bcc: B. H. Davis - 220-12E
L. F. Lundgrd - 225-5N
P. Riehle - Chemolite 41
D. R. Storrar - 42-4W-06
M. C. Goldsmith - 42-8W-06
C. E. Nelson - 42-8W-06
R. Hamer - 42-5E
J. P. Pilney - 21-2W-05
R. H. Susag - 21-2W-06
L. H. Hoffmeier - Chemolite 22
T. R. Pietrs - Chemolite 22

File: Chemolite Disposal Site - 1981

November 17, 1981

3M

Subject: 3M Chemolite Hydrogeologic Investigation

Minnesota Pollution Control Agency
Division of Solid Waste
1935 West County Road B2
Roseville, Minnesota 55113

Attention: Mr. Michael B. Ayers

Dear Mr. Ayers:

In response to your letter of July 6, 1981, 3M is herewith submitting a work plan for the hydrogeologic investigation of past disposal areas at the 3M Chemolite site in Cottage Grove, Minnesota.

3M has contracted the services of Weston Designers and Engineers, a consulting engineering firm that is well qualified to provide expertise and guidance on this hydrogeologic study. This firm uses a specialized group of Waste Management engineers who have successfully conducted a number of other thorough disposal site investigations.

The work plan consists of a 3 phase step wise program to determine the extent of any existing and potential groundwater contamination from the disposal areas located at the Chemolite site. The first phase is a compilation and evaluation of all existing information from available files and personnel interviews. The second phase is the detailed field investigation, leading to the last phase which is the recommendation of possible remedial programs. The phased approach is a common method that has been necessary in these types of investigation to provide the most detailed and usable information.

In accordance with the 3M corporate policy of solving our own environmental problems and complying fully with governmental environmental regulations, 3M is committed to conducting this investigation to arrive at an optimum and successful conclusion.

3M 089268

Trial Exhibit 3135

3MA00280597

Exhibit
2701
State of Minnesota v. 3M Co.,
Court File No. 27-CV-10-28862

3M_MN00001563

2701.0001

It is our understanding that after you have had a chance to review the work plan that you will arrange for a joint meeting at your offices sometime between November 23 and 25. We would like to receive approval of the plan as soon as possible after that meeting so we may proceed with the investigation.

If you have any questions or comments, please contact John Pilney on 778-4451 or me on 778-4089.

Sincerely,

Michael A. Santoro
Manager
Environmental Engineering

MAS/dmt

Enc.

3M 089269

3MA00280598

3M_MN00001564

2701.0002

WORK PLAN

HYDROGEOLOGICAL INVESTIGATION OF DISPOSAL AREAS AT THE 3M CHEMOLITE PLANT IN COTTAGE GROVE, MINNESOTA

INTRODUCTION

About a year ago, 3M initiated an investigation of past waste disposal practices at the 3M Chemolite facility in Cottage, Grove, MN, in anticipation of the Federal Comprehensive Environmental Response, Compensation and Liability Act. 3M also agreed earlier this year to cooperate with the Minnesota Pollution Control Agency (MPCA) on a similar investigation. As a result, five areas that were used during the period of 1947 to about 1973 to dispose of various industrial wastes have been identified. The Chemolite disposal areas were reported in June, 1981, to the U.S. EPA as required by the Federal Superfund Act.

In addition, information on the investigative findings was provided to the MPCA in a letter report to Mr. Michael Ayers dated July 28, 1981. This information included a property plot plan showing the general location of each known disposal area and of each of the existing six pumping and eight observation wells. Well boring logs, groundwater information, and a brief history on the use of each site were also included. A copy of this letter and information, except the property plot plan, is attached to this work plan for reference purposes.

The Minnesota Pollution Control Agency and 3M are concerned that the past disposal practices at Chemolite have the potential to create environmental effects in the local area, depending upon the types and volumes of waste material that were disposed of at the Chemolite plant site. 3M, therefore, has voluntarily proposed to conduct a detailed hydrogeological investigation to delineate dimension and magnitude of the former waste disposal areas at the Chemolite plant and the potential for environmental impact, if any, of these areas.

BACKGROUND

The Chemolite plant site is located on the eastern flank of the Twin Cities basin and is mostly underlain by quaternary glacier deposits followed by the major aquifer of Prairie du Chien and Jordan sandstone. The site is on a flat-topped escarpment about 100-115 feet above the Mississippi River, which flows from west to east on the south side. The site is severed from the highlands by deep ravines immediately to the east and west sides. To the north is a continuation of the normal highland topography.

Industrial wastes, both liquid and solid, generated from the manufacturing processes at the Chemolite plant from the initial operation in 1947 until about 1973 were treated and/or disposed of on site in accordance with commonly accepted practices at the time. One of the reported practices was the burning of wastes in an area or areas on the plant property and covering the resulting residue with surface soil. This burning practice was stopped in the mid-1950's. Wastes that were burned include paper, lumber, plastic film, solvent-contaminated materials, adhesives, resins, toluene, heptane, various alcohols, and other industrial solvents. It was also reported that hydrofluoric acid tar wastes were buried in one area after neutralization with lime. Unfortunately, the ongoing 3M investigation has not found any dependable written records to identify specific types and volumes of wastes that were handled at the site. However, the investigation has revealed that only wastes generated at the Chemolite plant were disposed of on site.

