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OFFICE OF REGULATORY COMPLIANCE & ASSURANCE
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TO:	Connie Pastoris
LOCATION:	NMED
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FROM:	**Cynthia Zvonar, Environmental Programs Manager**
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MESSAGE: let me know what else you may need to make a decision. Thanks!

000420

Mine De-watering Process at the WIPP

Brine or water management is a typical practice at most mines. Mines typically manage water by either evaporation in retention basins or reuse in mining and dust control activities; but they do not managed water under the solid waste regulations. The WIPP has managed brines since the beginning with the boring and construction of the various shafts at WIPP. The main source of mine process brines was the circulation fluids with a minor source being brine generated by the water-bearing zones in the Culebra and Magenta formations. These process brines were collected in two evaporation basins adjacent to the salt handling and waste handling shafts. Production of the process brines ended when the shaft boring was completed and the minor water-bearing zones in these shafts were grouted.

During the second period (1989-1994), the majority of the brines generated by the boring of the Air Intake Shaft were initially collected in large roll-off tanks and disposed of at an off-site brine disposal facility. Small volumes of water generated during this period were used for dust control, however, large volumes of brines could not be placed onto underground surfaces because they had the potential to interfere with underground site characterization and Performance Assessment experiments. When the off-site brine disposal facility was no longer available to WIPP, these brines were managed on a temporary basis at the Main Salt Pile Evaporation basin. Ultimately, these brines were managed in the evaporation basin when it became available at the sewage lagoon. In addition to the brine from the air-in-take shaft, brines from the on-site monitoring well pumping program were managed at the evaporation pond at the sewage lagoon.

The third period of process brines began when the brines started seeping from the liner of the Exhaust Shaft. The brine accumulated in both the Exhaust Shaft sump and the Waste-handling Shaft sump because water entering the Exhaust Shaft moves down gradient from the base of the Exhaust Shaft to the Waste-handling Shaft sump which is the lowest point in the WIPP underground. The accumulation of brine in the Waste-handling Shaft sump produces an unwanted buildup of water and salt which may reach the waste hoist tail ropes and counter weights. The accumulated water and salt in the sump are a major concern because the accumulation can interfere with the operation of the waste hoist. Concerns were also raised about the impact of the underground fluids on Performance Assessment. These brines were managed as hazardous waste only when routine underground sump sampling indicated lead levels exceeding the hazardous waste regulatory limit. The source of the lead was determined to be the chain-link fencing used to stabilize the walls of the exhaust shaft. Brine evidently leaches the lead from the galvanized fencing as it runs down the sides of the exhaust shaft. For these operational reasons, a catch basin was placed under the Exhaust Shaft to intercept these brines before they migrated to the Waste-handling Shaft sump.

The Exhaust Shaft catch basin is an integral part of the de-watering process at the WIPP for it allows interception and removal of the brine so that brine does not reach the Waste-handling Shaft sump. The WIPP de-watering process consists of the following:

- Based on relative humidity and ventilation flow rates through the repository, brine water from the Exhaust Shaft is accumulated in the catch basin at the base of the Exhaust Shaft.

- The catch basin is inspected each operational day for accumulated brine.

- Accumulated brine is pumped from the catch basin into containers and sampled to determine its disposition. This is considered the point of generation for any brines that exceed TCLP and are then managed as hazardous waste. The brine is held in the RCRA less than 90-day storage area awaiting sample results.

- Brines determined to be hazardous by sample analysis are shipped to an off-site TSDF; brines that are non-hazardous are either disposed in accordance with the Discharge Plan (DP-836) and the RCRA Part B Permit, or are shipped to an off-site non-hazardous disposal facility.

As indicated above, a factor in the production of Exhaust Shaft brines is the ventilation flow rate. The WIPP Hazardous Waste Facility Permit mandates an annual average ventilation flow rate of 260,000 cfm. Since WIPP has been operating under the Hazardous Waste Facility Permit accumulation of the brines in the exhaust shaft catch basin is very intermittent. The accumulation is so intermittent that the basin was pumped only twice since the Permit issuance of October 1999. This pumping rate is expected to remain low due to the permit-mandated ventilation flow rates.

The management of the brine in the catch basin involves safety issues as well. The difficulties are due to the intermittent flow of the brine down the Exhaust Shaft and the type of catch basin that had to be constructed for management of this brine. The physical features of the Exhaust Shaft are:

- The shaft is 14 feet in diameter and 2,150 feet in length.

