is also considered on-site property.

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

~~"POTABLE" MEANS GENERALLY FIT FOR HUMAN CONSUMPTION IN ACCORDANCE WITH ACCEPTED WATER SUPPLY PRINCIPLES AND PRACTICES~~  
"Potable" means generally fit for human consumption in accordance with accepted water supply principles and practices. [415 ILCS 5/3.65](Section 3.65 of the Act)

~~"POTENTIAL PRIMARY SOURCE" MEANS ANY UNIT AT A FACILITY OR SITE NOT CURRENTLY SUBJECT TO A REMOVAL OR REMEDIAL ACTION WHICH:~~  
"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~~

*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. [415 ILCS 5/3.59](Section 3.59 of the Act)*

~~"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~~ *"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. [415 ILCS 5/3.58](Section 3.58 of the Act)*

~~"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:~~

*"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 SUBSTANCE; OR STORES OR ACCUMULATES AT ANY TIME MORE THAN 25,000 GALLONS ABOVE GROUND, OR MORE THAN 500 GALLONS BELOW GROUND, OF PETROLEUM, INCLUDING CRUDE OIL OR ANY FRACTION 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~~  
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 substance; or stores or accumulates at any time more than 25,000 gallons above ground, or more than 500 gallons below ground, of petroleum, including crude oil or any fraction 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 [225 ILCS 225].  
[415 ILCS 5/3.60]

"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 in accordance with "Test Methods for Evaluating Solid Wastes, Physical/Chemical Methods", EPA Publication No. SW-846, incorporated by reference at Section 620.125.

"Previously mined area" means land disturbed or affected by coal mining operations 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 [225 ILCS 720] 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"~~  
"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".  
[415 ILCS 5/3.28](Section 3.28 of the Act)

"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 Marshal.

~~"REGULATED RECHARGE AREA" MEANS A COMPACT GEOGRAPHIC AREA, AS DETERMINED BY THE BOARD~~  
"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~~  
the geology of which renders a potable resource groundwater particularly susceptible to contamination. [415 ILCS 5/3.67](Section 3.67 of the Act)

~~"RESOURCE GROUNDWATER" MEANS GROUNDWATER THAT IS PRESENTLY BEING, OR IN THE FUTURE IS CAPABLE OF BEING, PUT TO BENEFICIAL USE BY REASON OF BEING OF SUITABLE QUALITY~~  
"Resource groundwater" means groundwater that is presently being, or in the future is capable of being, put to beneficial use by reason of being of suitable quality. [415 ILCS 5/3.66](Section 3.66 of the Act)

~~"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~~  
"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. [415 ILCS 5/3.61](Section 3.61 of the Act)

"SITE" MEANS ANY LOCATION, PLACE, TRACT OF LAND AND FACILITIES, INCLUDING BUT NOT LIMITED TO, BUILDINGS AND IMPROVEMENTS USED FOR THE PURPOSES SUBJECT TO REGULATION OR CONTROL BY THE ACT OR REGULATIONS THEREUNDER  
"Site" means any location, place, tract of land and facilities, including but not limited to, buildings and improvements used for the purposes subject to regulation or control by the Act or regulations thereunder. [415 ILCS 5/3.43](Section 3.43 of the Act)

"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)"~~*Unit" means any device, mechanism, equipment, or area (exclusive of land utilized only for agricultural production).* [415 ILCS 5/3.62]~~(Section 3.62 of the Act)~~

"USEPA" means the United States Environmental Protection Agency.

(Source: Amended at \_\_ Ill. Reg. \_\_\_\_\_, effective \_\_\_\_\_)

#### SUBPART C: NONDEGRADATION PROVISIONS FOR APPROPRIATE GROUNDWATERS

##### 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 415 ILCS 5/17.1(d)~~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 ~~that~~which represent a hazard to the continued availability of groundwaters for public use unless a groundwater protection needs assessment has been prepared pursuant to 415 ILCS 5/17.1(d)~~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:

Constituent	Criteria (mg/L)
para-Dichlorobenzene	0.005
ortho-Dichlorobenzene	0.01
Ethylbenzene	0.03
<u>Methyl Tertiary-Butyl Ether</u>	0.02
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-hexachloro cyclohexane), 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-trichloro- benzene, 1,1,2-trichloroethane, and 1, 1, 1 - trichloroethane.

