

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

RESPONSIVENESS SUMMARY

FOR
NORTH SHORE SANITARY DISTRICT
ZION, ILLINOIS

April 2004

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Decision

On April 15, 2004, the Illinois Environmental Protection Agency (Illinois EPA) issued a Bureau of Air construction permit and a Bureau of Land developmental permit to the North Shore Sanitary District (NSSD) to construct a sludge processing facility at 9th Street and Green Bay Road in Zion.

Copies of the documents can be obtained from the contacts listed at the end of this document. The permits and additional copies of this document can also be obtained from the Illinois EPA website www.epa.state.il.us/public-notices/ and the air permit and responsiveness summary can also be found at the Illinois Permit Database, www.epa.gov/region5/air/permits/ilonline.htm (please look under all permit records/state construction permits/new).

Background

On October 20, 2003, the Illinois EPA, Bureau of Air received an application from the NSSD to construct a sludge processing facility at 9th Street and Green Bay Road in Zion. An Illinois EPA Bureau of Air construction permit is required because the sludge processing facility would be a source of air emissions. The sludge processing facility would dry NSSD sludge and then burn it to create a glass-like aggregate.

Due to public interest in a previous proposal by NSSD to build the proposed facility in Waukegan, the Illinois EPA Bureau of Air determined that there would be sufficient interest to hold a public comment and public hearing on the proposal. The public comment period opened with the publication of a hearing notice in the Waukegan News Sun on November 28, 2003. The hearing notice was published again in the Waukegan News Sun on December 5 and 12, 2003. The Illinois EPA, Bureau of Air held a public hearing on January 13, 2004 at the Zion-Benton High School in Zion. The purpose of this public hearing was to accept oral comments into the written hearing record and answer questions about the proposed project. The comment period was scheduled to remain open until February 12, 2004. However, the deadline for submitting comments to the Illinois EPA was extended to February 23, 2004.

Questions

Sludge

1. How would the proposed facility process sewage sludge?

The proposed facility would be designed to process sewage sludge in two separate steps. In the first step, the sludge would be dried, reducing the amount of sludge to about one fifth of its original weight. This would convert the sludge into a dry material, known as granulate, which can be more easily stored and handled. In the second step, the dry granulate would be further processed in a melter and converted into a glass aggregate. The weight of the aggregate would be about one twentieth of

the original weight of sludge. In addition, to being easily stored and handled, the glass aggregate would have the potential for commercial uses. The energy for the melting process would be supplied by combustion of the organic fraction of the granulate, with the residual energy recovered and used in the initial drying process.

2. How can the NSSD guarantee that the sludge it receives today will be similar to the sludge it receives in the future?

Wastewater treatment plants, including those operated by the NSSD, are required to periodically sample and analyze the sludge because the composition of the sewage sludge does vary. The Air permit includes specific provisions for sampling and analysis of the sludge processed by the proposed facility.

3. The permit application does not disclose the levels of contaminants in sludge that would be brought to the proposed facility.

The application submitted to the Bureau of Land does include current data on sludge composition for each of the three NSSD plants that would send sewage sludge to the proposed facility.

4. At the hearing, the Illinois EPA commented that the composition of sludge is less variable than the wastewater that's going to the treatment plant. What percentage of variance would the Illinois EPA expect?

As a statistical matter, the composition of the sludge leaving a wastewater treatment plant should be less variable than the wastewater entering a plant. This is because the processing of sludge takes longer and sludge is mixed and recycled inside the treatment plant, so that the sludge leaving the plant contains material from the wastewater from a number of days. For the proposed facility, which would further combine the sludge from three different wastewater treatment plants, the relevant data would be collected as sludge is delivered to the facility for processing.

5. A construction permit is supposed to lay down the ground rules. Are you telling me that the Illinois EPA is going to wait until the facility is built to determine what is in the sludge?

The construction permit does lay down the ground rules for the operation and emissions of the proposed facility and is based on current information about the NSSD's sludge. However, the actual composition of the sludge and changes in the composition of the sludge over time are matters that the Illinois EPA cannot know for certain at this time. Accordingly, the permit includes appropriate provisions to keep track of the composition of the sludge actually being processed at the facility.

6. Is the melter subject to 40 CFR Part 503, Standards For The Use Or Disposal Of Sewage Sludge, Subpart E, Incineration? As the monitoring frequency for sewage sludge incineration under these rules is set, at least for arsenic, cadmium, chromium, and lead,

according to the capacity of the unit, which provisions of 40 CFR Part 503 apply?

The melter would be subject to these regulations and the Air permit specifies that the Permittee shall comply with the applicable sludge sampling requirements in 40 CFR 503.46(a). As the annual capacity of the melter is approximately 12,600 metric tons, dry basis, the frequency of sampling and analysis for metals in the material fed to the melter is generally every 60 days (6 times per year), in accordance with 40 CFR 503.46(a). For mercury, pursuant to 40 CFR 503.46(a)(1), the frequency of sampling is at least annually.

In addition, the Air permit requires sampling and analysis for the granulate to be conducted on at least a monthly basis.

7. The Air permit (Condition 1.1.5(c)) requires that the average daily concentration for arsenic, chromium, nickel, cadmium and lead in the sludge not exceed pollutant limits to be established during emissions testing. The concentration of those pollutants in the sludge can vary on a daily basis. How will such daily averages be established?

The permit, which incorporates 40 CFR Part 503 by reference, requires that the average daily concentration be established by calculations using several variables including control efficiencies, dispersion factors, and sludge feed rate in terms of metric tons per day (dry weight basis).

8. The permit should require the NSSD to measure the moisture content of the wet sludge as received. The permit limits the potential to emit based on the tons of material received. A decrease in the moisture content would mean an increase in actual amount of solids that would be processed and a potential increase in emissions. The permit should also require NSSD to measure the moisture content of the dried granulate for the same reason.

The throughput of the proposed facility will be adequately addressed by appropriate sampling and analysis of the wet sludge received by the facility. It is not necessary to measure moisture content of sludge and granulate as related to the potential emissions of the proposed facility. Contrary to the assumption in the comment, a reduction in moisture of the sludge would reduce the amount of drying that would be required, i.e., the amount of moisture removed by the dryer. Similarly, the melter throughput is appropriately limited in terms of the dried granulate as produced by the dryer.