- The shaft is equipped with a concrete liner that extends form the surface to a depth of approximately 900 feet.

- The remaining 1,250 feet of shaft is fitted with 1-inch chain link fencing that provides ground control.

- At the base of the shaft is the shaft sump area which is approximately 18-feet wide by 28-feet long. The opening of the Exhaust Shaft is located over the center of the sump area.

Operationally, the Exhaust Shaft was designed for ventilation only, i.e., all air flowing through the facility exits the underground through the South 400 drift and flows up the Exhaust Shaft. Consequently, it was not designed for personnel access and there is no over-head protection because the installation of overhead protection would impact ventilation flow rates. Because

there is no over-head protection, MSHA restricts access into the Exhaust Shaft. The MSHA regulations at 30 CFR 57.19108 state that "Shaft inspections and repair work in vertical shafts shall be performed from substantial platforms equipped with bonnets or equivalent overhead protection." Also, because the Exhaust Shaft was designed for ventilation only, there is no personnel conveyance of any kind. These aspects of the Exhaust Shaft have resulted in the following safety procedures:

- Inspections of the Exhaust Shaft are conducted using remote video cameras.
- Access to the sump area of the Exhaust Shaft is restricted with a chain-link fence.

Since there are no means of personnel conveyance in the Exhaust Shaft, installing an engineered component on the side to manage the brine would be next to impossible. For this reason, a catch basin was placed on the floor of the sump area. In order to ensure capture of all of the brine flowing down the sides of the Exhaust Shaft, the catch basin was constructed to cover the entire floor of the Exhaust Shaft sump area. The physical and operational features of the catch basin are:

- The catch basin is 18 feet wide, 28 feet long and 1 foot deep.
- It is constructed of 3/4-inch High Density Polyethylene.
- The catch basin slants approximately 2-inches from back to front to allow brine flowing down the shaft and into the basin to flow to the front of the catch basin for removal.
- There is a chain link fence about 10 feet from the front/forward edge of the catch basin and it serves as a barricade to the entrance of the Exhaust Shaft.

Because of these features of the Exhaust Shaft and the catch basin, meetings were held in 1995 and a formal presentation was made to the NMED in 1996 to clarify MSHA access limitations, and describe the Subpart J tank criteria to which the WIPP could not comply. Based on these discussions, the NMED suggested that the catch basin was not a tank, and the "point of generation" was the point at which brine waters were pumped from the basin and placed in 55-gallon drums. However, NMED never provided a documented position and, thus, an NMED RCRA inspector cited WIPP for non-compliance with the Subpart J tank requirements at the July 1999 inspection of WIPP.

The catch basin is important to maintaining normal operations at the WIPP for several reasons. It is integral to the WIPP de-watering process. It serves to accumulate and control the brine so that they can be pumped into containers and managed properly. It also serves to keep the waste hoist operational by intercepting brine water before it reaches the Waste-handling Shaft sump.

Mine de-watering and the associated management of brines has always been a part of normal operations at the WIPP. The catch basin is the most effective way to manage brines collected

from the WIPP underground. For these reasons, DOE and WID respectfully request that the NMED make a formal determinations (1) that current Exhaust Shaft brine management practices are a typical mine de-watering process, and (2) that waste generation begins when the catch basin brine is pumped into the containets and moved tot he less than 90-day storage area.

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FAX COVER SHEET

Date: December 21, 1999

To: Mark Coffman, Connie Pasteris

Company: HRMB Enforcement

Telephone: 7-1515, 7-1514

Fax: 7-1833

From: Steve Zappe

Number of Pages (including this cover sheet): 9

COMMENTS

Mark, Connie -

Attached are a few items for your consideration regarding the catchment basin at the base of the exhaust shaft at WIPP. First, I have extracted all relevant citations pertaining to "sump" from the regulations. Next I have several documents from the RCRA Compendium which may give us some ideas. 9843.1988(02) identifies three types of tanks subject to different regulatory requirements - look at the description of a "temporary tank" and see if we could justify that on the basis that the water is not always hazardous (it may be a bit of a stretch, but easier than the proposal by DOE) and therefore is not a systematic release of hazardous waste. 9483.1986(12) clarifies that a sump is also regarded as tank and needs to comply with secondary containment requirements unless a variance is obtained. 9483.1986(08) describes the two different kinds of variances from secondary containment requirements which the owner/operator may apply for - technology-based vs. risk-based.