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

Constituent	Criterion (mg/L)
BETX	0.095

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

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

- B) 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 preventive 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 \_\_ 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:

Constituent	Units	Standard
Antimony	mg/L	0.006
Arsenic	mg/L	0.05
Barium	mg/L	2
Beryllium	mg/L	0.004
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
Maganese	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
Thallium	mg/L	0.002
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 shall not be exceeded in Class I groundwater:

Constituent	Standard (mg/L)
Alachlor*	0.002
Aldicarb	0.003
Atrazine	0.003
Benzene*	0.005
Benzo(a)pyrene*	0.0002
Carbofuran	0.04
Carbon Tetrachloride*	0.005
Chlordane*	0.002
Dalapon	0.2
Dichloromethane*	0.005
Di(2-ethylhexyl)phthalate*	0.006
Dinoseb	0.007
Endothall	0.1
Endrin	0.002
Ethylene Dibromide*	0.00005
Heptachlor*	0.0004
Heptachlor Epoxide*	0.0002
Hexachlorocyclopentadiene	0.05
Lindane (Gamma-Hexachlorocyclohexane)	0.0002
2,4-D	0.07
ortho-Dichlorobenzene	0.6
para-Dichlorobenzene	0.075
1,2-Dibromo-3-Chloropropane*	0.0002
1,2-Dichloroethane*	0.005
1,1-Dichloroethylene	0.007
cis-1,2-Dichloroethylene	0.07
trans-1,2-Dichloroethylene	0.1
1,2-Dichloropropane*	0.005

Ethylbenzene	0.7
Methoxychlor	0.04
<u>Methyl Tertiary-Butyl Ether</u>	<u>0.07</u>
Monochlorobenzene	0.1
Pentachlorophenol*	0.001
Phenols	0.1
Picloram	0.5
Polychlorinated	0.0005
Biphenyls(PCB's)(as decachloro- biphenyl)*	
Simazine	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
1,1,2-Trichloroethane	0.005
1,2,4-Trichlorobenzene	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:

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 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:

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

(Source: Amended at \_\_\_ 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) of this Section, concentrations of the following chemical constituents must not be exceeded in Class II groundwater:

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

Nitrate as N	100
Thallium	0.02

- 2) Except as provided in Section 620.450 or subsection (a)(3) or (d) of this Section, 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) of this Section, 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) of this Section, 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, ~~that~~which proceeds in a reasonably continuous manner to completion, so as to impact the concentration of the parameters listed in subsection (a)(3) of this Section, and any on-site groundwater monitoring of such parameters is available for review by the Agency.

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

- b) Organic Chemical Constituents

- 1) Except due to natural causes or as provided in Section 620.450 or subsection (b)(2) or (d) of this Section, 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
Benzo(a)pyrene*	0.002
Carbofuran	0.2
Carbon Tetrachloride*	0.025
Chlordane*	0.01
Dalapon	2.0
Dichloromethane*	0.05
Di(2-ethylhexyl)phthalate*	0.06
Dinoseb	0.07
Endothall	0.1
Endrin	0.01
Ethylene Dibromide*	0.0005
Heptachlor*	0.002
Heptachlor Epoxide*	0.001
Hexachlorocyclopentadiene	0.5
Lindane (Gamma-Hexachloro cyclohexane)	0.001
2,4-D	0.35
Ortho-Dichlorobenze	1.5
Para-Dichlorobenzene	0.375
1,2-Dibromo-3-Chloropropane*	0.002
1,2-Dichloroethane*	0.025
1,1-Dichloroethylene	0.035
cis-1,2-Dichloroethylene	0.2
Trans-1,2-Dichloroethylene	0.5
1,2-Dichloropropane*	0.025
Ethylbenzene	1.0
Methoxychlor	0.2
<u>Methyl Tertiary-Butyl Ether (MTBE)</u>	<u>0.07</u>
Monochlorobenzene	0.5
Pentachlorophenol*	0.005
Phenols	0.1
Picloram	5.0
Polychlorinated Biphenyls (PCB's)	

(as decachloro- biphenyl)*	0.0025
Simazine	0.04
Styrene	0.5
2,4,5-TP	0.25
Tetrachloroethylene*	0.025
Toluene	2.5
Toxaphene*	0.015
1,1,1-Trichloroethane	1.0
1,2,4-Trichlorobenzene	0.7
1,1,2-Trichloroethane	0.05
Trichloroethylene*	0.025
Vinyl Chloride*	0.01
Xylenes	10

\*Denotes a carcinogen.