9. The Air permit states that the dry granulate is estimated is to have 5 percent moisture. What happens if the moisture content were higher, would more fuel be needed? Also, I don't see it being measured anywhere.

The exact moisture content of the dried granulate should not be a critical parameter as related to emissions. A combustible material with 5 percent moisture is a very dry material and should readily burn. If the moisture content were 10 percent, the material would still readily burn although less energy would be released.

Melter

10. The exhaust flow from the melter would be split with most of the flow recirculated back into the melter. How much of the flow would be recirculated into the melter, and how will this affect the melting process?

Approximately two-thirds of the exhaust would be recirculated. The recycled exhaust would act as tempering gas, ensuring effective use of the enriched oxygen supply to the melter and minimizing formation of nitrogen oxides (NO_x), as the exhaust contains inert carbon dioxide and water vapor formed during combustion.

11. Would the melter have a measuring device for combustion temperature? Why would it be exempt from this requirement of 40 CFR 60.153?

Monitoring of combustion chamber temperature is required by the permit. However, such monitoring is not required by 40 CFR 60.153(b)(3), as this rule only requires such monitoring for certain types of sludge incinerators, not including melters.

12. Do the alternative monitoring requirements for the melter in Conditions 1.1.8(c) and (d) of the Air permit involve the USEPA's approval of alternative methods?

USEPA approval is not needed. As reflected in these permit conditions, 40 CFR 503.40(c) provides that continuous monitoring must be conducted for either total hydrocarbon (THC) or carbon monoxide (CO) concentrations.

13. The project relies on oxygen rich combustion for NO_x control in the melter. The application claims that the use of oxygen rather than air in the melter results in a reduction in emissions, with NO_x formed primarily from the nitrogen in the sludge.

This is correct. Air is composed primarily of nitrogen and oxygen. In a combustion process, the use of pure oxygen rather than air, generally acts to reduce NO_x emissions.

14. The potential emissions of NO_x from the melter (85.6 tons/year) are based on "NO_x emission factor, vendor data," according to the application. The required percentage of oxygen versus air is not stated, nor does the application identify whether the recirculation of some of the melter exhaust was considered in establishing the potential emissions. The NSSD has to state at what percentage oxygen the formation of NO_x in the melter would not exceed 85.6 tons/year. The permit has to require monitoring for the oxygen content of the melter air or require continuous emissions monitoring for NO_x. It is not sufficient to require the melter to use the "*proper oxygen supply*," as in the draft Air permit. The permit needs to specify what the proper oxygen level is and require monitoring and recordkeeping in order to effectively limit the NO_x emissions. Because if the enricher is not working properly, extra nitrogen in the melter will increase NO_x emissions.

In response to this comment, the Bureau of Air permit requires recordkeeping for the level of oxygen in the supply entering the melter. The application indicates that the melter would be using 98 percent oxygen. However, the actual operation of the unit would be limited based on its demonstrated performance as related to tested NO_x emissions from the melter.

15. The Air permit should require monitoring for good combustion practices. Would the melter exhaust have a CO or an oxygen (O₂) sensor, because the permit is based on having good operating practices?

The Air permit does require monitoring for good combustion practices for the melter. In particular, monitoring is required for the following parameters, which relate to good combustion practices: combustion chamber temperature, oxygen level in the flue gas, and concentrations of either CO or THC in the exhaust from the melter.

16. What will be the monitoring frequency for the combustion temperature in the melter and O₂ concentration and moisture content in its exhaust?

These parameters must be continuously monitored. (See the Air Permit, Condition 1.1.8(d)(iii).)

17. I would feel better about the permit if the NSSD would actually have to log what they monitor.

It is inherent in a monitoring requirement that records of the measured data be kept. For the continuous monitoring required by the Air permit, the NSSD must use computer data logging systems or other automated recording devices to keep a record of the measured data.

Emissions Control, Monitoring and Testing

18. The proposed facility will control odors by routing the exhaust through odor control equipment. What recourse does the public have if that equipment fails or for some other reason odors are noticeable in the neighborhood? There have been odor problems at the NSSD's Gurnee wastewater treatment plant with sulfur odors. It took the NSSD more than two years and cost the NSSD more than \$7.5 million to correct the problem. Odor might very well be a problem here.

The Illinois EPA will investigate and take appropriate action regarding any odor complaint it receives. The proposed facility should not be a source of nuisance odors due to the safeguards incorporated into the design of the facility. Unloading/loading will be conducted inside a building; the building will be under negative pressure (i.e., air will be drawn into the building) during unloading operations; and air from

potential sources of odor will be drawn into an odor control system and neutralized.

If the NSSD does not control odors appropriately, it would have deviated from its permit and would not be operating the equipment properly subjecting it to enforcement. If equipment is operated properly but nuisance odors occur, then there would be further investigation on what needs to be done to modify the operation of the facility to eliminate such odors as well as the possibility of enforcement.

19. What contaminants would the initial filter and scrubber on the melter control?

The fabric filter would control particulate matter; the scrubber would control sulfur dioxide.

20. Who would maintain the scrubbers, filters and other devices that control the emissions from this facility? Who changes the filter? What happens when the filter is saturated? Does the plant have to shut down to do this? How long does it take for equipment to shut down so that people can work on it? How long does it take to bring it back up again?

The NSSD will be responsible for maintaining the emission control equipment at the facility so that it operates properly. Equipment will be shutdown as needed to perform maintenance and repairs, and the facility will be designed to store sludge and granulate for several days. The duration of any particular outage will depend on the amount of time needed to safely shutdown the affected unit and prepare it for access by workers and the nature of the maintenance that is actually required.

21. How do you know the NSSD will not try to run the facility without the filters or other control devices in an effort to skate by for one day?

As any such action would be readily identifiable, so that it is unrealistic to expect that it would ever be considered, much less attempted by the NSSD. In the hypothetical situation that the NSSD did intentionally operate without controls, it would be an egregious violation and civil and perhaps criminal enforcement would be aggressively pursued.

