

Waynesboro Plant RCRA Corrective Actions Update

10/21/08

Introduction

DuPont has conducted numerous field studies under the RCRA Corrective Action Permit at the Waynesboro Plant. These investigations have included the characterization of solid waste management units (SWMUs), and the monitoring of groundwater and outfall discharges to the South River. The results of these studies indicate that mercury impacted groundwater is not interacting with river water. However, monitoring has shown that discharges from the plant outfalls contribute to the mercury loading in the South River.

This summary provides details on the investigation activities conducted to date. However, the presentation that accompanies this summary will focus on new findings which are relevant to the connection between the plant outfalls and potential upstream (plant areas) sources of mercury loading.

History

In 1929 DuPont began operations at the Waynesboro site which is situated on 177 acres along the South River. Initial operations included the manufacture of acetate flake and yarn from 1929-1977. This process included the use of mercury from 1929-1950. Other products manufactured at the site include Orlon, Permasep, Lycra and BCF Nylon. In 2003 the plant assets were sold to Koch Industries (Invista). Upon the completion of the Corrective Action Program, the land will be transferred to Invista.

RFI Investigations

Three phases of the RCRA Facility Investigation (RFI) have been conducted to date to characterize SWMUs where hazardous substances may have impacted the environment. Twenty SWMUs were identified in the corrective action permit. Three of these SWMUs are currently under investigation. Thirteen SWMUs were recommended for no further investigation and four were recommended for no further action.

The Phase I investigation conducted in 2000-2001 consisted of soil and groundwater sampling at 10 SWMUs. Eighty six soil samples and forty groundwater samples were collected for VOCs, SVOCs, metals, methyl mercury, HMD, DMF, and DMAC. This included water level measurements and slug testing for hydrogeologic evaluations. Out of the 10 SWMUs that were investigated, the Phase I concluded that SWMU 1 (Mercury Recovery Area) and SWMU 4 (Incineration Area) required further evaluation and that the Northeast Area water level depression should be investigated. The remaining SWMUs would be investigated in subsequent phases.

During the Phase II investigation (2004-2005) eight SWMUs and two areas of concern (AOCs) were evaluated. This included the collection of 68 soil samples and 65 groundwater samples for the same constituents as in the Phase I. Also in this investigation were a soil gas sampling program at SWMU 1 for the presence of mercury vapor, and a geologic investigation at the Northeast Area. The Phase II Investigation detected low levels of mercury in groundwater in the deep clastic zone present in Northeast Area. Mercury was further characterized at SWMU 1 and SWMU 4, and benzene and mercury were detected downgradient of SWMU 6/7. No further

investigation was recommended for SWMUs 10, 13, 20 and AOCs 1 and 2, however additional investigation was recommended at SWMUs 1, 4, 6/7 and the Northeast Area.

The Phase III Investigation, completed in July 2007, included the collection of 76 soil samples and 5 groundwater samples at three SWMUs for the same constituents as in previous investigations. Soil samples were collected at SWMU 1 to confirm previous soil gas results, and the former process ditches at the Chemical Building were sampled for mercury. Geoprobe soil sampling was performed at SWMU 4 for further delineation of mercury and at SWMU 6/7 (former Sludge Pond) for initial characterization of soils. Two new wells were drilled to assess potential migration of constituents from SWMU 6/7. The Northeast Area was investigated by locating and logging plant Well #1 and conducting a long term water level study. This investigation concluded that additional sampling was needed at SWMUs 1, 4, 7 and that groundwater from Well #1 should be sampled.

The Phase IIIA Investigation has been in progress since February 2008 and should be completed in November 2008. This phase is focusing on the relationship between areas impacted by mercury and the plant outfalls. Test pits and structures that are suspected of containing mercury are being excavated and soil borings are being conducted to determine the nature and extent of these areas. Additional delineation of mercury in soil is also being performed at SWMUs 4 and 7. Finally, groundwater from Well #1, an off-line bedrock production well located in SWMU 1, will be sampled for mercury.

Groundwater

Following the Phase I RFI investigation, a semiannual groundwater monitoring program was initiated. The monitoring plan submitted in 2004 included the monitoring of 38 wells and 55 water level measurements. Findings from four and a half years of sampling (9 events) show that mercury concentrations are localized at SWMU 1, SWMU 4 and SWMU 6/7 and that downgradient perimeter wells are below VGS criteria. However, water level measurements indicate the Deep Water Table Zone water levels (Northeast Area) fluctuate significantly.

Outfall Monitoring

Three phases of outfall monitoring have been performed to assess the loading of mercury under base flow and storm flow conditions. The first phase conducted in 2003 sampled one storm and one base flow event at 8 outfalls and 10 upstream locations. No significant mercury was detected in baseflow or first flush storm samples, however mercury was detected in flow weighted composites (up to 1.7 µg/l) during the storm event. Estimated loading rates were low relative to the mass observed in the South River.

During the Phase II monitoring in 2004-2005, 10 locations were sampled during 3 base flows and one storm flow event. Also sampled were sediments and water in upstream portions of the sewer. This investigation concluded that the amount of mercury that is bioavailable was 20-29% under base flow conditions and 32-33% for storm flow conditions. The highest concentrations of Hg in sewer sediments and water occurred portions of the sewer near the former Chemical Building and SWMU-1.

The Phase III program conducted from 2005-2007 included the sampling of 10 locations over an 18 month program to support the TMDL program. Fifteen base flow and 6 storm events were sampled. The data shows that the highest concentrations occur at outfall 011 but it is in diversion to WWTP and does not discharge to the river. The outfall with the highest loading rate to the river is outfall 001.

The Phase IV program was initiated in June 2007 and will continue to monitor 10 outfall locations. The program consists of monthly base flow events and 2 storm events per year.

Sewer Investigation

Two phases of sewer investigations have been completed to date. The first phase, conducted in January 2007 focused on mapping and verifying sewer locations and structures and on confirming flow directions within the sewer system. The second phase, conducted in June 2008, consisted of closed circuit TV (CCTV) inspection of the lines near the former Chemical Building. Preliminary findings indicate that much of the inspected pipelines contained notable amounts of sediment and debris. Sediment accumulation and cracks were generally observed to be present, especially along the section that runs along Railroad Ave. Some sections were unable to be inspected due to the debris. Some of the cracks showed evidence of groundwater infiltration and will be targeted for further investigation.

Mercury Inspection and Abatement

In October 2007, DuPont implemented a program to inspect drainage structures near the former Chemical Building for the presence of mercury. Small pellet sized amounts of free mercury that were visible at a drainage box along Rail Road Ave were removed and disposed of in October 07. Since removal, no recoverable free mercury has been observed. The inspections are conducted on a monthly basis.

Future Activities

- Phase IV Stormwater Sampling (Ongoing since Jun 07)
- Additional Sewer Inspection / Pilot Testing (2009)
- Groundwater Monitoring (Nov 08)
- Comprehensive RFI Report (1Q09)
- Corrective Measures Study (2009)