

ILLINOIS POLLUTION CONTROL BOARD  
May 7, 2009

CITY OF JOLIET,	)	
	)	
Petitioner,	)	
	)	
v.	)	PCB 09-25
	)	(Permit Appeal - Water)
ILLINOIS ENVIRONMENTAL	)	
PROTECTION AGENCY,	)	
	)	
Respondent.	)	

ROY M. HARSCH OF DRINKER BIDDLE & REATH LLP APPEARED ON BEHALF OF PETITIONER; and

GERALD T. KARR, SENIOR ASSISTANT ATTORNEY GENERAL, APPEARED ON BEHALF OF RESPONDENT.

OPINION AND ORDER OF THE BOARD (by G.T. Girard):

The City of Joliet (Joliet) has petitioned the Board for review of an Illinois Environmental Protection Agency (IEPA) decision denying Joliet's request to modify a permit condition. Joliet's current permit allows for the agricultural land application of Joliet's sewage sludge, subject to a condition that limits the increase in soil concentrations of radium resulting from the addition of Joliet's sludge. Specifically, Joliet sought to augment, from 0.4 picocuries per gram (pCi/g) to 1.0 pCi/g, the permissible increase in soil radium concentrations above background levels that may result from applying Joliet's wastewater treatment plant sludge to agricultural lands.

For the reasons below, the Board finds that Joliet has not met its burden of proof. Joliet has failed to demonstrate that granting the modified permit would not result in a violation of the water pollution prohibition of Section 12(a) of the Environmental Protection Act (Act) (415 ILCS 5/12(a) (2006)). The Board therefore affirms IEPA's denial of Joliet's permit application.

In this opinion, the Board first sets forth the procedural history of this case and rules on Joliet's motion to strike portions of an IEPA brief. Next, the Board makes its findings of fact. The Board then summarizes the parties' arguments, after which the Board discusses the issues and renders its legal conclusions

## **PROCEDURAL MATTERS**

### **Procedural History**

On October 17, 2008, Joliet filed its petition for review of IEPA's September 12, 2008 denial of Joliet's requested permit modification. In an order of November 7, 2008, the Board accepted Joliet's petition for hearing. IEPA filed its 335-page administrative record (AR) on December 11, 2008.

On January 2, 2009, Joliet filed the pre-filed testimony of the four witnesses it would present at hearing: Harold Harty, Plant Operations Superintendent of the City of Joliet's three wastewater treatment plants; Dennis L. Duffield, Project Manager with Rogina & Associates, Ltd. (RAL); Eli A. Port, a health physicist and President of Radiation Safety Services, Inc. (RSSI); and Richard E. Toohey, Director of Dose Reconstruction Programs for Oak Ridge Associated Universities. On January 7, 2009, the hearing officer granted Joliet's January 5, 2009 motion to substitute pre-filed testimony for each of these four witnesses, correcting minor typographical errors in the January 2, 2009 filing.

Hearing was held on January 13, 2009, in the Village of Bolingbrook. The Board cites the hearing transcript as "Tr. at \_." Joliet offered ten hearing exhibits (Exh.), all of which were admitted. The exhibits include the pre-filed testimony of Harty (Exh. 1), Duffield (Exh. 4), Port (Exh. 8), and Toohey (Exh. 10). Joliet presented these four witnesses at hearing, and their pre-filed testimony was entered into the record as if read (Tr. at 8, 15-16, 20, 28-29). IEPA offered no hearing exhibits and presented no witnesses. On February 3, 2009, Joliet filed a motion to correct the hearing transcript. The motion, to which IEPA did not respond, is granted.

With the parties' agreement, post-hearing briefs were filed simultaneously. On February 20, 2009, Joliet filed its initial post-hearing brief (Joliet Br.) and IEPA filed its initial post-hearing brief (IEPA Br.). On February 27, 2009, Joliet filed its response brief (Joliet Resp. Br.) and IEPA filed its response brief (IEPA Resp. Br.).

On March 10, 2009, Joliet filed a motion to strike (Joliet Mot.) parts of IEPA's response brief. With the motion, Joliet filed a waiver of the Board's statutory deadline for deciding this case, waiving the deadline from April 3, 2009, to May 8, 2009. On March 23, 2009, IEPA filed a response (IEPA Resp.) to Joliet's motion to strike.

On May 1, 2009, after the hearing officer alerted counsel for the parties, Joliet filed, with IEPA's authorization, two replacement pages of IEPA's administrative record. The replacement pages (pp. 29 & 30 of a 2007 RAL report that had been submitted to IEPA) correspond to AR 72 and 73, which were miscopied in the administrative record filed by IEPA on December 11, 2008. The Board accepts the two replacement pages as the parties request.

### **Motion to Strike**

The Board declines IEPA's request that the Board deny Joliet's motion to strike portions of IEPA's response brief "without considering" the motion. IEPA Resp. at 1 (alleging the

motion is a “thinly veiled attempt to get in the last word”). The motion was timely filed and accompanied by a waiver of the decision deadline. *See* 35 Ill. Adm. Code 101.506.

The IEPA statements being challenged by Joliet concern: (1) the relocation of radium-containing topsoil removed from beneath future slab-on-grade houses that may be constructed on agricultural fields that received Joliet’s sludge; (2) the relationship between the treatment of radium in Joliet’s drinking water supply to the issue of radium levels in Joliet’s sludge; and (3) the Illinois Emergency Management Agency (IEMA) making determinations on the health effects and bioaccumulative properties of radium. Joliet Mot. at 2-6. Joliet moves to strike these three sets of statements made in IEPA’s response brief because they are allegedly unsupported by the record and lack record citations. *Id.* at 1-2, 6. IEPA opposes Joliet’s motion, arguing that IEPA’s statements are supported by the record and merely highlight Joliet’s misunderstanding of the issue and burden of proof on appeal. IEPA Resp. at 2-3.

Parties to a permit appeal are expected to provide record citations to support factual statements made in their briefs. The subjects addressed in the IEPA response brief statements being contested, however, are not without mention in the administrative record before IEPA at the time of IEPA’s determination. The Board declines to strike the IEPA statements as none of them constitute extra-record evidence beyond the scope of Board review in a permit appeal. *See Alton Packaging Corp. v. PCB*, 162 Ill. App. 3d 731, 738, 516 N.E.2d 275, 280 (5th Dist. 1987). The Board therefore denies Joliet’s motion to strike.

## **FACTS**

### **Land Application of Radium-Bearing Sludge**

Since the early 1980s, Joliet has operated a program for the land application of its digested wastewater treatment plant sludge or “bio-solids.” AR at 6, 55; Exh. 1 at 1, 2. Joliet operates three wastewater treatment plants: the Eastside Wastewater Treatment Plant (WWTP); the Westside WWTP; and the Aux Sable Creek Basin WWTP. AR at 55. The bio-solids are generated from treating sanitary sewage in the treatment plants. Exh. 1 at 2. Sludge settles in plant clarifiers and is directed to digesters where bacteria reduce the amount of organic matter and stabilize the sludge for land application. *Id.*

According to the June 2007 report entitled “*Land Application of Radium Bearing Biosolids*,” prepared by RAL for Joliet, the “land application of biosolids at agronomic rates allows growers to achieve desired crop yields without expenditures for commercial fertilizer.” AR at 54. Nitrogen concentrations in the biosolids normally range between 1% and 6% on a dry weight basis, while phosphorus concentrations typically range from 0.8% to 6.1%. AR at 54; Exh. 4 at 12. The Joliet land application program results in bio-solids being applied to approximately 1,000 acres per year. Exh. 1 at 2. To encourage farmers to accept the sludge in the spring, they are paid \$50 per acre for the right to apply the biosolids and up to an additional \$50 per acre if the crop yield is less than the five year average yield for the field. Exh. 1 at 2.

Radium is a radioactive element that occurs naturally in “rock and soil and may be found in groundwater.” AR at 108. Radium 226 and radium 228 are “[t]he more common isotopes of

radium.” AR at 108. RSSI prepared an October 25, 2004 report for Joliet, entitled “*Report of RESRAD Dose Modeling for Waste Water Treatment Plant Sludge Applied to Land Currently Used for Agriculture.*” AR at 107-277. The RSSI 2004 report states:

The U.S. Environmental Protection Agency (USEPA) has established a maximum contaminant level (MCL) of 5 picocuries per liter (pCi/l) for radium in public water supplies.<sup>1</sup>

\*\*\*

The radium concentration in the City of Joliet (Joliet) water supply is between 6 pCi/l and 10 pCi/l, exceeding the current MCL. Methods are available to Joliet’s water supply system to remove radium from the water. The total amount of radium remains unchanged and radium removed from the water remains in some other form and must be disposed of. Depending upon the method, treatment may result in the radium being concentrated in drinking water treatment waste or wastewater (sewage treatment) sludge.

Joliet currently returns the radium initially in the water supply to sewage treatment sludge. The sludge is made available for agricultural application to exploit its nutrient content. The application of the sludge to land raises the radium concentration in the soil. AR at 108-09; Exh. 8 at 2; Exh. 10 at 1; Tr. at 18-19.

The RAL addendum report of June 2008, prepared for Joliet, is entitled “*Addendum 1 Land Application of Radium Bearing Biosolids.*” AR at 9-22. That report refers to the bio-solids from Joliet’s Westside WWTP as having “one of the highest concentrations of radium in Illinois.” AR at 11.

