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Subject: Chemolite HF Tar Disposal
-- Final Report

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As the HF Tar Disposal Project Coordinator, I am writing this final report to inform everyone of Chemolite's successful solution to an old problem. The conclusion is given first for those not interested in the historical and developmental details.

CONCLUSION

A safe, economical and environmentally correct method was finally found and proven for the disposal of HF tars generated regularly in Building 15. After distilling off all free HF possible, the hot tar bottoms are drained to scrap openhead drums. A three-inch layer of water is added to each drum (7/8 full) of cooled tars. The water simply absorbs surface HF fumes into the non-fuming, aqueous top phase for safe incineration. Although the tars contain 10-20% soluble HF, the low diffusion rate of HF through the tars prevents an expected H₂O/HF heat of solution. Drums are sealed and sent directly to the Chemolite incinerator on a weekly basis as MC-6383. This disposal method has been in effect since June with virtually no problems at either the drumming and water addition stage or the incineration.



Exhibit
1135

State of Minnesota v. 3M Co.,
Court File No. 27-CV-10-28862

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Cell product distillation bottoms are also incinerated as they are generated under the same code. Subsequently, Chemolite no longer has a fluorochemical tars disposal problem. Credit must be given to M. A. Santoro, Supervisor of Chemolite Incinerator, for his cooperative effort in seeking a mutual solution to the problem.

A "Program for Profit" is being written for this simple and efficient disposal method compared to previous practice.

BACKGROUND:

An acceptable solution to the HF tars disposal problem has been sought since tar generation started. A renewed effort was made in 1975 to resolve the long and short term HF tar disposal situation. Following, in chronological order, is a brief summary of the meetings seeking a solution to this HF tar disposal dilemma.

December 27, 1974 -- Meeting was called to discuss the HF tar stockpile (1200 drums) located near the waste water treatment area. Most feasible method of disposal considered was lime neutralization and landfill.

February 10, 1975 -- General meeting to discuss alternate methods for disposal of HF tar both stockpiled and generated daily. Division Engineering and EE&PC proposed various neutralization schemes.

May 28, 1975 -- Meeting to express concerns over deficiencies of large scale lime neutralization of drum stock in an existing sludge pit and pumping of the neutral tars to regular disposal.

August 20, 1975 -- Propose an AFE be written (September 3) for disposal of the stockpile of hazardous HF tars by neutralization in an existing sludge basis (\$73,000) and install a system to neutralize daily tars generated (\$60,000).

COMMENT -- The AFE was not approved mainly because of high cost and the uncertainties about the bulk neutralization scheme. Since the stockpiled tar drums were in very deteriorated condition, the only other feasible solution was to incinerate some drums and determine their effect on the incinerator.

Engineering then concentrated effort on the best neutralization system for Building 15 and the cost to dry the tars recovering the HF.

September 30, 1975 -- Reviewed Engineering's estimates for installation of neutralization equipment in Building 15 and drying the tars similar to Decatur. Drying of the HF tars was too costly at Chemolite but an AFE was proposed for installation of the 300 gallon Monel kettle in the K-300 Room as the tar neutralization vessel. Process Engineering would look at HF content and possible revised process routes to determine if incineration of part or all of the tars generated is possible.

DEVELOPMENT:

At this point in time, I became project coordinator of the HF Tar disposal problem.

December 15, 1975 -- Reviewed the pending AFE (\$60,000) for the neutralization vessel. Delayed it's submittal until a laboratory and plant evaluation of the best alternatives to neutralization were complete. The primary alternative investigated was to recover the free HF by reacting it with butyric anhydride or other acid chloride cell feeds. The HF free tars from a K-300 experiment would be sent to the incinerator.

January 30, 1976 -- The first "Better Way" team meeting reviewed R. D. Raehsler's extensive laboratory investigation of HF removal from Dimer electrolyte bottoms. Butyric anhydride addition for HF removal required a high organic ratio to tars that varied with the type of tar and formed a solid clinker in all cases. Adding only 100% H₂SO₄ to the tar and attempting to distill off all the HF was not successful because of continued fuming.

In view of the tar bottoms the incinerator has satisfactorily burned, a new emphasis was put on the possibility of developing an acceptable method of direct incineration after the maximum HF removal by distillation only. Drummed tars would have a thin polymer or wax coating on the surface to positively eliminate any HF fumes.

February 11, 1976 -- M. A. Santoro reported that the cell product distillation bottoms can be satisfactorily destroyed at the Chemolite incinerator. Since an insignificant quantity of free HF is present from this source, there does not seem to be any detrimental effects on the refractory or coatings in the air pollution equipment.

April 5, 1976 -- M. A. Santoro informed K. W. Lund that the decision was made to incinerate the HF tars stockpiled in the field. This was prompted by personnel complaints of fumes and odor from the stockpile near the waste treatment ponds. The decision was based on favorable experience gained when some of the stockpiled tars were burned during the fall and winter of 1975.

COMMENT -- In March and April R. D. Raehsler and I determined that there was no simple, economical way to remove all the free HF from the different electrolyte tars. Optimum distillation of the tars in the K-300 still left 10-20% free HF present. The final effort was to eliminate the HF fumes from the drum of tars for

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COMMENT (cont'd) -- safe incineration. A layer of mineral oil or acetone over the tars initially sealed out the fumes but after saturation of the top phase they resumed fuming. A last attempt was to simply try water which did a beautiful job of eliminating the fumes. Refer to R. D. Raehsler's summary of his laboratory work in a memo dated May 12, 1976, Cell Tar Disposal (see attachment).

The last week of May four drums of HF tars from the K-300 were sealed with a layer of water and sent to the incinerator. I was present for the incineration to observe the exact procedure and answer any questions for the incinerator personnel. The incineration of the HF tars is done over a period of time rather than all at once to distribute the free fluoride concentration. Each drum of the tars is identified with an extra hazardous scrap label (see attachment).

This HF tar disposal procedure has been satisfactorily in effect since June.



TES/hmw

attachments