22. How do we know that the emission standards and limitations can be met?

The information presented in the application for a construction permit by the NSSD is consistent with the general understanding and experience of the Illinois EPA with respect to the equipment and operations of the type at the proposed facility. More importantly, however, the Air permit only allows construction and trial operation of the proposed facility. After construction, the NSSD must have emission testing performed to verify that the engineering data and assumptions in the permit application used as the basis for the emission estimates, did not understate emissions.

23. The Illinois EPA should require continuous emission monitors or other independent verification methods to track the proposed facility's emissions?

The proposed facility's emissions are appropriately tracked through a combination of periodic emissions testing, sampling and analysis of sludge, operational monitoring, and recordkeeping. In particular, the data for the composition of the sludge and the measured efficiency of the air pollution control systems will enable the facility's emissions to be accurately determined.

24. What is here today is not what it is going to be a year from now. So how can you base this facility on one-time emissions test?

The Air construction permit generally establishes the initial testing required for the facility to verify proper installation and operation of equipment and compliance with applicable emission limitation. For mercury, the construction permit requires a total of four emissions tests as part of the initial operation of the facility, to examine the operation of the carbon absorption control system in depth. Subsequent Air operating permits may establish specific requirements for additional emission testing. Moreover, additional testing may always be required pursuant to a specific request from the Illinois EPA.

25. How will the NSSD test emissions from the proposed facility when the sludge varies from day-to-day? Condition 1.1.7(a)(i)(A) of the Air permit requires testing "while operating at maximum throughput and other representative operating conditions". How do are representative conditions defined when it comes to the levels of contaminants in the sewage sludge?

Samples of sludge taken during the actual period of testing will be analyzed. This data will be compared to the measured emissions to calculate the amount of mercury and other metals removed by the control system. Thereafter, variation in the composition of the sludge is addressed separately from the emissions testing, with the requirements for regular sampling and analysis of the composition of the sludge. If there were significant changes in the metals content of the sludge, as revealed through this data, additional emissions testing could be required.

26. What are the representative operating conditions for the composition of sludge? I looked over the trial burns for a hazardous waste incinerator. It actually had standard conditions. It knew what was in the material it was burning and it tested what came out. I think that's exactly what testing should be about. The Illinois EPA should have some idea what the representative conditions will be with respect to the composition of the sludge?

The circumstances at and requirements for an existing commercial hazardous waste incinerator are generally not relevant to the proposed facility. The proposed facility would process the NSSD's own sewage sludge in a melter. The pollutants of concern for combustion of sewage sludge are well established and emission testing can be conducted without prior knowledge of the composition of the sludge. (Sampling of

sludge for analysis can be conducted at the same time that emissions testing is being conducted.) Unlike a commercial waste incinerator, the proposed facility would not stockpile wastes from a variety of clients and would not have the ability to take different materials out of inventory for processing. It could not prepare a specific mix of material for the purposes of conducting emission testing, which could be far different than the mixes of materials that it normally handles.

27. The provisions for emission testing in the Air permit should require that the emissions be tested while units are operating at maximum throughput and other operating conditions that are representative of maximum emissions. I believe the wording in this condition was changed from the Waukegan permit because neither the NSSD nor the Illinois EPA know what the conditions representative of maximum emissions are.

As stated, emission testing must be conducted for the maximum throughput of a unit, as maximum throughput is generally accompanied by the greatest demands on the pollution control system, with lowest control efficiency and highest emissions. With respect to other operating conditions, emission units must be operated during emission testing under representative operating conditions, that is, as the NSSD intends to and is prepared to operate the units in the future. This is because the NSSD will generally be held to operation of units in a manner that is consistent with the operating conditions during emissions testing. In this regard, it was realized that testing during “operating conditions that are representative of maximum emissions” would only be relevant if such conditions actually represented how the NSSD intended to operate a unit. Finally, these provisions of the Air permit are fully consistent with 40 CFR 503.43(e)(3)(i), which requires testing to be conducted under representative conditions at the highest expected sewage sludge feed rate.

28. What testing methods for mercury will be used by NSSD for analyzing the sludge at the proposed facility?

The NSSD currently uses USEPA method 245.1 (Mercury in Water by Manual Cold Vapor Atomic Absorption (CVAA)) for sludge mercury analysis.

Emissions from Wastewater

29. This permit does not address treatment of wastewater at the proposed facility.

The Air permit does not address the treatment of wastewater at the proposed facility, other than activities conducted in unvented, sealed systems or pretreatment activities (such as neutralization), because wastewater treatment will not occur at the facility. The permit does include a limit for the emissions of volatile organic material (VOM) attributable to the handling of wastewater that will occur. (See Condition 1.1.3(g)(ii).)

30. This permit is issued based on negligible emissions of the VOM from handling of wastewater. There was a concern about the VOM emissions associated with wastewater in Waukegan. What information did the Illinois EPA base this 1.2 tons per year on and how is this measured?

This limit was based on detailed information for the very large Metropolitan Water Reclamation District - Stickney Works, which handles millions of gallons of water per day and the VOM emissions that are occurring from that wastewater treatment plant compared to the amount of wastewater being handled at this facility.

31. I talked to the Michigan Department of Environmental Quality (MDEQ) about the Detroit sludge processing facility, and they said there were concerns about the VOM in the effluent there. And I said, "I'm not sure that you have the same concerns." And he said, "We had big concerns about that. We felt the concerns were so huge that we asked Minergy to come up with the dry process." And I said, "They have a dry process?" He said, "Yes. They have applied for the same wet 190 million gallons a year process." But MDEQ decided that wasn't good enough and asked Minergy to come up with a dry process. So I don't care what is done in Stickney, that's what was done in Michigan.

The Illinois EPA's understanding is that the primary reason that the MDEQ suggested a dry system was to comply with state wastewater discharge requirements. The proposed facility would be designed to comply with applicable wastewater discharge requirements without the more complex dry process.