I'd suggest pursuing the "temporary tank" route, and fall back on the variance if that doesn't survive scrutiny. Let me know what you think. I'll be out after today and will be back in the office January 4.

Steve

§260.10

"***Sump***" means any pit or reservoir that meets the definition of tank and those troughs/trenches connected to it that serve to collect hazardous waste for transport to hazardous waste storage, treatment, or disposal facilities; except that as used in the landfill, surface impoundment, and waste pile rules, "***sump***" means any lined pit or reservoir that serves to collect liquids drained from a leachate collection and removal system or leak detection system for subsequent removal from the system.

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§ 264.15 General inspection requirements.

(a) The owner or operator must inspect his facility for malfunctions and deterioration, operator errors, and discharges which may be causing -- or may lead to -- (1) release of hazardous waste constituents to the environment or (2) a threat to human health. The owner or operator must conduct these inspections often enough to identify problems in time to correct them before they harm human health or the environment.

(b)(1) The owner or operator must develop and follow a written schedule for inspecting monitoring equipment, safety and emergency equipment, security devices, and operating and structural equipment (such as dikes and ***sump*** pumps) that are important to preventing, detecting, or responding to environmental or human health hazards.

(2) He must keep this schedule at the facility.

(3) The schedule must identify the types of problems (e.g., malfunctions or deterioration) which are to be looked for during the inspection (e.g., inoperative ***sump*** pump, leaking fitting, eroding dike, etc.).

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§ 264.175 Containment.

(a) Container storage areas must have a containment system that is designed and operated in accordance with paragraph (b) of this section, except as otherwise provided by paragraph (c) of this section.

(b) A containment system must be designed and operated as follows:

(1) A base must underlay the containers which is free of cracks or gaps and is sufficiently impervious to contain leaks, spills, and accumulated precipitation until the collected material is detected and removed;

(2) The base must be sloped or the containment system must be otherwise designed and operated to drain and remove liquids resulting from leaks, spills, or precipitation, unless the containers are elevated or are otherwise protected from contact with accumulated liquids;

(3) The containment system must have sufficient capacity to contain 10% of the volume of containers or the volume of the largest container, whichever is greater. Containers that do not contain free liquids need not be considered in this determination;

(4) Run-on into the containment system must be prevented unless the collection system has sufficient excess capacity in addition to that required in paragraph (b)(3) of this section to contain any run-on which might enter the system; and

(5) Spilled or leaked waste and accumulated precipitation must be removed from the ***sump*** or collection area in as timely a manner as is necessary to prevent overflow of the collection system.

Comment: If the collected material is a hazardous waste under part 261 of this Chapter, it must be managed as a hazardous waste in accordance with all applicable requirements of parts 262 through 266 of this chapter. If the collected material is discharged through a point source to waters of the United States, it is subject to the requirements of section 402 of the Clean Water Act, as amended.

Subpart J -- Tank Systems

Source: 51 FR 25472, July 14, 1986, unless otherwise noted.

§ 264.190 Applicability.

The requirements of this subpart apply to owners and operators of facilities that use tank systems for storing or treating hazardous waste except as otherwise provided in paragraphs (a), (b), and (c) of this section or in § 264.1 of this part.

(a) Tank systems that are used to store or treat hazardous waste which contains no free liquids and are situated inside a building with an impermeable floor are exempted from the requirements in § 264.193. To demonstrate the absence or presence of free liquids in the stored/treated waste, the following test must be used: Method 9095 (Paint Filter Liquids Test) as described in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," EPA Publication SW-846, as incorporated by reference in § 260.11 of this chapter.

(b) Tank systems, including ***sumps***, as defined in § 260.10, that serve as part of a secondary containment system to collect or contain releases of hazardous wastes are exempted from the requirements in § 264.193(a).

(c) Tanks, ***sumps***, and other such collection devices or systems used in conjunction with drip pads, as defined in § 260.10 of this chapter and regulated under 40 CFR part 264 subpart W, must meet the requirements of this subpart.

Skip references to sumps in Subparts K (Surface Impoundments), L (Waste Piles), and N (Landfills)

containment vessel storing hazardous waste, are subject to all applicable requirements for tank systems except for the requirement to obtain secondary containment. 51 Fed. Reg. 25441 (July 14, 1986).