### **1984 MOA**

In September 1984, IEPA and the Illinois Department of Nuclear Safety (DNS, now the Division of Nuclear Safety within IEMA), entered into a “Memorandum of Agreement” (MOA) “for the purpose of delineating certain responsibilities of IEPA and IDNS regarding the disposal of sludge resulting from treatment of water or sewage and containing radium occurring naturally from ground waters.” AR at 336. The 1984 MOA states that many public water supplies in Illinois “draw their raw water from deep wells which contain naturally occurring radium” and such radium is “removed from the raw water during treatment thereby concentrating it in sludge.” AR at 336. Paragraph 3 of the MOA provides:

Sludge resulting from the treatment of water and sewage and containing naturally occurring radium from ground water may be disposed of in accordance with the provisions of this Memorandum of Agreement and the requirements of IEPA and the Rules and Regulations of the Illinois Pollution Control Board, as implemented

---

<sup>1</sup> “Picocurie” or “pCi” means “the quantity of radioactive material producing 2.22 nuclear transformations per minute.” 35 Ill. Adm. Code 611.101. The Board’s primary drinking water standards provide: “MCL for combined radium-226 and –228. The maximum contaminant level for combined radium-226 and radium-228 is 5 pCi/l.” 35 Ill. Adm. Code 611.330(b).

by IEPA. Any permit issued by the IEPA pursuant to this Agreement shall contain conditions based on the technical criteria contained herein and in any regulations which IEPA and DNS agree to adopt pursuant to this Agreement. AR at 337, ¶3.

The MOA then sets forth ways in which sludge may be “disposed of” (landfilling, soil conditioning) depending upon the level of radium in the sludge. AR 337-38, ¶¶4-6. These provisions include the following language:

the sludge may be used for soil conditioning purposes on agricultural crop land (e.g., corn, soy beans) but only if:

- (1) such use is in accordance with IEPA procedures; and
- (2) the level of radium in the sludge is such that after the sludge is mixed with soil (for agricultural use) the incremental increase of the radium concentration in the soil does not exceed 0.1 picocurie per gram (dry weight). AR at 337.

Where the level of radium in the sludge exceeds 50 pCi/g, for example, the MOA requires pre-disposal approval by DNS. AR at 338, ¶6. Paragraph 7 of the MOA provides a process for receiving prior DNS approval of “[a]lternative methods of sludge disposal” in specified circumstances. AR at 338-39. The MOA also states that DNS agrees to “provide IEPA with technical support in any proceeding in which the technical criteria contained in this Memorandum are at issue.” AR at 339, ¶11.

### **Joliet’s Permit and Application to Modify**

Joliet’s current permit for applying sewage sludge to agricultural lands was issued by IEPA on February 16, 2007, and is set to expire on September 30, 2011. AR at 5, 6. Special condition No. 2 of the permit limits the “total accumulative increase” in the amount of radium 226 and radium 228 in soil to 0.4 pCi/g above background levels. AR at 8; Exh. 1 at 3; Exh. 4 at 8-9; Tr. at 16-17. The permit had previously contained a limit of 0.1 pCi/g. AR at 29; Exh. 1 at 3; Exh. 4 at 5, 8.

Joliet applied with IEPA for a permit modification on July 30, 2008. AR at 1; Exh. 4 at 21. The application states:

Special Condition 2 should be modified to provide for a total accumulative increase of Radium 226 and Radium 228 in the soil of 1.0 pCi/g. There is no scientific basis for a limit of 0.4 pCi/g to be imposed on the City. A limit of 1.0 pCi/g meets all applicable guidelines in regard to the safe disposal of sludge materials. The enclosed report “Land Application of Radium Bearing Biosolids” prepared for the City of Joliet by Rogina and Associates, Ltd. supports this position. AR at 8.

### Joliet's Technical Reports

The RAL addendum report of June 2008, prepared for Joliet, is entitled "*Addendum 1 Land Application of Radium Bearing Biosolids.*" AR at 9-22. The addendum report concludes:

Joliet has employed a health physicist to determine the annual exposure to radiation by future residents on land receiving biosolids. The results of Joliet's work are that the soil concentration of radium can be increased by 1.0 pico-curies per gram without exceeding a dose of 10 milli-rem per year. AR at 11; Exh. 10 at 6.

More specifically, the RAL June 2008 addendum report sets forth these conclusions and recommendations:

The current Joliet Program of 10 applications of biosolids from the Joliet Westside Wastewater Treatment Plant does not result in the exposure of future residents of homes that follow the local building codes to radiation doses greater than 10 mill-rem per year.

The anticipated dose to a resident of a home that was not constructed following local building codes and has received 10 applications of Joliet Westside biosolids is 15.35 milli-rem.

\*\*\*

Programs that do not remove the topsoil from beneath the house should be limited to 0.4 pico-curies per gram increase in soil concentration.

\*\*\*

It is recommended that the City of Joliet be allowed to continue their current program of land application of biosolids.

The cumulative increase in soil concentration should be limited to 1.0 pico-curies per gram. The cumulative increase should be calculated as the sum of the increase resulting from each application.

Joliet should continue to monitor the building code requirements that may potentially apply to sites receiving biosolids to assure that topsoil must be removed prior to the construction of a home. AR at 12; Exh. 4 at 15, 21; Tr. at 18.

Joliet's February 28, 2005 cover letter submitting to IEPA the October 25, 2004 RSSI report ("*Report of RESRAD Dose Modeling for Waste Water Treatment Plant Sludge Applied to Land Currently Used for Agriculture*") (AR at 107-277)) summarized the report:

The dose models were prepared using the radium concentrations for the Joliet Eastside and Joliet Westside Wastewater Treatment Plants. The models were based on the application of sludge eight separate times over 20 years and nine separate times over 22 years. The models were prepared by RSSI, Inc. a

consulting health physics firm, and used the program RESRAD 6.22. This is the same model that was used by the Interagency Steering Committee on Radiation Standards (ISCORS) in their review of biosolids.

The program was run by RSSI, Inc, a consulting health physics firm, at the direction of the City of Joliet. The inputs to the model are in the written report and output material. The future land use was based on single family homes with 3 units to the acre who do not have a dairy cow or grow their own vegetables. Water was to be supplied by the City of Joliet after installation of the radium removal equipment. The applied radium concentrations were based on Joliet experience. One model with 8 applications over 20 years and another model for 9 applications over 22 years were used. All models conclude that the dose to residents is less than 10 milli-rems per year. AR at 105; Exh. 4 at 6.

The “RESidual RADioactivity” or “RESRAD” model and computer code was developed at Argonne National Laboratory for the United States Department of Energy to evaluate the “dose or risk associated with residual radioactive material.” AR at 110; *see also* AR at 50; Exh. 8 at 2 (“for evaluating human health risk from residual contamination.”). RESRAD computes “potential annual doses or lifetime risks resulting from exposure to radioactive material in soil, and concentrations of radionuclides in air, surface water, and ground water resulting from the activity in the soil.” AR at 110; Exh. 8 at 2. The “significant exposure pathways” available in RESRAD modeling are:

direct external dose from the contaminated soil, and internal dose from inhalation of airborne radionuclides including radon progeny, and from ingestion of fruits and vegetables grown in the contaminated soil and irrigated with contaminated water, from meat and ingestion of milk from live stock fed with contaminated fodder and water, from drinking water drawn from a contaminated well or pond, from ingestion of fish from a contaminated pond, and from ingestion of contaminated soil. AR at 110; *see also* AR at 50; Exh. 8 at 3.

RESRAD modeling conducted by RSSI for Joliet’s sludge application considered external exposure, inhalation, and radon. AR at 74, 110, 133, 158, 185, 212, 238, 265; Exh. 8 at 3. RSSI did not include ingestion of plant food, meat, milk, aquatic foods, soil, or drinking water. AR at 74, 110, 133, 158, 185, 212, 238, 265. RSSI explained that “the planned use of land is resident with no option of growing livestock or significant plant food,” adding that the modeling assumed “[m]unicipal water supply will be used for drinking, bathing and irrigation purposes” and that “the new homes will be served by a public water supply providing water that complies with the Safe Drinking Water Act.” AR at 110, 112; AR at 74, 78; Exh. 8 at 3. RSSI determined the annual radon dose and annual total dose resulting from two application patterns using sludge from Joliet’s Eastside WWTP and two application patterns using sludge from Joliet’s Westside WWTP. AR at 112. RSSI states that the “maximum annual dose from the total of all applications in any application pattern is less than 9 mrem [millirems] per year.” AR at 114; Exh. 8 at 3; Exh. 10 at 2.

The June 2007 RAL report (“*Land Application of Radium Bearing Biosolids*” (AR at 41-91)) states that RESRAD has “predetermined inputs” or “default values” to be used “if the actual conditions are not known.” AR at 51. The RAL report purportedly described IEMA’s modeling, though IEMA modeling documentation is not in the record:

The Illinois Emergency Management Agency, Division of Nuclear Safety has modeled the radiation dose using a model configured to demonstrate construction of the home on the radium bearing topsoil. The model also used input values indicating that the resident would drink water from wells on site, grows vegetables for consumption on the site, and consumes dairy products and seafood impacted by the biosolids application on the site. The input values are identified as default values in the model.

The results of the model indicated that a single radionuclide soil guideline of 0.23 pico-curies per gram for radium 226 and 1.50 pico-curies per gram for radium 228. Since both radionuclides are present in biosolids, the sum of fractions was applied based on equal proportions of radium 226 and 228. The resulting soil guideline calculated to 0.4 pico-curies per gram.

0.4 pico-curies per gram soil concentration was recommended by the IEMA-IDNS as the allowable increase in soil concentration that would comply with the 10 milli-rems per year dose limit. AR at 50; Exh. 4 at 8, 10; Exh. 8 at 3; Tr. at 17, 21-22.

The RAL June 2007 report states that Joliet’s modeling inputs were adjusted from those used by IEMA. For example, “[o]ne of the primary inputs to the RESRAD model is the concentration of radium in the topsoil below the house.” AR at 51. The inputs proposed by Joliet are based on removing the topsoil under the house “as this is the normal construction practice.” AR at 51; Exh. 4 at 11. The report states:

The primary local regulation of home building is through the local building code. Since Joliet has historically applied biosolids on land in four counties, variations in the building code requirements exist. Land that has received biosolids has also been incorporated into a number of cities and villages.

\*\*\*

Joliet requested RAL to survey the communities. The results of the survey indicate that building codes in the areas receiving biosolids from Joliet require the removal of topsoil prior to construction of the home or building.

\*\*\*

The inputs to the RESRAD model are based on purchased vegetables, dairy products and seafood instead of the use of items produced on site using contaminated soil. This is consistent with the life style in a subdivision in the Joliet area.