32. The NSSD does not disclose the contaminants (which the NSSD describes as "most" of the pollutants from the dryer) collected and discharged in wastewater. Some of those volatile compounds will be released at the wastewater treatment plant. There has been contention as to how to estimate these emissions and I am convinced that the NSSD estimation method results in a gross underestimate of emissions. The Illinois EPA must review whether these calculations were done using the correct data and models, and in particular whether these are equilibrium or dynamic calculations. Additional items that are absent in the application: quantity and composition of the volatiles in the sludge and condensate, volatilization from the sewers, and other significant material.

The NSSD used the BASTE Wastewater Fate Model to determine the fate of the organic compounds should all of the condensate organic load be treated at the Waukegan Sewage Treatment Plant. The samples came from a facility in Houthalen, Belgium. This emission model estimated that only 13.1 pounds of VOM would be emitted from treatment of condensate at the Waukegan treatment plant. Additionally, the vast majority of the volatiles in the wastewater will remain entrained in the wastewater until further processing at the treatment plant.

33. Will the proposed facility be considered a single source with the NSSD's Waukegan wastewater treatment plant because it will be connected by pipeline? Why not? There would be a direct connection with a force main that goes directly from this facility to that plant. There has been precedent for facilities that are under common control that are far

apart but connected with a pipeline.

The proposed facility is considered a separate source from the NSSD's Waukegan wastewater treatment plant, which is almost 10 miles away. The Illinois EPA is not aware of any precedent that suggests that connection of a facility by general usage sewer lines to a municipal waste treatment facility makes that facility a single source with the wastewater treatment plant. In this regard, the force main from the proposed facility would only extend a short distance to connect the facility to general usage sewer lines.

Permitting

34. The potential emissions of the proposed facility are just a tad under 100 tons/year, which is the difference between having to get a federal Clean Air Act operating permit or a state operating permit. The Air permit does not take into account future increases in the amount of sludge the NSSD generates because of new residential and commercial development. The NSSD has predicted that it will experience 17 percent growth between now and 2030. That makes this a sham permit because increases in sludge produced in the future will force the NSSD to expand the capacity of the facility, add another dryer or melter, which will increase emissions above the major source threshold.

“Sham permitting” is not a concern for the proposed facility. The NSSD has requested a permit that addresses the entirety of the facility that it intends to build and has requested a permit that allows the facility to operate at its physical capacity.

By way of background, sham permitting can be a concern under the federal Prevention of Significant Deterioration (PSD) rules. The concern in sham permitting is a source that accepts operating and emission limitations restricting a project to non-major levels, so that construction may begin without satisfying requirements that apply to a major project (e.g., Best Available Control Technology and air quality modeling), when the source really plans or expects the project to be major. These circumstances are not present for the proposed facility. The NSSD has not proposed any artificial constraints on the capacity of the facility to expedite permitting. In addition, as noted in the comments, a physical modification of the facility with additional equipment would be necessary to increase the capacity of the plant. The potential emissions of the proposed facility are well below the major source levels in the PSD rules, i.e., 250 tons/year, so that applicability of PSD requirements is not a concern. Finally, the Illinois EPA is not now in a position to address what the NSSD might decide to do in the future to address growth in the amount of wastewater that it receives and the amount of sludge it must handle.

Other

35. Where will the meter be that will measure the amount of natural gas used by the facility? The meter should be as far downstream as possible so that all the natural gas fired combustion devices, not just the auxiliary heater, are included.

The auxiliary heater and emergency generator are the only significant units at the proposed facility that will be fired with natural gas. The Air permit requires records for the fuel usage of the auxiliary heater. No records of fuel usage are required for the emergency generator because its fuel usage can be adequately determined indirectly, from operating records.

36. Is there any facility in the world that will be the same as this dryer-melter system? Has the Illinois EPA investigated the success or failure rate of this type of sludge processing facility at other locations in the United States?

The proposed NSSD melter system reflects Minergy's experience with its "GlassPack" demonstration plant in Winneconne, Wisconsin, which has been in operation for several years. There are about 20 similar VA Tech sludge dryers in operation in Europe with a number of others currently planned or in construction. These dryers are all of similar design to that proposed for the Zion facility. The Illinois EPA is not aware of any problems experienced by similar facilities except those alluded to in the hearing for the Detroit facility or whether the problems mentioned would be considered site-specific or unique.

37. The draft Air permit says, "The Permittee shall submit semi-annual compliance reports that include emissions on a monthly basis." What emissions and how are they measured?

Monthly data for emissions of NO_x, CO, VOM, sulfur dioxide, particulate matter and mercury must be submitted with the semi-annual compliance report. This data would be determined using appropriate emission factors and control efficiencies as determined by emission testing, and monitoring data and operating records.

38. Why is the natural gas-fired emergency generator exempt from permit requirements? Don't the generator's emissions have to be accounted for?

The emergency generator is formally exempt from state permit requirements pursuant to 35 IAC 201.146(i). However, the emissions of the generator are still accounted for and are included in this permit.

39. Does the NSSD have to record the hours it operates the emergency generator? How do you know how much NO_x the emergency generator is emitting? Are there any guarantees for the emission factors?

The emissions of NO_x from the emergency generator were calculated in accordance with USEPA guidance. This guidance provides that emissions should be determined

based on 500 hours of operation per year at the maximum hourly emission rates. This overstates the typical operation and emissions of emergency generators. Because the resulting emissions for this unit are so low, additional requirements, such as an explicit limit on hours of operation, were not placed on the unit.

40. The draft Air permit reads, "Operation of the sludge processing facility is allowed under this construction permit for a period of 365 days during which period shakedown of equipment and emission testing shall be performed." This period is usually 180 days. Why is this permit 365 days? The condition should be revised to indicate that NSSD has 180 days for shakedown and 180 days to apply for an operating permit, not just 365 days.

The 180-day period of operation that is usually allowed for equipment shakedown and emission testing does not provide time for processing an operating permit application after testing is completed, especially if a public comment period is provided. Accordingly, the Air permit allows a second 180-day period after the performance of emission testing (or a total of a year) to accommodate the processing of an operating permit application.