Finally, "temporary tanks" are tanks used for the storage of hazardous waste in response to a leak or spill, and other temporary, unplanned occurrences. Such tanks are exempted from regulatory and permitting requirements under 40 C.FR. Sections 264.1(g)(8), 265.1(c)(11), and 270.1(c)(3), except for requirements concerning preparedness and emergency procedures. 51 Fed. Reg. 25445 (July 14, 1986). Under these provisions, a sump that may be used to collect hazardous waste in the event of a spill, whether accidental or intentional, and which is not designed to serve as a secondary containment structure for a tank storing hazardous waste, is generally exempt from regulatory and permitting requirements so long as it is used to contain hazardous waste only as an immediate response to such a spill.

As you have described the remote secondary containment device at St. Marys, the sump will contain hazardous waste only in the unusual event of a spill during the offloading of hazardous waste-derived fuel into the cement kiln. It will not collect routine or systematic discharges of hazardous waste, and thus is not a primary containment tank. In addition, it is not serving as a secondary containment structure for spills from a primary containment vessel storing hazardous waste because the trucks containing the hazardous waste-derived fuel are not storage vessels when located on-site for short periods during the transfer of hazardous waste into the kiln. See 40 C.F.R. 263.12 and letter of clarification to Mr. Richard Stoll (attached). Accordingly, the remote secondary containment sump is not subject to RCRA permitting requirements to the extent that it is only used to contain hazardous waste as an immediate response to a spill.

If you have further questions concerning this issue, please feel free to call me at (202) 382-7706.

Sincerely,
Caroline H. Wehling
Attorney
Solid Waste and Emergency
Response Division (LE-132S)

Attachment

cc: Robert Dellinger; Matthew Hale; Karl Bremer

I hope I have adequately addressed your question. If you should have any further questions, please call Bill Kline or me at (202) 382-7917.

Sincerely,

Robert W. Dellinger
Chief, Waste Treatment Branch

cc: RCRA Branch Chief
Region VIII

9483.1986(08)

RCRA/SUPERFUND HOTLINE MONTHLY SUMMARY

OCTOBER 86

1. Secondary Containment Variances for Tanks

New regulations promulgated in the July 14, 1986 Federal Register (51 FR 25422) address secondary containment requirements for hazardous waste treatment and storage tanks. 40 CFR 264.193(g) and 265.193(g) allow the tank owner/operator to apply to the Regional Administrator for a variance from the secondary containment requirements. A tank owner/operator may apply for either a technology-based variance or a risk-based variance. How are these two kinds of variances different?

40 CFR 264.193(g) and 265.193(g) described the requirements for both technology-based and risk based variances. The Regional Administrator may grant a technology-based variance if the owner/operator can demonstrate that alternative design and operating practices, combined with location characteristics, will be at least as effective as secondary containment in preventing the migration of hazardous waste or hazardous constituents into the ground water or surface water. The Regional Administrator may grant a variance based on risk if the owner/operator can demonstrate that there will be no substantial present or potential hazard to human health or the environment if there is a release to the ground water or surface water. Risk-based variances will not be granted to new underground task systems.

According to §264.193(g)(1) and §265.193(g)(1), the Regional Administrator will base a decision to grant a technology-based variance on (1) the nature and quantity of wastes, (2) the proposed alternate designs and operation, (3) the hydrogeologic characteristics of the facility (e.g.,-thickness of soil between the tank system and ground water), and (4) other factors related to the potential for hazardous constituents to migrate into ground or surface water. For a risk-based variance, the Regional Administrator will consider, in addition to the nature and persistence of the waste and the facility's hydrogeology, the potential effects on human health and welfare (i.e.,-wildlife, crops, vegetation, physical structures). The Regional Administrator will evaluate these factors as they relate to the quality of ground water, surface water, and the land (see §§264.193(g)(2) and 265.193((g)(2)). In applying for a risk-based variance, a tank owner/operator may demonstrate either that there will be no exposure pathways for hazardous constituents, or that exposure to hazardous constituents through ground or surface water will not be high enough to pose a substantial hazard to human health or the environment. In the latter approach, the variance would have to address current and potential hazards (51 FR 25453).

For both technology-based and risk-based variances, the burden will be on the applicant to demonstrate either that the alternate technology will be equivalent to secondary containment or that the tank system will present no current or potential risk to human health or the environment.

Source: Bill Kline (202) 382-4623
Ellen Siegler (202) 382-7700