\*\*\*



The RESRAD program was to run with inputs for the radium bearing topsoil to be removed from beneath the future house, but remain in the area surrounding the home. AR at 51-52.

The RAL June 2007 adds that the proposed drinking water treatment technology is not expected to increase the amount of radium in the sludge, noting:

Since the mass loading of radium is not expected to change, the quantity of radium in the waste sludge from the plant is not expected to change from the current levels. Therefore, the amount of radium currently being applied with the biosolids to farm fields will not be increased due to the installation of new water treatment technology. AR at 86.

### Memoranda and Correspondence

Jeff Hutton of IEPA's Division of Water Pollution Control, Permit Section, prepared a memorandum on January 24, 2007. As documented in that memorandum, representatives of IEPA, IEMA, and Joliet met on January 24, 2007, "to discuss the appropriate model to be used in determining the allowable increase in radium above background." AR at 92. The memorandum continues:

All present agreed that a dose of 10 mrem/yr was acceptable.

\*\*\*

The question then devolved to what parameters were appropriate for modeling the 10 mrem/yr exposure limit. Specifically, Joliet wanted the model based on the idea that the top 12 inches of soil was removed from under the house. Roy Harsch [on behalf of Joliet] indicated that the City had done a survey of the counties in northern Illinois and all had adopted the International Building Code standard which required the removal [of] "expansive soils" prior to construction. The use of this parameter would allow a much higher application rate of radium to the soil.

Gary McCandless (IEMA) asked how the city or [IEPA] could guarantee that the building codes were followed. Rich Allen [of IEMA] asked if [IEPA] was willing to assume the risk associated with an individual not following building codes.

Toby [Frevert of IEPA] said that [IEPA] wouldn't dictate building codes at the local level.

Roy Harsch said that [IEPA] should realize the constraints of working with the general population.

\*\*\*

Eli Port [of RSSI] indicated that the modeling needed to be based on a reasonable assurance of public protection. This seems to me to be the primary question. Does requiring people to adhere to the County building codes constitute a reasonable level of protection? AR 92-94; Exh. 4 at 9; Tr. at 16, 21.

In a July 18, 2007 memorandum, Hutton of IEPA documented his observations after completing his review of “Joliet’s radium proposal, IEMA’s proposed MOA and RESRAD Manual 6.0.” AR at 35. According to Hutton:

The biggest factor impacting exposure is the question[] of whether the topsoil is removed before construction of the residence. Joliet has presented a chart indicating that building codes in the area require removal of topsoil prior to building. In addition common home construction practice is to remove the topsoil prior to laying either foundations or concrete pads. I contacted several builders selected at random from the phone book and all said the same thing. The top 3 feet of soil is removed prior to construction so that the footings of the structure are below the frost line.

\*\*\*

IEMA’s pathways and Joliet’s pathways differ in that IEMA included factors assuming the subdivision resident drank water from an on site well, drank milk produced on site, ate meat produced on site, ate fish contaminated with radium, and consumed vegetables produced on site. According to table 2.2 [of RESRAD Manual 6.0] only the vegetables should have been used for the suburban resident scenario. I have real problems with the concept of suburbanites drinking milk directly from the cow and raising their own meat and poultry onsite.

\*\*\*

Joliet assumed that the drinking water used by the resident came from public water supply system rather than a well which would increase the amount of radium allowed on site. Given that many of the areas being developed in northern Illinois are outlying areas where the residents use well and septic systems the use of the drinking water in IEMA’s model is a valid pathway. AR at 35-36.

Hutton then states his conclusions and discusses a “presentation to IEMA”:

If [IEPA] allows an increase of 1.0 pCi/g above background and assumes removal of the topsoil under the structure, it will be protective of human health. This is the same increase above background as is allowed under Wisconsin’s rules and results in less than 10 mrem/year exposure based on Joliet’s model.

\*\*\*

[IEPA] should propose an allowable increase of 1.0 pCi/g in soil radium based on the RESRAD scenario where the exposed individual is a suburban dweller living in a house where the topsoil has been removed during the construction of that house.

**Presentation to IEMA:** Mike Klebe [of IEMA] indicated to me that IEMA has gone as far as they believe they can by allowing an increase of 0.4 pCi/g above background. However, that 0.4 pCi/g increase is based on extremely conservative factors in their modeling that do not appear to reflect the real world situation.

[IEPA] should argue that the assumptions in the model need reflect the actual

situation with regard to the conversion of farmland to subdivisions. The assumptions in the model should assume 1) removal of the topsoil under the structure, 2) the individual is not consuming meat, milk and poultry grown onsite and 3) be based on the change above background rather than total radium. We can accept the use of well water by the individual.

[IEPA] should request that the RESRAD model should be re-run by both Joliet and IEMA using the above constraints to determine just how many mrem/year are produced by an increase in soil radium of 1.0 pCi/yr. The two models should show similar results. The Agencies could review the proposal after these new models are completed. AR at 37; Exh. 4 at 16-17.

In a letter of August 13, 2007, from IEMA's Gary McCandless, Acting Chief, Bureau of Environmental Safety, Division of Nuclear Safety, to IEPA's Toby Frevert, Manager, Division of Water Pollution Control, McCandless refers to the RAL report of June 2007 and states:

Joliet misinterpreted [IEMA's] computer modeling. They claim [IEMA] used input parameters that indicate ingestion exposure pathways. While [IEMA] left certain ingestion related input parameters as the default values, the pathways were turned off. This is an easier way to accomplish the same effect.

Joliet also took issue with [IEMA] not taking into consideration that topsoil would be removed prior to construction of any buildings. Other than statements that building code requires removal of topsoil, Joliet provided no documentation stating this requirement. Neither did Joliet provide any documentation of procedures used by building inspectors to verify this or documentation regarding the use of the soil removed from the site.

In their study, Joliet discussed the results of the computer modeling used to support their proposed radium concentration increase limit. Joliet did not provide any input or output files so [IEMA] could verify their results.

At our last meeting where we agreed to a 300% increase in the radium soil concentration increase limit, we agreed that Joliet would have to adapt their procedures to meet their operational needs for biosolids management. It appears from [IEMA's] review of Joliet's submittal, they remain steadfast in their quest to maintain the status quo for their biosolids land application program, and, remain unsatisfied with [IEMA's] efforts and willingness to increase the previous limit by 300%. AR at 33; Exh. 4 at 18.

In a December 3, 2007 memorandum from Hutton of IEPA to Mike Klebe of IEMA, Hutton states:

[IEPA] would like to know what is the level of exposure, expressed in mrem/yr, for an increase in background of 1.0 pCi/g based on the following cases:

The exposed individual is a suburban home owner where the top foot of soil was removed from underneath the house during construction. No inputs from food occur for this individual.

The exposed individual is a suburban home owner where the top foot of soil was not removed under the house. No inputs from food occur for this individual.

[IEPA] has been operating under the assumption that the City of Joliet and [IEMA] were in consultation over the inputs to be used in running RESRAD models. However, [IEPA] has not received a response from the City with regard to the status of such consultation at this time. AR at 32; Exh. 4 at 19.

A December 22, 2007 letter from James Eggen, Director of Public Utilities for Joliet, to IEPA's Allen Keller, Manager, Permit Section, Division of Water Pollution Control, provides:

The radium is naturally occurring in the water supply and its presence in the biosolids had been overlooked until such time that treatment from the water supply became mandatory. Initially a limit of 0.1 pCi/g was imposed based on a long standing Memorandum of Agreement (MOA) between the Department of Nuclear Safety (DNS) and Illinois Environmental Protection Agency (IEPA). As a result of an objection from the City of Joliet, a new permit was issued with the radium limit revised to 0.4 pCi/g. This allowed Joliet's program to proceed while the matter was reviewed further. It was always Joliet's intention that the 0.4 pCi/g limit was an interim limit while we allowed the science to justify a higher limit.

\*\*\*

The Division of Nuclear Safety (DNS) has been unwilling to accept the City's analysis on the premise that new homes will be built on top of the topsoil layer which has been amended with biosolids. By building above this topsoil layer, the natural decay products will be trapped inside the building providing for a greater risk to its inhabitants. Joliet's analysis maintains that the topsoil layer is disturbed and removed from the building site during the construction process.

The current use of the land is for agricultural purposes. It is reasonable to presume that the land would remain as agricultural until developed or left to grow wild for conservation or nature preserve purposes, in which case there would be no future buildings on the land.

The Department of Nuclear Safety has not demonstrated their argument on how a future building may be constructed on a subject site. The two major defects with their argument are that any professional builder will remove unsuitable materials from beneath a structure and that all current building codes require organic material (i.e. topsoil) to be removed from beneath a structure.

\*\*\*

Joliet's argument is a simple one. The land is tilled two or more times a year. The topsoil layer has absolutely no structural bearing capacity and must be removed prior to building any type of structure.

The City of Joliet with its consultants has attempted to work with the DNS to find a common ground which would be agreeable to both parties. While they gave us the impression they agreed with our calculations and would further review the data, they proceeded to complete a Memorandum of Agreement (MOA) with the EPA to set the standard at 0.4 pCi/g.<sup>2</sup> From this we can conclude that the City and the DNS will not be able to come to an agreement. AR 29-30; Exh. 4 at 20.

A February 26, 2008 memorandum of IEPA's Hutton describes a meeting of that date between representatives of IEPA and IEMA. AR at 23. Hutton states that the meeting was held to discuss, among other things, the "status of MOA" and "technical issues." AR at 23. According to the memorandum, Klebe of IEMA indicated that when topsoil is assumed to be "removed," "IEMA's model results in 5.8 mrem/yr exposure." AR at 23. Klebe also indicated that "0.4 pCi/g is IEMA's comfort number." AR at 23; Exh. 4 at 20.

In a Hutton memorandum of August 27, 2008, he states that Joliet's requested permission to "raise the radium to a level of 1.0 pCi/g above background levels" is "in violation of the memorandum of agreement between IEPA and IEMA/Nuclear Safety." AR at 5. Hutton's memorandum describes the "[a]ction" on Joliet's request: "Deny supplemental request for increase above background." AR at 5. As documented in an August 28, 2008 memorandum prepared by Hutton, representatives of IEPA and Joliet met on that date to discuss Joliet's permit modification application. AR at 3-4; Exh. 4 at 22. At the meeting, Hutton stated that the "increase to 1.0 pCi/g increase was unlikely." AR at 3; Exh. 4 at 22.