41. If the facility is found to be a big mistake, if it's determined that the NSSD is not doing what it said it was going to do, what is the Illinois EPA going to do? The answer the Illinois EPA gave in the Responsiveness Summary for Waukegan was that, if the facility doesn't meet the applicable standards and the requirements established for the facility, the Illinois EPA will then enforce the applicable standards and take appropriate action. This action would vary from trying to get immediate correction from the alleged violator, to asking the Attorney General to bring a lawsuit against the party.

This answer is still appropriate. Based on the nature of a violation, a range of enforcement responses from the Illinois EPA is possible and likely.

42. If the Illinois EPA has to initiate enforcement, the public will actually have to pay for it. If the Illinois EPA asks the Attorney General to bring a lawsuit, we will have to pay for it twice; once for the Attorney general and once for the NSSD to defend itself.

For an alleged violator, the legal cost of environmental enforcement itself is often determined by the defendant, as he or she determines whether to challenge the alleged violation or to cooperate in resolving the violation. In any case, if the NSSD were to undertake corrective actions to resolve a violation, the public would certainly pay for it through user fees and tax dollars. The Illinois EPA must concern itself with the potential impacts that the environment might experience if NSSD were not to take corrective action in resolution of a violation.

43. There were two years that the Waukegan paper talked about the hydrogen sulfide emitted at the Gurnee wastewater treatment plant. It took the NSSD two years to get that problem cleaned up. Hydrogen sulfide smells like rotten eggs. Was there any type of fines levied against the NSSD for creating these odors from the Gurnee plant?

The NSSD did undertake a complex and expensive construction project to better control odors at its Gurnee wastewater treatment plant. While the Illinois EPA does not anticipate nuisance odor problems from the proposed facility, the Illinois EPA would expect the NSSD to be as responsive if such problems do occur. In addition, the Illinois EPA would expect the corrective action to be far easier for the proposed facility as operations are enclosed in a building and operations can be interrupted while construction is taking place.

44. Monitoring and compliance and enforcement are concerns that are rippling through the community here. The NSSD just recently is bragging that it installed generators at its Lake Forest and Lake Bluff pumping stations. Its history has been when ComEd had a power failure, the NSSD simply dumped raw sewage into Lake Michigan. I haven't heard anything about any fines or requirements that the NSSD install the generators. I think it finally did so out of the public complaints and pressure it was getting.

While the history of these situations is more complicated than set forth in this comment, the issue from the Illinois EPA's perspective is whether the NSSD acted prudently and responsibly in its contingency planning for power outages, given the likely and possible consequences of such outages. We are pleased that the NSSD has now purchased engines that are permanently located at these stations, rather than relying on portable engines that had to be moved to the stations. No fines were levied for these incidents.

45. It is very important that the Illinois EPA consider the consequences of emissions from the proposed facility. Mercury and mercury compounds have serious debilitating effects in humans, and bio-accumulates in Lake Michigan. We need to have a zero tolerance with respect to mercury emissions.

While the Illinois EPA also has concerns about mercury emissions and levels of mercury in the environment, these concerns do not provide a basis to refuse to grant a permit for the proposed facility. Permitting decisions must be based on applicable laws and rules. The proposed facility would readily comply with applicable requirements for mercury emissions and would not be a direct threat to air quality.

The Illinois EPA's concerns about mercury emissions are expressed in programs designed to reduce release of mercury to the environment. This includes programs to reduce the use of mercury containing products, such as mercury thermometers, and to assure proper disposal of mercury, especially in the event of spills. It also includes support for aggressive new rules ideally on a national level to reduce mercury emissions from coal-fired power plants, by far the largest source of mercury emissions resulting from human activities. Finally, it includes programs to develop public awareness and understanding of environmental mercury so that the public is generally aware of measures that they can take to help protect the environment and themselves.

46. The Illinois EPA should consider the consequences of all air pollutants from the proposed facility. Emissions of sulfur dioxide (SO₂) can cause lung problems and form acid rain.

The emissions of the proposed facility will not have a significant impact on local air quality. The amount of SO₂ that could be emitted from the proposed facility is not significant. Acid rain is caused by very large sources of emissions, like coal-fired power plants.

47. How many hours a day and how many days a week would the proposed facility be permitted to operate?

The permit would allow the facility to run 24 hours per day, 7 days per week and 52 weeks per year, or 8,760 hours per year.

48. Are the permitted emissions based on processing 187 wet tons of sludge a day, which I understand represents NSSD's maximum throughput from 1999? Do we have any confirmation from Minergy, the company designing the proposed facility for the NSSD, that the capacity of the proposed facility is the same as what the NSSD is requesting?

The Air permit limits the facility to processing no more than 240 tons per day of wet sludge. This limit is based on information in the application, in which the NSSD provides the maximum capacity of the facility.

49. Why is the Illinois EPA willing to permit such unproven technology? Zion and its neighbors should not be guinea pigs. If this sludge drying, melting and burning is such a good idea, why aren't other sanitary districts pursuing it?

The Illinois EPA's role for the permitting of the proposed facility is to review the submitted applications in accordance with applicable laws and regulations and to issue or deny permits based upon that review. In order to obtain permits, the applications must demonstrate that the proposed facility will be developed to comply with the applicable environmental laws and regulations. Moreover, while the proposed technology may be innovative or cutting edge, it should not be characterized as unproven. As explained below, other sanitary districts are also pursuing this technology.

50. Minergy built a similar facility in Detroit for \$30 million, which is about the price for the proposed facility. That sludge incinerator has failed. Minergy Detroit, LLC, recently withdrew its application to amend its construction permit because of difficulties meeting emission standards. Instead of the melting process, it is now seeking to subcontract to a company for land application of sludge. Are we looking at the same problem here?

This comment does not accurately describe the situation in Detroit. Minergy did not build any facility in Detroit. While a similar facility was proposed, construction was never commenced on the facility. It is the Illinois EPA's understanding that the proposed Minergy facility was not constructed for several reasons. One reason was

that in order to comply with the SO₂ emission standards for the area, which was relevant, as the Detroit facility was being developed to use coal as a fuel, an additional scrubber for SO₂ was needed. The additional funds for this scrubber were not available.