There are 6 pumping wells that supply water for industrial and sanitary purposes at the Chemolite plant. The six production wells were installed between the period 1947 to 1970; wells No. 1-4 are drilled into the Jordan aquifer, while wells No. 5 & 6 are shallow alluvial wells. There are also 8 groundwater observation wells that were installed between 1974-75 period to maintain an ongoing record of the groundwater levels.

Preliminary evaluation of historical records of pumping levels, pumping rates, and static water levels indicates a natural gradient to the Mississippi River from the Chemolite plant site. Natural static levels as indicated in the well logs for pumping wells 1, 2, 3, & 4 varies from 85' to 109' below grade. Pumping, which commenced in 1947, has continuously maintained a cone of depression in the groundwater below the plant property. Presently, there are two cones of depression beneath the property, one centered around pumping wells 1, 2, 3, & 4 and the other centered around wells 5 & 6. The pumping levels in wells No. 1-4 in 1980 varied from 122 feet to 156 feet, whereas, in wells No. 5 and No. 6 levels were 74 feet to 72 feet, respectively.

Review of the physical setting of the Chemolite plant site, coupled with the natural hydrogeology and groundwater pumping configuration at the site, indicates that the disposal areas are located well above the groundwater table. This means the waste material has never been in contact with the groundwater. A potential exists for infiltration of precipitation through the waste disposed of at the plant site. The intent of this work plan is the determination of the extent of any present or potential groundwater contamination.

PURPOSE AND SCOPE

The purpose of the proposed Hydrogeological Investigation is to:

1. Identify the boundaries of all past waste disposal areas at the Chemolite plant site.

2. Determine as much as possible the type and volume of wastes disposed of at each of the disposal areas.

3. Evaluate the hydrogeologic setting of each of the disposal areas.

4. Determine the extent and magnitude of soil, groundwater, or surface water contamination, if any, resulting from the past waste disposal practices.

5. Establish transport mechanisms for any contamination plumes.

6. Recommend possible remedial actions.

The scope of this work plan is divided into three phases: Phase I will involve background data collection; Phase II will consist of developing and conducting a detailed field investigation program; and Phase III will address possible remedial programs, if needed.

PHASE I

TASK 1 - HAZARDOUS WASTE SURVEY AND RECORD REVIEW

A site survey will be conducted by Waste Management Engineers of Weston, Inc., an independent consulting firm based in Pennsylvania. This survey will include a review of facility records, past and present disposal practices, and waste management systems. A standard effective protocol and format will be used that will include interviews with 3M personnel who have extensive knowledge of past plant operations and waste disposal practices. This task will supplement the investigation undertaken by 3M and, is expected to provide more detailed information on the type of wastes generated in the plant in the past, quantity of waste disposed of at the plant site, and the locations of all disposal areas.

TASK 2 - HISTORICAL AIR PHOTO SURVEY

An extensive air photo base for the Chemolite plant site has been compiled from existing files. The project personnel will survey the appropriate photos to determine the historical boundaries of disposal areas. These detailed photos will be invaluable in locating field sampling points and monitoring wells.

TASK 3 - COLLECTION AND REVIEW OF ALL EXISTING DATA

All available information on the geology, soils, and ground and surface waters in and around the Chemolite plant will be collected and reviewed to augment the data base that already exists. The following sources of information are identified for this task:

1. Minnesota Geological Survey
2. U.S. Geological Service
3. Soil Conservation Service
4. 3M files

All available information on the existing wells, well logs, pumping levels, static water levels, and pumping rates will be reviewed. In addition, an assessment of the present groundwater pumping system will be made to determine the area influenced by the present pumping system.

Weston's experience in similar situations where detailed records are not available is that the above-mentioned three tasks will lead to a detailed and efficient work plan for investigation of site characterization.

PHASE II - SITE CHARACTERISTICS

At the completion of Phase I activities, a detailed work plan for Phase II will be developed by Weston for mutual review and approval by 3M and MPCA.

Phase II activities may include, but not be limited to, the following:

1. Surface water sampling and analysis.
2. Soil sampling and analysis.
3. Geophysical survey to locate the areas of past waste disposal.
4. Waste characterization.
5. The analysis of the fate of waste materials.
6. Soil boring and monitoring well installation, if needed.
7. Groundwater sampling and analysis.
8. Pump testing.
9. Data analysis and report preparation.

PHASE III

Based on the findings at the completion of Phase II activities, recommendations for appropriate additional study and/or remedial actions will be made where required.

SCHEDULING

Phase I will be completed within eight weeks of receiving approval of this plan by MPCA. A detailed work plan for the Phase II field activities will be submitted to MPCA for review within three weeks of the completion of Phase I efforts. Scheduling of Phase III will be established upon completion of Phase II. All three phases should be completed within a period of one year. Periodic progress reports will be submitted at the completion of each phase of the program.