### **IEPA's Denial Letter**

On September 12, 2008, IEPA issued a letter denying Joliet's request to modify special condition No. 2 of Joliet's sludge application permit. AR at 1. IEPA's denial letter states that IEPA must deny Joliet's requested permit modification because:

The Memorandum of Agreement (MOA) between Illinois EPA and the Illinois Emergency Management Agency limits the increase in soil radium to 0.1 pCi/g above background levels. The proposed allowable increase in soil radium to 1.0 pCi/g exceeds the limit set in the MOA. AR at 1; Exh. 4 at 23.

The denial letter further states:

Sections 12 and 39 of the Environmental Protection Act (Act), 415 ILCS 5/12 and 39, prohibit the Agency from issuing a permit for any facility which would threaten, cause or allow the discharge of contaminants which might cause or tend to cause water pollution in Illinois.

---

<sup>2</sup> No such MOA is in the record.

In addition to the above cited Sections of the Act, the permit application does not fulfill the requirements of 35 Ill. Adm. Code 309.241.

The following information, clarification or corrections must be provided for us to complete our technical review and are to be considered specific reasons why the Act and the regulations adopted pursuant to the Act will not be met:

The Agency will be pleased to reevaluate your permit application on receipt of your written request and the necessary information and documentation to correct or clarify the deficiencies noted above. AR at 1; Exh. 4 at 23.

## **PARTIES' ARGUMENTS**

### **Joliet's Post-Hearing Brief**

Joliet states that radium, a radioactive element found naturally in soil and groundwater, is “also in the bio-solids that are produced by Joliet in the process of treating its wastewater.” Joliet Br. at 1, n.1. According to Joliet:

Each application of bio-solids to a farm field is assumed to add a tiny incremental amount of radium to the soil and, therefore, Special Condition 2 has the effect of limiting the total number of applications of bio-solids that are allowed on any one farm field. *Id.*

Joliet asserts that it sought to increase the special condition No. 2 radium limit of 0.4 pCi/g because the limit restricts the number of land applications of sludge to “so few total applications that farmers were reluctant to disrupt their standard fertilization programs for such a limited benefit.” Joliet Br. at 1-2; *see also id.* at 19.

There is no disagreement, continues Joliet, that 10 millirems is the radiation dosage considered protective, as “each party agrees that the 10 millirem exposure level is the appropriate maximum level from which the land application limit (e.g., 0.4 pCi/g in the Permit, compared to 1.0 pCi/g as requested by Joliet) is derived.” Joliet Br. at 2, 5. Joliet explains that after “extensive negotiations” with IEPA:

the only actual point of disagreement between Joliet and IEPA (which caused IEPA to deny the modification request) was whether the standard and required building practice of removing topsoil is a factor that may be considered in determining the allowable increase of radium levels in the soils from Joliet's bio-solids program. *Id.* (emphasis in original).

Joliet maintains that the “legally-mandated building practice” of removing topsoil before constructing a residence should be considered in arriving at the “theoretical allowable increase of radium levels in the soils from Joliet's bio-solids program.” *Id.*

Accordingly, the “real issue” in this appeal, Joliet asserts, is:

whether Joliet or IEPA is correct as to the proper exposure model input to use when calculating the radium dosage based on the assumptions that are made concerning whether topsoil is usually removed as part of residential construction. Joliet Br. at 3.

Joliet maintains that building codes in the Joliet area require that topsoil be removed for structural reasons prior to constructing slab-on-grade residences. *Id.* Joliet adds that topsoil obviously must be removed to build below-grade-features, such as basements. *Id.*, n.2. According to Joliet, by removing the topsoil before construction, the “risk of radiation exposure resulting from the elevated levels caused by previous bio-solid application on the land is greatly reduced.” Joliet Br. at 3.

“IEMA does not accept that topsoil is almost always stripped before homes are built,” according to Joliet, and so “IEMA’s modeling assumes that the topsoil always remains underneath a house.” Joliet Br. at 5. Joliet asserts that “the majority of building codes (as well as standard building practices) require that the topsoil be removed prior to construction.” *Id.* There is a “stark absence in the record of any evidence refuting” Joliet’s position. *Id.* at 25. It appears from the record, continues Joliet, that IEPA “improperly gave deference” to IEMA’s position on the “building code issue” instead of acknowledging Joliet’s evidence and the “opinions of its own agency personnel.” *Id.* at 3-4, 23. Joliet argues that the record supports its contention that increasing the current permit limit to 1.0 pCi/g is “safe and protective of human health and the environment.” *Id.* at 5-6.

In addition, Joliet states that the “only justification IEPA provided” for denying Joliet’s request is the 1984 MOA between IEPA and IEMA. Joliet Br. at 4. Joliet argues that the MOA “cannot bestow upon IEPA any enforceable authority to set any specific limit.” *Id.* at 26. The MOA limit of 0.1 pCi/g, Joliet continues, constitutes “an impermissible rulemaking without following proper rulemaking procedures under the Administrative Procedure Act (‘APA’), 5 ILCS 100/5-40, or any specific authority to implement such a rule under the Act.” *Id.* at 4, 27.

The MOA comes within the APA’s definition of a “rule” and “no exceptions apply,” according to Joliet. Joliet Br. at 27. Joliet explains that:

The APA defines a “rule” as each agency statement of general applicability that implements, applies, interprets, or prescribes law or policy, but does not include (i) statements concerning only the internal management of an agency and not affecting private rights or procedures available to persons or entities outside the agency, (ii) informal advisory rulings issued under Section 5-150, (iii) intra-agency memoranda, (iv) the prescription of standardized forms, or (v) documents prepared or filed or actions taken by the Legislative Reference Bureau under Section 5.04 of the Legislative Reference Bureau Act. Joliet Br. at 27.

Joliet then asserts:

The MOA is of general applicability as it does not specify any specific entity, and it provides for the implementation of a standard regarding the disposal of sludge resulting from treatment of water or sewage and containing radium occurring naturally from ground waters. (R336). Furthermore, the MOA prescribes the policies to be taken based on the content of the radium-containing sludge. (R337 - R339). Moreover, the MOA, on its face, does not fall within any of the exceptions provided above. The fact that this MOA is between IEMA and IEPA, two separate and distinct governmental agencies, is dispositive that no exceptions apply and, therefore, the MOA clearly falls within the definition of a rule as defined in the APA. *Id.* at 27.

Joliet maintains that IEMA and IEPA entered into the MOA “without giving the public and those affected by this rule notice or an opportunity to comment on such rule, thereby violating the rulemaking requirements to which both agencies are subject.” Joliet Br. at 4. Consequently, Joliet argues, the rule is invalid and IEPA has “no legal basis for denying Permit Condition 2 in reliance on a MOA which is not legally binding.” *Id.* at 28. The facts of this case, according to Joliet, “exemplify the very reason why the APA requires that proper rulemaking procedures be followed”:

The issues and concerns identified by IEMA would have been resolved had proper rulemaking procedures been followed, because the regulated community would have had notice and the opportunity to comment. Moreover, because this MOA is of general applicability it affects other communities that have similar bio-solid land application programs. *Id.*

Further, Joliet notes, IEPA “has already disregarded the MOA” by issuing the permit on February 16, 2007, with a limit of 0.4 pCi/g, “a limit that is clearly in excess of what it is allowed under the same MOA.” *Id.* IEPA “obviously did not consider itself bound by the MOA at that time.” *Id.* at 4-5.

Joliet acknowledges that IEPA “has also generally cited to Sections 12 and 39 of the Act” in the denial letter, but Joliet argues that:

these sections of the Act simply concern enforcement of the general prohibitions on causing water pollution and IEPA fails to offer any evidence that granting the Permit modification from 0.4 pCi/g to 1.0 pCi/g, as requested, would have caused a violation of these sections. Nor is any evidence concerning this issue set forth in the record. Joliet Br. at 4, n.4.

Joliet notes that there is no specific numeric limit for radium in the Act or Board regulations, but Joliet makes clear that it is “not challenging IEPA’s authority to regulate radium levels under the Permit.” Joliet Br. at 16.

Joliet adds that the permit denial will negatively affect farmers who rely on the sludge and will cost Joliet over four times as much to dispose of the sludge:



the program is beneficial to the environment because the only other alternative for dealing with the radium containing bio-solids would be to dispose of the material in a landfill. The current present value of the cost associated with the existing land application program is about \$10,265,000. However, the cost for disposal of such to a landfill would be more than four times the current cost, and totals \$48,083,408. Joliet Br. at 6.

### **IEPA's Post-Hearing Brief**

IEPA argues that its denial letter "is very specific in the reason" for denying the requested permit modification:

The denial letter provides that Sections 12 and 39 of the Act prohibit the Agency from issuing a permit to a facility which would threaten, cause or allow the discharge of contaminants which might cause or tend to cause water pollution in Illinois. (R-1). Even more specifically, the causing, threatening or allowing of the discharge of contaminants which might cause or tend to cause water pollution will occur because the Petitioner is seeking an increase in soil radium from 0.1 pCi/g above background levels to 1.0 pCi/g above background levels, which will exceed the limit set in the Memorandum of Agreement ("MOA") between Illinois EPA and Illinois Emergency Management Agency. (R-1, R-8 & R-336-339). IEPA Br. at 2.

IEPA further asserts that in denying Joliet's request for permit modification, IEPA was "fulfilling the mandate" of the Illinois Constitution and the Act of "ensuring all citizens enjoy the right to a healthful environment." IEPA Br. at 4. Joliet's proposed activities, according to IEPA, would contravene this purpose, as those activities "will increase the radium concentrations in the soil above what is already there" and that increase in concentration "leads to an increase in risk." *Id.* IEPA maintains that Joliet's arguments about how the increased risk would be "insignificant" is "beside the point." *Id.* IEPA argues that:

the standard for issuing a permit is whether the Act will be violated not whether the activity will not lead to a significant risk of harm to the general population. Petitioner has failed in its burden of showing that the Act will not be violated. *Id.* at 5.