51. We are familiar with the landfilling that has happened over the past 30 years or so. And quite frankly, with the technology today, I can't understand why we would any longer consider landfilling the sludge. Our technology is now far superior to that. This is better technology than landfilling and eating up more and more land.

The proposed facility would be an alternative to the NSSD's historic practice of landfilling sludge.

52. Mercury emissions are going to be negligible from the proposed facility compared to the two nearby coal-fired power plants.

While the emissions of mercury of the proposed facility would be very small compared to current emissions of nearby coal-fired power plants, this is only one basis to judge the emissions. The Illinois EPA believes that it is more significant that the emissions comply with current requirements for such emissions. In addition, the proposed facility would utilize available measures to minimize the emissions of mercury to the extent reasonably practical.

53. The draft construction permit does not include limits for lead emissions. How much lead would be emitted?

The potential lead emissions would be 0.04 tons/year.

54. Who supplies the air quality modeling information? Is the air modeling performed by NSSD, Minergy, or the Illinois EPA? Does Illinois EPA review the modeling?

The NSSD supplies the initial air quality modeling, which is performed by a contractor experienced in air modeling. The Illinois EPA reviews the modeling to make sure that the modeling was properly conducted following appropriate USEPA procedures. The Illinois EPA may also conduct supplemental modeling to audit the modeling that is submitted.

55. What other sources were taken into consideration in the air quality modeling performed for the proposed facility?

First, to generally address existing sources, the air quality modeling used actual data from ambient monitoring stations for the background levels of air quality. The monitoring stations selected for this purpose were located in areas in which fairly high levels of pollutants are experienced. For example, for the proposed facility, data from a monitoring station near O'Hare Airport was used for the background level for NO_x. Second, the permitted emissions of certain large sources in the

immediate vicinity of the proposed facility, including the Pleasant Prairie power plant and the Zion Energy Center, were also included in modeling that was performed, along with the permitted emissions of the proposed facility.

Waste Management

56. What will be left after burning dry sludge in the melter and what will be done with it?

The process produces a glass-like residual that NSSD proposes to use as aggregate. The applicant has submitted documentation that the material meets specifications for use as trench backfill in bedding operations or as an ingredient in making blended cement. Except for these specific uses, the Land permit requires the NSSD to manage the glass residual as waste. The permit will also require that all treatment residues, including the glass-like material destined for use as aggregate, be managed as waste while on-site.

57. The NSSD will not actually be the operators of the proposed facility. Minergy is exclusively the operator. It has all the rights to hire the people, to fire the people, to train the people, to do with the glassy residual what they want. All the NSSD will do is deliver the sludge to the proposed facility. Since NSSD is not the operator of this facility, the proposed facility does need local siting approval.

In addition, for the prior facility proposed in Waukegan, the Land permit said that the NSSD had demonstrated that the glassy residual from the melter would not be a waste if used as fill material in certain construction projects or as an ingredient in blended cements. However, since the NSSD does not know and cannot ask Minergy what exactly they are doing with this material, which might not be a commercial product and may just be driven a nearby landfill, how is the NSSD going to be able to do what is required by the permit? The NSSD will not be able to determine what Minergy is using the aggregate for because the contract between NSSD and Minergy provides that Minergy shall operate and maintain the facility, not the NSSD. The responsibility of the NSSD is to deliver wet sludge to the facility, and prepare, maintain, and furnish to Minergy accurate records with respect thereto. That is, the NSSD's responsibility is just for the sludge, not to operate the dryer, not to operate the melter, and not to deal with the glass aggregate. In particular, NSSD has agreed to sell and convey to Minergy, and Minergy has agreed to purchase from NSSD, all the output of glass aggregate and to bear all costs of and retain all revenues from marketing, sales, and use of glass aggregate without any duty to account to NSSD with respect thereto. The NSSD in the sales contract has agreed for Minergy not to tell the NSSD what they are doing with the glass product.

The NSSD has applied for permits as both owner and operator of the proposed facility, so that the proposed facility is not subject to local siting approval, as discussed in previous responses. This does not mean that the NSSD cannot hire another party, such as Minergy, to construct the facility and to carry out the day-to-day operation of the facility. However, NSSD would remain responsible and will be

held responsible for the facility. The NSSD would also retain responsibility for the appropriate disposal or use of the treatment residuals and may be subject to an enforcement action if another party improperly reuses or disposes of material. Accordingly, it will be important that any contractual agreements that the NSSD enters into with Minergy or other parties with respect to the proposed facility does not interfere with the NSSD's ability to comply with its environmental obligations.

58. All of the heavy metals in the sludge, the lead, cadmium, and other heavy metals, other than mercury will end up in the glassy aggregate and could be quite concentrated in this material. Why are there no requirements for how this material is used dependent on its content of heavy metals? I don't want this product used in any manner where that heavy metal could be recycled into the environment. There has to be a very stringent control on its use, related to the heavy metal contents of that material.

The concern for the glassy aggregate is not only the metals content but also whether the metals are bound up in the material. To address the release of heavy metals from the glassy aggregate, the NSSD provided analysis of representative samples of the glassy material from another facility. The results of testing of that material by the Toxicity Characteristic Leaching Procedure (TCLP) and Synthetic Precipitation Leaching Procedure (SPLP) of that material showed that it met established standards.

59. Would the Land permit specify what the qualifications of the glassy aggregate need to be to be considered as a product rather than a waste?

Yes. The Land permit provides that the ceramic residual from the sludge melter is not a solid waste when used in the following manner: (A) as bedding material or trench fill material in conjunction with utility projects provided, ...it meets the Classification FA6 (fine aggregate) as defined by IDOT "Standard Specifications for Road and Bridge Construction," or (B) as an ingredient in the manufacture of blended cement provided that the cement meets the latest ASTM standard (C595) for blended cement.

60. The proposed facility is going to be located on the trenchfill portion of the NSSD's sludge landfill. Are precautions being taken to make sure that the trenchfill is not dug into? Will this facility disturb anything that is in that trenchfill?

