

PPC 9476.1984(05)

CLOSURE PLAN COMMENTS/ISSUES (CRUCIBLE STEEL)

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

SEP 18 1984

MEMORANDUM

Subject: Steam Team Comments, Crucible Steel, Syracuse, NY

From: Chris Rhyne
HO Permit Assistance Team

To: James Reidy, Chief
RCRA Permits Section, Region II

Background

Crucible Corporation operates a specialty steel mill on the west side of Onondaga Lake approximately 2 miles northwest of Syracuse, New York. Since 1973 Crucible has been operating a 20 acre landfill to dispose of its steel mill waste. These wastes, including EAF and AOD dusts, waste caustic solids, and acid pickling sludges, are spread over the surface of an inactive Solvay Process Wastebed that is 60 feet deep and 365 acres in areal extent.

The Solvay Process Wastebed was formed as a by-product from the production of Soda Ash (sodium carbonate) dating back to 1881 and is comprised of Calcium Carbonate, Calcium Silicate, Magnesium Hydroxide, and lesser amounts of other compounds. The average pH is approximately 12.0.

After spending time with the State of New York in an attempt to obtain a permit to dispose of their hazardous waste, Crucible decided to halt the disposal of hazardous waste at this site in March of 1982. Since Crucible was no longer disposing of hazardous waste, they agreed to submit a closure plan to the Region II office. In this plan, Crucible proposes to continue operating the landfill as a non-hazardous waste landfill, applying non-hazardous waste over the in-place hazardous waste.

Final cover would be applied in stages as the landfill, is completed. Crucible anticipates completion in eight years.

Issues

May the requirement for cover at closure be delayed for an extended period of time?

Assuming the regulations allow delayed cover, do Crucible's Arguments for delayed cover demonstrate that the facility will prevent threats to human health and the environment?

May the final cover be covered by non-hazardous waste after installation?

Discussion

The first issue is whether there is a legal basis for delaying placement of the cover. The owner or operator must generally complete closure activities within 130 days after closure plan approval. The regulations do provide in some cases for a longer than 180 day closure period; however, the conditions outlined in §265.113(b) are specific and must be met by the applicant. That is, the closure activities must, of necessity, take him longer than 180 days to complete; or closure would be incompatible with continued operation, there is a reasonable likelihood that operation will be recommended by a person other than the owner or operator, and the facility has the capacity to receive additional waste. In addition, the owner or operator must take all steps to prevent threats to human health and the environment.

If the Regional Administrator finds that the above conditions have been met, Crucible may delay closure for a period longer than 180 days. discussions with OSH staff and with OGC staff have concluded, however, that the longer period must be related to a need for extra time to complete legitimate closure activities or to a likely transfer of the operation to new parties, not to the addition of non-hazardous waste disposal operations at the same site by the same owner or operator. We have not been informed of any likelihood that someone other than the current owner will take over operations at this site. In addition, the preamble to the May 19, 1980 regulations (45 FR 33197) provides that "...in no case may closure take more than 3 years." Therefore, the

Crucible closure plan must contain only that time needed to complete legitimate closure activities and must reflect a closure time of less than 3 years.

The second issue is whether or not Crucible's arguments for delaying final cover are environmentally sound. Crucible has indicated that an impermeable membrane over their waste would cause excess settlement and subsequent Solvay Waste dike instability. They reference a report by Ray M. Teeter, P.E., addressing settlement and stability of the Crucible Landfill. Mr. Teeter states that if the water table within the Solvay Waste were lowered (as would be the case if the landfill were covered with impermeable liner), this would increase the effective stresses in the Solvay Waste, resulting in increased settlement. Nowhere does Mr. Teeter indicate that the increased settlement would create instability in the dike.

Crucible's other environmental argument for delaying cover is that the Solvay Waste absorbs the chromium being leached from the hazardous steel mill waste. This argument is based on Section 4 of the Engineering Report and Plan of Operation accompanying the application for a State of New York permit.