Finally, as for Joliet's argument that it will be more expensive to landfill the sludge, IEPA counters that "cost is not a basis for allowing a violation of the Act." IEPA Br. at 5.

### **Joliet's Response Brief**

Joliet states that IEPA's brief fails to address, or "even acknowledge," what Joliet considers the only actual point of controversy in this appeal: "whether the standard and required building practice of removing topsoil before constructing a slab-on-grade residence is a factor that should be considered in determining the allowable increase of radium levels in the soils from Joliet's bio-solids program." Joliet Resp. Br. at 1. Instead, Joliet continues, IEPA appears to be

arguing that “any increase” in soil radium levels is a “*per se* violation” of the Act. *Id.* at 2 (emphasis in original). Joliet responds that IEPA, IEMA, and Joliet have already agreed that “an increase in radium concentration in the soil in farm fields is acceptable and permissible pursuant to Special Condition 2 of Joliet’s Permit,” and therefore “it is simply not the case that any increase is a violation of the Act.” *Id.* (emphasis in original).

According to Joliet, because neither the Act nor any regulations under the Act contain any specific limitations on radium levels in soils, IEPA “relies heavily” on the 1984 MOA between IEPA and IEMA “that set a limit of 0.1 pCi/g of radium for land applications of sewage sludge.” Joliet Resp. Br. at 2. Joliet maintains that when IEPA argues that “anything in excess of that level ‘causes water pollution’ and is a violation of the Act,” IEPA “loses sight of the fact” that IEPA itself has already issued a permit to Joliet allowing a level of 0.4 pCi/g. *Id.* Accordingly, in addition to the MOA limit being unenforceable, Joliet continues, land application resulting in an increase “in excess of 0.1 pCi/g of the background level is not a violation of the Act as asserted by Respondent in its denial because the Permit already allows for this.” *Id.*

Joliet stresses that the current limit of 0.4 pCi/g “was a level that was derived from modeling the acceptable radiation dose—10 millirems—that all concerned (Joliet, IEPA and IEMA) agreed is protective.” Joliet Resp. Br. at 3 (emphasis in original). The analytical model used is “specifically designed to determine what is protective of human health” when setting the “appropriate soil application limit as to radium.” *Id.*, n.3. Joliet continues:

The limitation of 0.4 pCi/g in Special Condition 2 was not a level that was chosen because radium at that level (0.4 pCi/g or below) did not cause “water pollution” under Section 12 of the Act. This fundamental point must be understood before one can consider the ultimate question of whether granting the requested modification would cause a violation of the Act.

\*\*\*

[T]he real issue in this appeal . . . is whether Joliet or IEPA is correct as to the proper exposure model inputs to use when calculating the radiation dosage. The only material difference in the modeling is the assumption made as to whether topsoil is usually removed as part of slab-on-grade residential construction (which then determines whether 0.4 pCi/g or 1.0 pCi/g is the appropriate radium limitation). Joliet Resp. Br. at 3.

Joliet asserts that IEPA, IEMA, and Joliet agreed that the increase above soil radium background concentrations from land applying sludge should be limited to a concentration that would not result in “an unacceptable level of risk to those who might reside in houses that might subsequently be built on these lands where Joliet’s bio-solids had been applied.” Joliet Resp. Br. at 9-10. The three entities further agreed, according to Joliet, that this risk would be determined by “evaluating the increased exposure to radon gas from the decay of the radium that would not produce an increased dose of more than 10 millirems.” *Id.* at 10. They agreed still further, continues Joliet, on using “the RESRAD computer model to calculate this increased radiation exposure.” *Id.*

Joliet's modeling predicted that an increase in soil radium concentration of 1.0 pCi/g above background would result in less than a 10 millirem dose for a resident of a house built using "the legally required and accepted building practice of removing the topsoil when building an on-grade slab house." Joliet Resp. Br. at 10; *see also* Tr. at 30. Joliet maintains that IEMA, however, would not agree to this assumption when modeling the increased risk "because some individual might proceed to violate building codes and ignore sound construction practices by building a house with the slab poured on top of the topsoil." *Id.* "This," according to Joliet, is the "sole controversy at issue," not "whether any increase in radium will cause water pollution or violations of the Act or regulations, as argued by Respondent, or as cited in the boilerplate IEPA permit denial letter." *Id.* (emphasis in original).

### **IEPA's Response Brief**

IEPA asserts that Joliet's arguments "have nothing to do with the standard of review for a permit appeal hearing." IEPA Resp. Br. at 1. IEPA argues that the burden of proof rests with Joliet, and Joliet has not met the burden. Under Section 39(a) of the Act, continues IEPA, a permit is to issue only "upon proof of the applicant that the permitted activity or facility will not cause a violation of the Act or regulations." *Id.* According to IEPA, this is this standard that must be met, not, as Joliet argues, whether the activity will cause harm or undue risk. *Id.*

IEPA maintains that Joliet's arguments about whether the record supports Joliet's position on building codes requiring topsoil removal "misses the point of what standard is required to be met for issuance of a permit." IEPA Resp. Br. at 2. IEPA states:

Compliance with building codes is not at issue before the Board. The denial letter issued by the Agency framed the issue and it relates to the increase of concentration of radium in the soil above background, not the removal of topsoil.  
*Id.*

IEPA argues that Joliet waived the argument about the 1984 MOA being an impermissible rulemaking by not putting this argument in Joliet's petition for review. IEPA Resp. at 4-5. If Joliet is not foreclosed by waiver, IEPA argues that the MOA between it and IEMA is not an impermissible rulemaking. IEPA cites Section 4 of the Act for the IEPA Director's authority to "by agreement secure such services as he or she may deem necessary from any other department, agency, or unit of the State Government . . . as may be required." *Id.*, quoting 415 ILCS 5/4 (2006). Further, IEPA quotes Section 3 of the Illinois Intergovernmental Cooperation Act: "Any power . . . which may be exercised by a public agency of this State may be exercised . . . and enjoyed jointly with any other public agency of this State." IEPA Resp. Br. at 5, quoting 5 ILCS 220/3 (2006). Based on these statutory provisions, IEPA maintains that governmental agencies may enter into a memorandum of agreement "to memorialize a joint exercise of power," adding that IEPA and IEMA "did so in this case to combine areas of expertise on radium contamination." IEPA Resp. Br. at 5.

IEPA concedes that it does not derive authority to set permit limits from the 1984 MOA, but rather from Section 39 of the Act. IEPA Resp. Br. at 5-6. IEPA asserts that Section 12 of the Act, cited in the denial letter, provides:

the prohibition against causing or threatening to cause water pollution through certain activities or means. It is this Section coupled with the Agency's duty contained in Section 39 of the Act when issuing permits that gives the Illinois EPA the authority to act in this case. The Petitioner's proposal to increase the allowable concentration of radium in the soil above background by 1000% are the types of activities that the Illinois EPA must consider when fulfilling its duty of ensuring that permit applicants have proven their activities will not lead to a violation of the Act. *Id.* at 6.

IEPA concludes that Joliet failed to prove that its proposed activity will not cause a violation of the Act, and Joliet's arguments about (1) the activity being "safe," (2) alternatives being more costly, (3) building codes, and (4) the IEPA permit writer disagreeing with IEMA, "are all diversions." IEPA Resp. Br. at 6.

## **DISCUSSION**

### **Legal Framework**

Under the Act (415 ILCS 5 (2006)), IEPA is the permitting authority. The Act requires IEPA to issue a permit if the permit applicant proves that the requested permit will not cause a violation of the Act or the Board's regulations. *See* 415 ILCS 5/39(a) (2006). If IEPA denies a requested permit, the applicant may appeal IEPA's decision to the Board within 35 days. *See* 415 ILCS 5/40(a)(1) (2006); 35 Ill. Adm. Code 105.204, 105.206. The petitioner has the burden of proof on appeal. *See* 415 ILCS 5/40(a)(1) (2006); 35 Ill. Adm. Code 105.112.

The Board's review of permit appeals is generally limited to information before IEPA during IEPA's statutory review period, and is not based on information developed by the permit applicant or IEPA after IEPA's decision. Alton Packaging, 162 Ill. App. 3d at 738, 516 N.E.2d at 280; Panhandle, PCB 98-102, slip op. at 2; American Waste Processing v. IEPA, PCB 91-38, slip op. at 2 (Oct. 1, 1992). However, it is the proceeding before the Board that affords the petitioner the opportunity to challenge the information relied upon by, and the reasons given by, IEPA for denying the permit. Alton Packaging, 162 Ill. App. 3d at 738, 516 N.E.2d at 280, citing IEPA v. PCB, 115 Ill. 2d 65, 70, 503 N.E.2d 343, 345 (1986).

On appeal, the question before the Board is "whether the applicant proves that the application, as submitted to the Agency, demonstrated that no violation of the Act would occur if the permit was granted." Panhandle Eastern Pipe Line Co. v. IEPA, PCB 98-102, slip op. at 10 (Jan. 21, 1999), *aff'd sub nom* Panhandle Eastern Pipe Line Co. v. PCB and IEPA, 314 Ill. App. 3d 296, 734 N.E.2d 18 (4th Dist. 2000), quoting Centralia Environmental Services, Inc. v. IEPA, PCB 89-170, slip op. at 9 (Oct. 25, 1990); *see also* Browning-Ferris Industries of Illinois, Inc. v. PCB, 179 Ill. App. 3d 598, 601-602, 534 N.E.2d 616, 619 (2d Dist. 1989); Joliet Sand & Gravel Co. v. PCB, 163 Ill. App. 3d 830, 833, 516 N.E.2d 955, 958 (3d Dist. 1987), citing IEPA v. PCB, 118 Ill. App. 3d 772, 455 N.E.2d 188 (1st Dist. 1983). IEPA's denial letter frames the issues on appeal. *See* Centralia, PCB 89-170, slip op. at 8; Pulitzer Community Newspapers, Inc. v. IEPA, PCB 90-142, slip op. at 6 (Dec. 20, 1990).