The proposed facility would not be located over the trenches at the landfill. It would be in an area of the site that both the NSSD's and Illinois EPA's records show was not used for disposal of sludge. In the event that any waste material is uncovered during the excavation for foundations, that material would have to be properly handled.

61. What regulations would govern the use of sludge as a fertilizer or fuel, which NSSD requested in the Land application as allowed uses of the material?

At this time, the Illinois EPA has not approved the use of the NSSD's sludge as a fertilizer or fuel. Use of the sludge as a fertilizer would have to be separately permitted by the Illinois EPA's Bureau of Water under 35 IAC Part 309. The sludge would be a regulated waste when sent off-site for use as a fuel in Illinois and would be subject to the waste regulations at 35 IAC Parts 807 and 809. A facility in Illinois burning the sludge would also need to obtain appropriate permits from the Bureaus of Air and Land for such activity.

62. How much storage of the glass aggregate will be allowed at the facility?

The Land permit will restrict storage capacity to two roll-off dumpsters, consistent with the NSSD's application.

63. Should equipment breakdown, is there a limit on how long sludge can be stored at the facility? The NSSD should be required to provide a backup plan in the permit in case of significant failure of a unit.

The proposed facility would be designed with on-site storage capacity for 4 days of sludge and 4.5 days of granulate. If the dryer is out of service for more than 4 days, sludge would have to be diverted to a permitted landfill. If only the melter is out of service, the dried granulate would have to be loaded into trucks for disposal in a regular landfill or delivered to other permitted facilities for use as a fuel.

Water Usage

64. Where will wastewater from the proposed facility go?

The wastewater will go by sewer to the NSSD's Waukegan wastewater treatment plant. The discharge from that plant goes into the DesPlaines River.

65. By locating the proposed facility in Zion, rather at Waukegan, the NSSD will need approximately 300,000 to 500,000 gallons per day of water. I estimate that the water usage at the proposed facility would be about 190 million gallons per year. That is astonishing. I understand this is going to be drawing water from the deep aquifer, which is already overmined. Can the water resources in Lake County accommodate this? What will the water supply of Lake County be in the next 20 years? Are we going to run out if we keep it up? I'm astounded that the Illinois EPA is considering issuing permits for a facility that would (1) draw water from the deep water aquifer, and (2) add anything at all over the Great Lakes, which are about 20 percent of the world's fresh surface water supply.

The permits being issued by the Illinois EPA address emissions and waste. Use of groundwater by the proposed facility is subject to permitting by Lake County.

66. So the NSSD is processing the same water twice? It was used in the processing of the sewage treatment, and then the NSSD will be dumping it into a sewer that goes back to a wastewater treatment plant, which goes back to where it was.

No, the NSSD would have been processing the same water twice if the proposed facility had been developed at the NSSD's Waukegan wastewater treatment plant, There the treated effluent could have been recycled and used in the condensers associated with the sludge drying process. However, at Zion this source of water is not available and the NSSD must use fresh water from an aquifer.

Local Siting Approval

67. How important is it that the proposed facility could produce a commercial product? What would the consequences be if it does not? If it doesn't produce a commercial product, isn't the facility producing waste so that it needs siting approval? Would an incineration process be classified as a pollution control facility, meaning that NSSD would have to go through siting?

It is not important for purposes of environmental permitting that the proposed facility produce a commercial product. The proposed facility's exclusion from local siting approval is based on the NSSD handling its own waste and is not related to whether the output from the facility may be beneficially used or disposed of as waste. The definition of a pollution control facility specifically excludes facilities that process their own waste (Section 3.330(a)(3)) of the Environmental Protection Act (Act)). That is the basis upon which the local siting approval is not required for the proposed facility. It is the same basis that local siting approval was not required for the proposed facility when planned for Waukegan.

The exclusion from local siting approval also does not depend on whether or not the melter is considered an incinerator. Indeed, various emission standards and regulatory requirements for incinerators do apply to the melter.

68. The NSSD claimed that local siting approval was not required for the proposed facility when it was being planned for Waukegan. It does this again for Zion. However, when this issue was taken to court by the City of Waukegan, the local court ruled that siting is required. This ruling should be applicable to the Zion location as well.

This is not correct. For the proposed facility in Waukegan, the circuit court did not overturn the Illinois EPA's determination that local siting approval under Section 39.2 of the Act was not required. Indeed, the circuit court's decision was appealed to the appellate court on procedural and legal grounds. The appellate court affirmed the circuit court's decision, in which the merits of the Illinois EPA's determination on local siting approval were addressed.

69. I understand that the Illinois EPA's decision not to require the proposed facility to have local siting approval was based on the sludge being "self-generated waste". In a recent court case, *People vs. Dixon Marquette*, the court found that *In our aim to harmonize Section 21(d)(1) of the Act with provisions elsewhere in the Act, we construe Section 21(d)(1) as providing an exemption to those on-site facilities that generate minor amounts of waste that can be disposed of without a significant threat of environmental harm.* Based on this case, the Illinois EPA needs to rethink its decision for the NSSD. Several tons of sludge cannot be construed to be a "minor amount".

The cited case is not relevant to the issue of local siting approval. The case addressed whether Land Permits are required under Section 21 of the Act for certain on-site waste disposal activities conducted by Dixon Marquette at a plant that it operates. The case did not address provisions under Section 39.2 of the Act for local siting approval of new pollution control facilities.

70. I protest the plan to build a sludge incinerator in Zion. The decision to place the proposed facility in Zion has little to do with necessity. The Board of the NSSD used poor judgment in selling most of its property in Zion. Was this done to force the acceptance of this project? The NSSD is running away from its more than adequate landfill to consummate a deal. It did not publicly consider or look for an alternative to landfill disposal, as used for many years, until someone outside of the NSSD came up with the idea that the remaining property would be good for something else. The Illinois EPA should look at alternate methods for sludge disposal, including landfill disposal, and determine the method that is safest for human health.