2) The standards for pesticide chemical constituents listed in subsection (b)(1) of this Section 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 [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 \_\_ Ill. Reg. \_\_\_\_\_, effective \_\_\_\_\_)

SUBPART E: GROUNDWATER MONITORING AND ANALYTICAL PROCEDURES

Section 620.505 Compliance Determination

a) Compliance with standards at a site is to 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 as specified in Section 620.240(e)(1).
- 3) For groundwater that underlies a coal mine refuse disposal area, a coal combustion waste disposal area, or an impoundment that contains sludge, slurry, or precipitated process material at a coal preparation plant, the outermost edge as specified in Section 620.240(f)(1) or location of monitoring wells in existence as of the effective date of this Part on a permitted site.
- 4) For a groundwater management zone, as specified in a corrective action process.
- 5) For groundwater ~~At any point, where at which groundwater~~ monitoring is conducted using a ~~any~~ water well, or a monitoring well that meets one of the following conditions:
  - A) For a potable water supply well if geologic log(s) exist for this well or geologic logs in the immediate 1,000-foot area of this well are representative of the hydrogeologic materials encountered by this well as determined by a licensed professional geologist or a registered professional engineer; or
  - B) ~~A)~~ For a potable water supply well other than a community water supply well, a construction report has been filed with the Department of Public Health for such potable well, or such well has been located and constructed (or reconstructed) to meet the Illinois Water Well Construction Code [415 ILCS 30] and 77 Ill. Adm. Code 920,
  - C) For a potable water supply well that was constructed prior to August 20, 1965, the enactment of the Illinois Water Well Construction Code [415 ILCS 30/1], and meets all of the following criteria:
    - i) Construction must be done in a manner that will enable the collection of groundwater samples that represent *in situ* groundwater conditions;
    - ii) Casings and screens must be made from durable material resistant to expected chemical or physical degradation that



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

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

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

~~E)C)~~ For a water well other than a potable water supply well (e.g., a livestock watering well or an irrigation well), a construction report has been filed with the Department of Public Health or the 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 [415 ILCS 30] and 35 Ill. Adm. Code 920.

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

- i) Construction must be done in a manner that will enable the collection of groundwater samples;
- ii) Casings and screens must be made from durable material resistant to expected chemical or physical degradation that do not interfere with the quality of groundwater samples being collected; and
- iii) The annular space opposite the screened section of the well (i.e., the space between the bore hole and well screen) must be filled with gravel or sand if necessary to collect groundwater samples. The annular space above and below the well screen must be sealed to prevent migration of water from adjacent formations and the surface to the sampled depth.

6) For groundwater at any potable water supply well listed below, monitoring shall not be conducted:

A) For a water well:

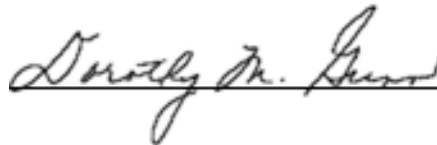
- i) Less than 15 feet in total depth from the land surface, and
  - ii) bored or dug, and
  - iii) constructed of permeable materials (e.g., cement, tile, stone or brick), and
  - iv) 36 inches or more diameter.
- B) For a water well with water quality problems due to damaged well construction materials or poorly-designed well construction;
- C) For a water well in a basement or pit; or
- D) For a water well water from a holding tank.
- b) For a spring, compliance with this Subpart shall be determined at the point of emergence.

(Source: Amended at \_\_\_ Ill. Reg. \_\_\_\_, effective \_\_\_\_\_)

This opinion constitutes the Board's findings of fact and conclusions of law in this matter.

IT IS SO ORDERED.

I, Dorothy M. Gunn, Clerk of the Illinois Pollution Control Board, certify that the Board adopted the above opinion and order on September 6, 2001, by a vote of 7-0.



Dorothy M. Gunn, Clerk  
Illinois Pollution Control Board