### **IEPA's Denial Letter**

On September 12, 2008, IEPA denied Joliet's request to modify special condition No. 2 of Joliet's permit for applying WWTP sludge to agricultural fields. Joliet had requested that IEPA change from 0.4 pCi/g to 1.0 pCi/g the allowable increase in soil radium concentrations due to sludge application. IEPA's denial letter states that IEPA must deny Joliet's requested permit modification because:

The Memorandum of Agreement (MOA) between Illinois EPA and the Illinois Emergency Management Agency limits the increase in soil radium to 0.1 pCi/g above background levels. The proposed allowable increase in soil radium to 1.0 pCi/g exceeds the limit set in the MOA. AR at 1; Exh. 4 at 23.

The denial letter also states:

Sections 12 and 39 of the Environmental Protection Act (Act), 415 ILCS 5/12 and 39, prohibit the Agency from issuing a permit for any facility which would threaten, cause or allow the discharge of contaminants which might cause or tend to cause water pollution in Illinois.

In addition to the above cited Sections of the Act, the permit application does not fulfill the requirements of 35 Ill. Adm. Code 309.241. AR at 1; Exh. 4 at 23.

Accordingly, IEPA based its denial upon the MOA limit and various statutory and regulatory provisions, including Section 12 of the Act. The Board will address these denial grounds in turn.

### **MOA Limit Denial Ground**

IEPA's denial letter specifically provides that Joliet's request of 1.0 pCi/g would exceed the limit of 0.1 pCi/g set forth in the 1984 MOA between IEPA and IEMA. The Board finds several deficiencies with this denial ground. First, the MOA limit is neither a provision of the Act nor a regulation promulgated under the Act. If an applicant fails to prove that permit issuance would not violate *the Act or its regulations*, then denial is proper. Accordingly, that the MOA limit may be exceeded is not, by itself, an appropriate ground for denying the permit application. *See* 415 ILCS 5/39(a) (2006). Second, IEPA's reliance on the 0.1 pCi/g limit of the MOA is incongruous with the fact that IEPA has already granted Joliet a permit with a limit of 0.4 pCi/g. IEPA has not adequately reconciled this denial reason with the limit set forth in Joliet's current permit. Third, the Board finds that this record provides no basis to equate exceeding the MOA limit of 0.1 pCi/g (by 10 times or otherwise) with violating the water pollution prohibition of Section 12 of the Act.

Further, Joliet argues that the 1984 MOA between IEPA and IEMA is an improperly promulgated rule in violation of the APA. The Board finds initially that, contrary to IEPA's assertion, Joliet did not waive this specific argument by not explicitly articulating it in Joliet's petition for review. Joliet's petition challenged IEPA's decision as lacking any basis in law or

fact. IEPA never moved to challenge the pleading as insufficient, and the Board finds the petition grounds broad enough to include Joliet's argument that the MOA violates the APA.

The APA defines a "rule" as follows:

each agency statement of general applicability that implements, applies, interprets, or prescribes law or policy, but does not include (i) statements concerning only the internal management of an agency and not affecting private rights or procedures available to persons or entities outside the agency, (ii) informal advisory rulings issued under Section 5-150, (iii) intra-agency memoranda, (iv) the prescription of standardized forms, or (v) documents prepared or filed or actions taken by the Legislative Reference Bureau under Section 5.04 of the Legislative Reference Bureau Act. 5 ILCS 100/1-70 (2006).

The MOA language at issue states in relevant part:

the sludge may be used for soil conditioning purposes on agricultural crop land (e.g., corn, soy beans) but only if:

\*\*\*

(2) the level of radium in the sludge is such that after the sludge is mixed with soil (for agricultural use) the incremental increase of the radium concentration in the soil does not exceed 0.1 picocurie per gram (dry weight). AR at 337, ¶4(b)(2); *see also* ¶¶5(b), 6(b) (cross-referencing ¶4(b)).

IEPA does not argue that this MOA limit is a statement concerning only internal agency management or otherwise qualifies for an exemption from the APA definition of "rule." On its face, the MOA limit is not restricted in its applicability to a specific entity. Under the terms of the MOA, the 0.1 pCi/g limit is to apply when sludge of a given radium concentration is proposed to be used as a soil conditioner. The denial letter simply states that Joliet's request "exceeds the limit set in the MOA." AR at 1. IEPA's use here of the MOA limit does not constitute the construction of Section 12 of the Act or the application of that statutory provision to this particular set of facts. *See Sparks & Wiewel Construction Co. v. Martin*, 250 Ill. App. 3d 955, 968, 620 N.E.2d 533, 542-43 (4th Dist. 1993).

The Board in no way questions the ability of State agencies to enter into MOAs with each other. *See* 5 ILCS 220 (2006). The Board finds, however, that as the MOA limit of 0.1 pCi/g has been used in this denial letter, the limit is a statement of general applicability that implements policy affecting the rights of persons or entities outside the agencies and therefore constitutes a "rule" under the APA (5 ILCS 100/1-70 (2006)). It is undisputed that the MOA limit was never subjected to the APA's rulemaking requirements of public notices, opportunity for public comment, and filing with the Secretary of State. *See* 5 ILCS 100/5-35, 5-40, 5-65 (2006). The Board finds that as applied by IEPA in the denial letter, the MOA limit is an unpromulgated rule. *See Illinois Ayers Oil Co. v. IEPA*, PCB 03-214, slip op. at 15-16 (Apr. 1, 2004). Unless a rule is promulgated in conformity with the APA, "it is not valid or effective against any person or party and may not be invoked by an administrative agency for any

purpose.” *See Sparks*, 250 Ill. App. 3d at 967, 620 N.E.2d at 542; *see also* 5 ILCS 100/5-10(c) (2006).

For all of these reasons, the Board finds that exceedence of the MOA limit is not a proper ground for permit denial.

### **Section 12 Denial Ground**

#### **The Water Pollution Prohibition**

As set forth above, IEPA’s denial letter also cites Sections 12 and 39 of the Act (415 ILCS 5/12, 39 (2006)). Section 12 of the Act is a substantive prohibition while Section 39 provides the procedures for IEPA permit determinations. Referring to Section 12, the denial states that IEPA cannot grant a permit for a facility that “would threaten, cause or allow the discharge of contaminants which might cause or tend to cause water pollution in Illinois.” AR at 1. Referring to Section 39, the denial letter states that an applicant must “submit proof to the Agency that the proposed facility will not cause a violation of the Act.” *Id.* Whether or not this passage of the denial letter is “boilerplate” as Joliet argues (Joliet Resp. Br. at 10), the Board cannot simply ignore it, picking and choosing which words of the letter to give effect. *See Centralia*, PCB 89-170, slip op. at 8; *Pulitzer*, PCB 90-142, slip op. at 6.

In addition, the denial letter cites Section 309.241 of the Board’s water pollution regulations (35 Ill. Adm. Code 309.241). Section 309.241(a) provides:

- a) The Agency shall not grant any permit required by this Subpart B . . . unless the applicant submits adequate proof that the treatment works, pretreatment works, sewer, or wastewater source will be constructed, modified, or operated *so as not to cause a violation of the Act* or of this Subtitle . . . . 35 Ill. Adm. Code 309.241(a) (emphasis added).

It must be presumed that IEPA referred to Section 309.241 based on its determination that Section 12 of the Act may be violated. Neither the denial letter nor IEPA’s briefs provide any other apparent explanation for the citation to this regulation.

Therefore, IEPA’s decision bases denial on Section 12 of the Act, and Joliet’s purported failure to prove that issuance of the requested permit condition would not “threaten, cause or allow the discharge of contaminants which might cause or tend to cause water pollution in Illinois.” AR at 1. This language of the denial letter paraphrases a portion of Section 12(a) of the Act:

No person shall:

- (a) Cause or threaten or allow the discharge of any contaminants into the environment in any State so as to cause or tend to cause water pollution in Illinois, either alone or in combination with matter from other sources . . . . 415 ILCS 5/12(a) (2006).

“Contaminant” is defined in the Act as “any solid, liquid, or gaseous matter, any odor, or any form of energy, from whatever source.” 415 ILCS 5/3.165 (2006). Under the Act, “waters” means “all accumulations of water, surface and underground, natural, and artificial, public and private, or parts thereof, which are wholly or partially within, flow through, or border upon this State.” 415 ILCS 5/3.550 (2006). The Act defines “water pollution” as:

such alteration of the physical, thermal, chemical, biological or radioactive properties of any waters of the State, or such discharge of any contaminant into any waters of the State, as will or is likely to create a nuisance or render such waters harmful or detrimental or injurious to public health, safety or welfare, or to domestic, commercial, industrial, agricultural, recreational, or other legitimate uses, or to livestock, wild animals, birds, fish, or other aquatic life. 415 ILCS 5/3.545 (2006).<sup>3</sup>

### **RESRAD**

Central to Joliet’s arguments on appeal is the RESidual RADioactivity (RESRAD) model and computer code. Joliet’s consultant, RSSI, relied upon the *User’s Manual for RESRAD Version 6*, ANL/EAD (July 2001) (AR at 110, n.1), which the Board will refer to as the “Manual.” RESRAD was created by the Argonne National Laboratory as a multi-functional tool for developing cleanup criteria and assessing the dose or risk associated with residual radioactive material.<sup>4</sup> Manual at 1-3. RESRAD includes a detailed pathway analysis for deriving soil concentration guidelines from a given dose limit. *Id.* at 1-4, 2-3, 2-4. The soil guideline is the radionuclide concentration in the soil that is acceptable if the site is to be used “without radiological restrictions.” *Id.* at 3-1. The pathway analysis includes “source” analysis, “environmental transport” analysis, “dose/exposure” analysis, and “scenario” analysis. *Id.* at 2-1.