The Illinois EPA's responsibility in permitting a proposed facility is strictly limited to whether the facility will be designed and developed to comply with applicable laws and regulations established to protect the environment. As a general matter, the Illinois EPA does not review the reasons why an applicant proposes to build a particular facility, as those reasons are not relevant to the decision on the permit application. The Illinois EPA also does not review how the site for a facility was selected, as we do not have authority over site selection. (In this case, Zion clearly was not the NSSD's first choice for location, as the proposed facility was originally planned for Waukegan. However, this does not mean that the facility cannot also be permitted in Zion.) Finally, the Illinois EPA does not generally have the authority during permitting to consider alternatives to a proposed facility. Such an effort in this case, or an effort by the Illinois EPA to identify the "ideal method" of sludge disposal by the NSSD, would not be a useful effort as any such alternative would not necessarily be physically possible, economically feasible, or politically acceptable.

71. The advantages of a well-constructed landfill over an incinerator would be (1) it is cheaper; (2) it would not emit any pollutants into the air; (3) it can be reused once it is closed; and (4) if there is a problem, it can be dug up and fixed.

The Illinois EPA's responsibility is to assure that the disposal method chosen by the NSSD to dispose of its sewage sludge is compliant with environmental laws and

regulations.

72. The facility would be located near a state park, a county forest preserve, various wetlands, and Lake Michigan, all with great ecological significance to the region.

The emissions of the proposed facility must be controlled and comply with applicable regulations designed to protect against adverse environmental impacts. New programs and regulations are being developed to reduce emissions and improve air quality in the Greater Chicago metropolitan area, which will also serve to address and reduce the adverse impacts of the metropolitan area on the natural environment.

73. For roughly the last 25 years from approximately March until the beginning of November, two days a week, I do not go outside of my house, because the air is that rank. This is because the wind comes from the direction of the NSSD's existing sludge landfill.

The proposed permit is for a sludge processing facility, not the existing landfill.

74. We will lose significant property value on our home.

It is not appropriate for the Illinois EPA to respond to this comment, as it concerns a matter that is outside the authority and purview of the Illinois EPA and rests with local governmental authorities.

75. The proposed facility will provide us with something of benefit other than a smelly landfill.

It is not appropriate for the Illinois EPA to respond to this comment, as it concerns a matter that is outside the authority and purview of the Illinois EPA and rests with local governmental authorities.

76. No light industry will choose to locate in an area with a sludge burner and an active waste dump.

It is not appropriate for the Illinois EPA to respond to this comment, as it concerns a matter that is outside the authority and purview of the Illinois EPA and rests with local governmental authorities.

General

77. The proposed facility has potential for fire and explosions.

The facility must be designed, built and operated in accordance with applicable fire protection codes that address such matters.

78. I would like assurance that this time the Illinois EPA will wait until at least the public comment period closes before it assures the NSSD that permits will be forthcoming, because that is exactly what happened last time. The NSSD knew two weeks before the permits came, on the day that the comment period closed, that the permits would be coming on March 11, exactly when they were issued.

The timing of action on the prior applications was a consequence of State law. Pursuant to Section 39 of the Act, the Illinois EPA must act on a construction permit application within a set number of days from the date of receipt of the application. For the applications for the proposed Waukegan facility as discussed by this comment, this period ended on March 11, 2002. As the NSSD was aware of this, the NSSD knew when the Illinois EPA would have to act on its applications. And on this date, March 11, 2002, the Illinois EPA's final decision was to grant the permits.

79. Democracy is the will of the people. It is pretty obvious by all the people at the hearing that their will is not to have the proposed facility in Zion.

The Illinois EPA's permit decisions are based on the technical merit of a project, that is, whether the project or source complies with applicable environmental laws and regulations. The public can have input into Illinois EPA decisions by making relevant technical comments on permits during public comment periods. Such comments can affect conditions of permits and the final action that is taken by the Illinois EPA. However, permit decisions are not based upon whether the majority of the public favors or opposes a particular project.

80. I protest millions of dollars of public funds being spent on an unproven, potentially hazardous method of sludge treatment. The NSSD does not appear to have independent oversight to assure that taxpayers' money is spent wisely.

The decisions of local governments are subject to various checks and balances in the decision-making process. The Illinois EPA has limited authority over the decisions of local governments, specifically related only to compliance with applicable environmental laws and rules.

81. How can the Illinois EPA limit discussions at the hearing solely to the permit applications without considering that PM and VOM can pollute nearby land, including vegetation that we eat, and Lake Michigan. The Illinois EPA should consider all interrelated issues as part of the whole problem, not as separate unrelated issues.

The scope of public comments at the public hearing was not limited as implied in this comment. At the same time, it is not a productive use of a hearing for a specific project or source, to raise broad concerns such as those posed in this comment, especially as others have specific concerns about the proposed permits. This is because the programs for control of emissions, waste and wastewater are governed by separate laws and regulations. In routine day-to-day practice, as confirmed by the courts, the applicable permit programs must be administered independently.

This is an inevitable conclusion given the complexity of the decision-making that would be needed if all possible issues and implications of each individual project had to be simultaneously addressed and resolved as part of the permitting of the project. Instead, the broad concerns and possible interrelationships between different aspects of projects, as cited in this comment and as are certainly of concern, are addressed, as appropriate, as laws and regulations are developed and refined.

82. If the proposed facility does not perform as required by the permit, the NSSD may try to hold Minergy responsible for the failure. How then will the Illinois EPA enforce the permit? The Illinois EPA should insist upon an agreement between the NSSD and Minergy that holds Minergy responsible and the NSSD harmless if the facility does not perform, thus protecting the NSSD's ratepayers.

While the NSSD may wish to pursue a legal agreement with Minergy that addresses monetary consequences if certain performance guarantees for the proposed facility are not met, the Illinois EPA cannot require such an agreement. Any such agreement could not shield the NSSD from its legal responsibility for the compliance of the proposed facility. Under applicable law, the NSSD is strictly responsible for properly managing the sludge that is produced by its wastewater treatment plants.

For Additional Information

Questions about the public comment period and permit decision should be directed to:

Bradley Frost, Community Relations Coordinator
Illinois Environmental Protection Agency
Office of Community Relations
1021 North Grand Avenue, East
P.O. Box 19276
Springfield, Illinois 62794-9276
217/782-7027