In this document lab scale and field scale test results are reported. The report, however, does not support Crucible's conclusion. The following questions and observations are included for your use:

1. Significant amounts of chromium were leached from the Pilot column leaching test (see tables 4-4, 4-5, 4-6, and 4-7 for examples).
2. The "Multiple 2 Column Tests" did not indicate how much tap water was leached through the columns or what the composition of the leachate was at the completion of the test. This information is critical to proper evaluation of the data.
3. Hexavalent Chromium is readily leached from both Air Pollution Dust and Waste Caustic Solids (See Table 4-8, page 4-12.).
4. Crucible indicates that Caustic Sludge and Acid Pickling

Sludge do not leach chromate with neutral pH water, but do leach chromate during the EP toxicity test at pH 5.0. They then conclude that these wastes could not be expected to leach Hexavalent Chromium in the Crucible Landfill (see page 4-13). This is not necessarily true since acid rain deposited in this region can be expected to have a pH of <5.0 (see pages 4-7 and 4-10).

5. Field Scale tub leaching tests showed a high level (17.6 mg/L) of Chromium in the leachate when Solvay Waste was used as an adsorbant (see table 4-15, page 4-24).
6. Trivalent and Hexavalent Chromium tests are not thoroughly reported since the quantity of leachate passed through the Solvay Process Waste has not been stated. Results do, however, indicate that Hexavalent Chromium is not well adsorbed by the Solvay Waste.
7. Hexavalent Chromium Adsorption Tests show that Chromate is not well absorbed (350 mg/L) and is easily leached by tap water (see page 4-28).
8. In the Sequential Adsorption Columns test the Hexavalent Chromium content of the Solvay Process waste was very low (.5mg/L). Crucible indicates that this is due to the reduction of Hexavalent Chromium to Trivalent Chromium. Our review indicates that this is unlikely to happen. Since the chromate content of the leachate was not reported, no reliable deductions can be made. Their theory of reduction of the Hexavalent Chromium to Trivalent Chromium with Ferrous Iron as the reducing agent is unsubstantiated (see page 4-29).

The third issue is whether the final cover can be covered by additional non-hazardous waste. It is distinctly the intent of the regulations that final cover be "final". (This is clearly implied by the reference to the vegetative layer in rule, preamble, and guidance). Moreover, §265.117(c) states that post-closure use of the property on or in which hazardous wastes remain after closure must never be allowed to disturb the integrity of the final cover. The only exception is if the owner or operator can demonstrate that the disturbance:

- (1) Is necessary to the proposed use of the property, and will not increase the potential hazard to human health or the environment; or
- (2) Is necessary to reduce a threat to human health or the environment.

Obviously, the first test would be the one that might be used at this site. To meet meet this test, Crucible would still have to show how disturbance of the cover would not only satisfy the requirements of §265.117(c)(1) but must demonstrate specifically how this disturbance will still provide for control of pollutant migration and surface water infiltration (§265.310(b) and other applicable conditions outlined in §265.310.

Recommendations

Crucible's request for an extended period of time for installation of a final cap should be denied. First, it is doubtful that continued operation of the nonhazardous landfill is "necessary" for the completion of closure activities. Even if it could be construed as such, 3 years would be the limit outlined in the regulatory preamble. Secondly, the purely environmental arguments outlined in Crucible reports are not technically substantiated. In fact, the underlying Solvay Process Waste is apparently a significant contributor to the poor quality ground water underneath the site. Crucible's steelmill waste merely exacerbates the problem by making its own hazardous waste contribution in the form of Hexavalent Chromium, and by providing a conduit for increased infiltration into the underlying Solvay Process Waste.

Covering the final cap with additional non-hazardous solid waste might be allowed if Crucible can demonstrate that this disturbed cap will function as well as a normal exposed final cap as per §265.117(c) and §265.310, and that periodic inspections will not be necessary.

In any event, the current proposed cap configuration should not be approved. Since it is a soil-only cap, it will allow significant amounts of precipitation to enter the underlying Solvay Process Waste. An impervious cap design will not

only mitigate the threat posed by the chromium-containing steel mill wastes but will also lower the contaminant loading contributed by underlying Solvay Process Waste. If the Region should allow the interim cap, it should take another look at subsidence, since it appears to be significant. The problem with slope stability should not be increased by the addition of the impermeable cap.

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