The source analysis addresses the derivation of the source terms that determine the rate at which residual radioactivity is released into the environment. In Joliet’s case, the source analysis relates to the land application of sewage sludge that results in residual radioactivity. The environmental transport analysis concerns the identification of “environmental pathways by

---

<sup>3</sup> Section 12(a) of the Act also prohibits persons from causing, threatening, or allowing the discharge of contaminants so as to violate “standards adopted by the Pollution Control Board under the Act.” 415 ILCS 5/12(a) (2006). Under the Act, the Board has adopted groundwater quality standards for radium 226 and 228 (35 Ill. Adm. Code 620.410(a)), drinking water quality standards for radium (35 Ill. Adm. Code 611.330(b)), and surface water quality standards for radium (35 Ill. Adm. Code 302.207(c), 302.307, 302.525(c)). IEPA’s denial letter, however, does not state Joliet failed to prove that permit issuance would not violate any of these standards.

<sup>4</sup> The Manual defines “radiation dose” as “the effective dose equivalent (EDE) from external radiation and the committed effective dose equivalent (CEDE) from internal radiation.” Manual at 1-3. The sum of the external radiation EDE and the internal radiation CEDE is referred to as the “total effective dose equivalent” (TEDE). *Id.*



which radionuclides can migrate from the source to a human exposure location” and the determination of “the migration rate along the pathways.” Manual at 2-1. The dose/exposure analysis pertains to the derivation of dose conversion factors for the radiation dose that will be incurred by the exposure to ionizing radiation. Finally, the scenario analysis concerns the pattern of human activity that affects the rate of radionuclide release into the environment and the severity and duration of exposure. *Id.*

The major pathways considered in RESRAD to derive site-specific soil guidelines are: external radiation from direct exposure to contaminated soil; inhalation of dust and radon; and ingestion of contaminated plants, meat, milk, aquatic foods, water, and soil. Manual at 2-4, 2-5. The RESRAD model allows for consideration of some aspects of the Act’s definition of “water pollution.”<sup>5</sup> The contamination of groundwater and surface water may be taken into account. Ingestion exposure pathways include “food pathways” (plants, meat, milk, and aquatic foods), “water pathway segments” (groundwater and surface water), and the “drinking water pathway” (groundwater and surface water). *Id.* at 2-7 to 2-12.

The plant food pathway accounts for, among other things, root and foliar uptake of irrigation water that has been contaminated. Manual at 2-7. A water pathway segment can connect the contaminated zone with the point of water withdrawal for drinking or irrigation. *Id.* at 2-9. The model can assume that irrigation or drinking water will be taken from a well that was contaminated by precipitation or irrigation water infiltrating the contaminated zone and transporting radionuclides through the vadose zone to the aquifer. *Id.* at 2-9, 2-10. Where an on-site well is the source of drinking water, RESRAD determines the concentration factor that characterizes the drinking water pathway through multiplication of the water/soil concentration ratio by the annual quantity of contaminated drinking water consumed by an individual. *Id.* at 2-12.

Under RESRAD, exposure scenarios are:

patterns of human activity that can affect the release of radioactivity from the contaminated zone and the amount of exposure received at the exposure location. There are many potential exposure scenarios, such as subsistence farming and industrial worker. The actual scenario of a site depends on numerous factors, including the location of the site, zoning of the land, physical characteristics of the site, etc. Soil guidelines are usually based on a resident farmer exposure scenario. This scenario includes all environmental pathways for on-site or near-site exposure and is expected to result in the highest predicted lifetime dose. Other scenarios, such as the suburban resident, industrial worker, and recreationist, can be taken into account by adjusting the scenario parameters in

---

<sup>5</sup> RESRAD assesses human exposure to radiation. The model does not consider, for example, the separate effects of radiation rendering surface waters harmful to “wild animals, birds, fish, or other aquatic life.” 415 ILCS 5/3.545 (2006). The Board addressed such concerns in setting water quality standards for radium. See Revisions to Radium Water Quality Standards: Proposed New 35 Ill. Adm. Code 302.307 and Amendments to 35 Ill. Adm. Code 302.207 and 302.525, R04-21, slip op. at 13 (Dec. 15, 2005).

formulas for calculating the transport of radionuclides through the pathways . . . .  
Manual at 2-16.

The exposure scenario for a suburban resident can be considered by “suppressing” (*i.e.*, not including) pathways believed to be inapplicable. *Id.* at 2-20. According to the Manual, in the suburban resident scenario, the pathways considered are external radiation exposure, dust inhalation, radon inhalation, and the ingestion of plant foods and soil. *Id.* at 2-21. The pathways suppressed are the ingestion of contaminated meat, milk, fish, and water. *Id.* The following table from the Manual is illustrative:

**Pathways to be Considered for the Resident Farmer, Suburban Resident, Industrial Worker, and Recreationist Scenarios**

Pathway	Resident Farmer <sup>a</sup>	Suburban Resident <sup>b</sup>	Industrial Worker <sup>c</sup>	Recreationist <sup>d</sup>
External gamma exposure	Yes	Yes	Yes	Yes
Inhalation of dust	Yes	Yes	Yes	Yes
Radon inhalation	Yes	Yes	Yes	Yes
Ingestion of plant foods	Yes	Yes	No	No
Ingestion of meat	Yes	No	No	Yes
Ingestion of milk	Yes	No	No	No
Ingestion of fish	Yes	No	No	Yes
Ingestion of soil	Yes	Yes	Yes	Yes
Ingestion of water	Yes	No	No	No

- a Resident Farmer: water used for drinking, household purposes, irrigation, and livestock watering is from a local well in the area.
- b Suburban Resident: no consumption of meat and milk obtained from the site, and the water used for drinking is from offsite sources.
- c Industrial Worker: no consumption of water or food obtained on the site. Note: the EPA’s industrial worker is assumed to drink water from an onsite well (EPA 1994). However, the drinking water ingestion rates for the industrial worker and resident are different.
- d Recreationist: no consumption of food except meat (game animals) and/or fish obtained from the onsite pond, and the water used for drinking is from offsite sources. Manual at 2-21, Table 2.2; *see also* AR at 38.

The RESRAD model therefore can account for certain aspects of the Act’s definition of “water pollution” by considering human exposure to radiation resulting from surface water and groundwater impacts that arise out of radium-contaminated soil. The record indicates that Joliet and IEPA agreed that the radium limit in the permit should be set based on the use of RESRAD, that the modeling should address a suburban resident scenario, and that human exposure from the sludge should be kept below a radiation dose of 10 millirems per year.

Joliet's modeling estimated the dose of radiation to which a future suburban resident may be exposed due to Joliet's sludge application, assuming that a suburban house would eventually be built on agricultural land that received Joliet's sludge. As discussed below, based on its modeling assumptions, Joliet calculated that an increase in soil radium concentration of up to 1.0 pCi/g above background levels would not subject a future suburban resident to a radiation dose greater than 10 millirems per year.

### **Joliet's Modeling**

One of Joliet's consultants, RSSI, conducted Joliet's RESRAD modeling. RSSI used radium concentrations in sludge from the Joliet Eastside and Joliet Westside WWTPs. AR at 105. The modeling was based on applying sludge eight separate times over 20 years and nine separate times over 22 years. *Id.* Future land use was based on single-family homes with 3 units to the acre. *Id.* RSSI considered "three pathways: external exposure, inhalation, and radon." AR at 110. RSSI did not include exposure from the ingestion of drinking water, plant food, meat, milk, aquatic foods, or soil. AR at 110, 133, 158, 185, 212, 238, 265. RSSI determined the annual radon dose and annual total dose resulting from varied sludge application patterns. AR at 112. RSSI concluded that "the maximum annual dose from the total of all applications in any application pattern is less than 9 mrem per year." AR at 114.

**Drinking Water.** In suppressing the drinking water pathway, RSSI stated that municipal water supply was assumed for drinking, bathing, and irrigation purposes. AR at 110. Accordingly, RSSI assumed, for purposes of Joliet's RESRAD modeling, that the suburban resident would not ingest drinking water from an on-site well. Drinking water would be provided by an off-site source. This pathway assumption, as noted above, is consistent with the Manual. However, the Manual elaborates:

In the suburban resident scenario, it is assumed that municipal water (i.e., uncontaminated water) is used for drinking and irrigation purposes. If well water is used, however, these pathways can be activated in RESRAD. In an EPA [United States Environmental Protection Agency] study (EPA 1994), an on-site well is assumed for drinking in the suburban resident scenario. Manual at 2-20.

RESRAD considers water ingestion only for the rural resident, and the ingestion rate is 510 L/yr. The EPA also considers water ingestion for the suburban resident and industrial worker; the EPA *Exposure Factor Handbook* (EPA 1997) recommends an average drinking water intake of 1.4 L/d. *Id.* at 2-22, Table 2.3, n.g.

Hutton of IEPA's Division of Water Pollution Control, Permit Section, expressed concern about Joliet's RESRAD modeling effort excluding the consumption of drinking water:

Joliet assumed that the drinking water used by the resident came from public water supply system rather than a well which would increase the amount of radium allowed on site. Given that many of the areas being developed in northern Illinois are outlying areas where the residents use well and septic systems the use

of the drinking water in IEMA's model is a valid pathway. AR at 36.

IEMA's modeling, referenced by Hutton, is not in the record and it is unclear whether IEMA used the drinking water ingestion pathway in assessing Joliet's proposal. AR at 33; Exh. 4 at 18. Joliet presented testimony at the Board hearing concerning the issue of modeling water ingestion. Dennis L. Duffield, who is with Joliet's consultant RAL and is the former Director of Joliet's Public Works and Utilities, testified before the Board about Hutton's comment:

It should be noted that I am not aware of a single well and septic subdivision that has developed on land that has received Joliet biosolids. All the development that I recall has developed on the public water supply. Exh. 4 at 16.

The Board finds that Duffield's testimony relates to past development and is not necessarily predictive of future subdivision development on agricultural lands that have received Joliet's sludge.

RSSI's report states:

Surface water usually has low radium concentrations, but groundwater concentrations can be significant. Water drawn from deep bedrock aquifers may contain concentrations of radium that exceed regulatory standards. In Northern Illinois, high radium concentrations result from the presence of radium in the granite bedrock that surrounds the aquifers from which water supplies are drawn.

Radium in drinking water may pose a radiological health hazard. About one-fifth of ingested radium is taken up by the body and the balance is excreted in feces. Some of the absorbed radium is subsequently excreted in urine. In the body, radium, a group IIA alkali earth element, behaves like other elements in the group, such as calcium, and is deposited primarily in bone cortex.

The internally deposited radium emits alpha particles that damage tissues adjacent to the decaying atoms. AR at 108.

The Board finds that the record does not support Joliet's exclusion of the water ingestion pathway.

**Plant Food.** RSSI stated that "the planned land use is resident" with "no option" of growing "significant plant food." AR at 110. RAL added that "purchased vegetables" are "consistent with the life style in a subdivision in the Joliet area." AR at 52. The Manual, however, includes the ingestion of plant foods among the pathways to be considered for the suburban resident scenario, noting that "[p]lanting vegetable gardens is common in urban and suburban areas as well as rural areas . . . ." Manual at 2-8, 2-21.

This is noted by Hutton of IEPA:

IEMA's pathways and Joliet's pathways differ in that IEMA included factors assuming the subdivision resident drank water from an on site well, drank milk produced on site, ate meat produced on site, ate fish contaminated with radium, and consumed vegetables produced on site. *According to table 2.2 [of the Manual] only the vegetables should have been used for the suburban resident scenario.* I have real problems with the concept of suburbanites drinking milk directly from the cow and raising their own meat and poultry onsite. AR at 36 (emphasis added), 38 (Table 2.2 of the Manual).

Like RESRAD, the USEPA study (1984) referred to in the Manual included a pathway for the ingestion of home-grown produce in a suburban scenario. *Radiation Site Cleanup Regulations: Technical Support Document for the Development of Radionuclide Cleanup Levels for Soil, Review Draft*, USEPA, Office of Air and Radiation, EPA 402-R-96-011 A at 2-8 (Sept. 1994).

Though Joliet's modeling approach is based on the claimed subdivision lifestyle in "the Joliet area," the record shows that historically, Joliet's sludge has been received on crop lands in four counties. Further, if municipal water is not assumed, as discussed above, the plant food could be impacted by contaminated irrigation water from an on-site well. The Board finds that the record does not support Joliet's exclusion of the plant food ingestion pathway.

**Topsoil.** Much of the record is devoted to the dispute over whether Joliet's RESRAD model properly assumed that topsoil would be removed before construction of the future suburban residences on the agricultural fields that have received Joliet's sewage sludge. In fact, Joliet argues that the sole issue for the Board to decide on appeal is whether, for purposes of the RESRAD model, it is more appropriate to assume that topsoil will be removed, or left in place, when the suburban house is built.

In its RESRAD modeling, Joliet assumed the topsoil would be removed before any house construction, based on what Joliet describes as common industry practice and the requirements of local building codes. IEMA's calculations were based on the assumption that the future residence would be built on the topsoil, though, as noted, IEMA's modeling documentation is not in the record. Assuming the topsoil's presence or absence beneath the house affects the calculated radon entry into the house and thus the resident's radiation dose estimated under the model.

It is undisputed that removing topsoil before house construction is common industry practice. Nor is there any dispute that numerous building codes in northern Illinois, including those in areas that have received Joliet's sludge, require the removal of topsoil before house construction. AR at 51-52, 72-73, 92. Each of the following communities was surveyed by RAL and found to have such a building code requirement: Will County,<sup>6</sup> Kendall County, Grundy County, Kankakee County, Kane County, DeKalb County, LaSalle County, Joliet, Manhattan, Channahon, Minooka, Shorewood, Plainfield, Oswego, Yorkville, Wilmington, Frankfort, Mokena, Sugar Grove, Elburn, and Morris. AR at 72-73. These local codes are based on either

---

<sup>6</sup> Will County allows construction of pads without topsoil removal "only with proven 95% compaction." AR at 72.

the International Building Code (IBC) and the International Residential Code (IRC) or the Building Officials and Code Administrators (BOCA) National Building Code. *Id.* Joliet has established that it is reasonable to assume, for purposes of RESRAD, the removal of topsoil from beneath the future suburban house prior to construction.

While the record establishes that industry practice and local building codes call for the topsoil *within the footprint of the house* to be removed, Joliet has not established that all topsoil on a parcel is permanently removed from that property. In the record, IEMA raised a concern about “the use of soil removed from the site.” AR at 33. Duffield testified on behalf of Joliet at the Board hearing that:

Most new construction in the Joliet area is a part of a 40 acre or larger subdivision. Common practice in developments of this size is to strip the topsoil from the site and place it in stockpiles during the grading and construction of the site. When the homes are ready for occupancy, the topsoil is spread on the lawn areas around the home. Exh. 4 at 23.

Eli Port, a health physicist and President of RSSI, testified about modeling the removal of topsoil before construction: “[i]n the model, the only interface with amended soil is where topsoil is brought up against a basement wall or outside the home.” Exh. 8 at 3; *see also* AR at 52 (RAL June 2007 report: “The RESRAD program was to run with inputs for the radium bearing topsoil to be removed from beneath the future house, but remain in the area surrounding the home.”).

The Board finds that if radium-impacted soil remains on the property, albeit outside of the building footprint, the soil could be an on-going source of groundwater contamination to the detriment of an assumed on-site drinking water well.

### **Board Finding on Section 12 Denial Ground**

The RESRAD model permits the use of the on-site drinking water well pathway in the suburban resident scenario and calls for using the plant food ingestion pathway. The record does not support Joliet’s exclusion of these pathways from its modeling. Had Joliet included the pathways, the resulting dose would have taken into account the suburban resident’s additional radiation exposure due to the migration of radionuclides from Joliet’s sludge to groundwater, which in turn could be used for drinking water or irrigation of plant foods.

Radium 226 and 228 in WWTP sludge, as well as their decay products, are “contaminants” (415 ILCS 5/3.165 (2006)) under the Act. “Waters” include groundwater (415 ILCS 5/3.550 (2006)). Section 12(a) of the Act provides in relevant part that no person shall “[c]ause or threaten or allow the discharge of any contaminants into the environment in any State so as to cause or tend to cause water pollution in Illinois, either alone or in combination with matter from other sources” (415 ILCS 5/12(a) (2006)). “Water pollution” includes the “discharge of any contaminant into any waters of the State, as will or is likely to . . . render such waters harmful or detrimental or injurious to public health . . .” 415 ILCS 5/3.545 (2006).

Joliet argues that “*IEPA fails to offer any evidence* that granting the Permit modification from 0.4 pCi/g to 1.0 pCi/g, as requested, would have caused a violation” of Section 12(a). Joliet Br. at 4, n.4 (emphasis added). Joliet, however, carries the burden of proof. *See* 415 ILCS 5/40(a)(1) (2006). By not taking into account the human health effects of radiation exposure due to ingesting contaminated water from an on-site well or ingesting plant foods irrigated with contaminated water, Joliet did not demonstrate that permit issuance would not “[c]ause or threaten or allow the discharge of any contaminants into the environment in any State so as to cause or tend to cause water pollution.” 415 ILCS 5/12(a) (2006). After carefully reviewing the record, the Board finds that IEPA correctly determined that Joliet failed to prove that issuance of the requested permit would not result in a violation of Section 12(a) of the Act. The Board accordingly affirms IEPA’s decision to deny Joliet’s requested permit modification.

### **CONCLUSION**

On September 12, 2008, IEPA denied Joliet’s request to modify special condition No. 2 of Joliet’s sewage sludge land application permit. The denial was based on IEPA’s determination that (1) Joliet’s proposal would exceed the 0.1 pCi/g radium limit of the 1984 MOA between IEPA and IEMA, and (2) Joliet did not prove that issuance of the modified condition would not cause, threaten, or allow the discharge of contaminants so as to cause or tend to cause water pollution in violation of Section 12(a) of the Act. The MOA limit is neither a provision of the Act or Board regulation nor a proxy for water pollution under the Act. Further, as applied by IEPA in the denial letter, the MOA limit is an invalid “rule,” contrary to the APA.

However, because Joliet’s modeling of residual radiation exposure from its sludge did not account for the ingestion of water from an on-site well and the ingestion of plant food irrigated with water from that well, Joliet did not meet its burden of proof with respect to the water pollution prohibition of Section 12(a). On that ground, IEPA’s denial was proper, and the Board therefore affirms.

This opinion constitutes the Board’s findings of fact and conclusions of law.

### **ORDER**

1. The Board denies Joliet’s motion to strike portions of IEPA’s response brief.
2. The Board affirms IEPA’s September 12, 2008 denial of Joliet’s requested permit modification for the reasons stated in the above opinion.

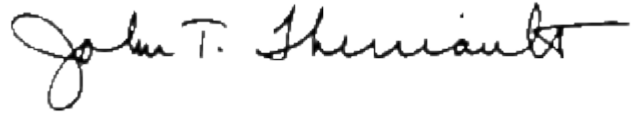
IT IS SO ORDERED.

Board Member T.E. Johnson dissented.

Section 41(a) of the Environmental Protection Act provides that final Board orders may be appealed directly to the Illinois Appellate Court within 35 days after the Board serves the order. 415 ILCS 5/41(a) (2006); *see also* 35 Ill. Adm. Code 101.300(d)(2), 101.906, 102.706. Illinois Supreme Court Rule 335 establishes filing requirements that apply when the Illinois

Appellate Court, by statute, directly reviews administrative orders. 172 Ill. 2d R. 335. The Board's procedural rules provide that motions for the Board to reconsider or modify its final orders may be filed with the Board within 35 days after the order is received. 35 Ill. Adm. Code 101.520; *see also* 35 Ill. Adm. Code 101.902, 102.700, 102.702.

I, John Therriault, Assistant Clerk of the Illinois Pollution Control Board, certify that the Board adopted the above opinion and order on May 7, 2009, by a vote of 4-1 with Member Johnson dissenting.

A handwritten signature in black ink that reads "John T. Therriault". The signature is written in a cursive style with a long horizontal flourish extending to the right.

---

John T. Therriault  
Assistant Clerk.