TRC Environmental Corporation

RCRA Facility Investigation
Pre-Investigation Evaluation of Corrective Measures Report

Prepared for:

AKZO NOBEL

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Burt, New York

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1.0 INTRODUCTION

Akzo Nobel Chemicals, Inc. (Akzo) is currently operating its Burt, New York facility under a RCRA permit issued pursuant to 6 NYCRR Part 373. The RCRA Permit Module III contains corrective action requirements. Under the Permit Appendix III-B, Scope of Work for a RCRA Facility Investigation (RFI), Task II requires a pre-investigation evaluation of corrective measures. This report identifies the potential corrective measure technologies that may be used on-site or off-site for the containment, treatment, remediation, and/or disposal of contamination. This report also identifies field data that needs to be collected in the facility investigation to facilitate the evaluation and selection of the final corrective measure or measures.

2.0 SCOPE OF THE RFI

2.1 Contaminants of Concern

For the purposes of the RFI, Akzo has established a list of analytes for each of the solid waste management units (SWMUs) and areas of concern (AOC). This Contaminants of Concern (COC) list is limited to analytes found to be present at levels above NYSDEC cleanup objectives during the RFA, and analytes of potential concern based on historical materials management at the SWMUs/AOCs (TRC, 1995). For the purposes of evaluating corrective measures technologies, the class of compounds is pertinent. All analytes are organics; the Burt, NY facility has no history of inorganic chemical production or usage, and thus metals are not an issue at the facility. The organic analytes found include semi-volatile organic compounds (SVOCs), and volatile organic compounds (VOCs). Acetophenone, benzo(a)pyrene, phthalates, methyl ethyl ketone, and naphthalene are the specific analytes.

2.2 Media of Concern

The studies conducted to date are summarized in the RCRA Facility Investigation Description of Current Conditions Report (TRC, 1995). To date, the medium sampled has been soils. The soils data generally supported the conclusion that surface soil contamination levels do not exceed NYSDEC cleanup objectives. Additional information regarding the nature and extent of contamination will be generated during the RFI. The RFI will include sampling of soils and ground water. The evidence to date suggests localized, low concentration contamination of soils. At this time, there is no data to indicate the presence/absence of contaminants in ground water at the facility. It is anticipated that the RFI will include a Hydropunch/Geoprobe ground water characterization to take a first look at ground water hydrology and quality. In the event ground water contamination is found at levels of concern, additional investigation phases would be needed. Given the lack of data regarding ground water hydrology and chemistry, and the lack of evidence of ground water

contamination, ground water is not considered a medium of concern at this time. Therefore, for purposes of this report, no remedial technologies associated with ground water treatment are examined.

3.0 EVALUATION OF POTENTIAL TREATMENT TECHNOLOGIES

The Akzo permit requires a report that identifies the potential corrective measure technologies that may be used on-site or off-site for the containment, treatment, remediation, and/or disposal of contamination.

The RCRA facility assessment performed at the Akzo Burt, NY facility suggests that large volumes of contaminated media are unlikely to be encountered. Instead, the potential exists for localized areas of contamination. Therefore, containment remedial technologies are not considered further at this time. Disposal of contaminated soils in a secure landfill, recycling of contaminated soils in asphalt batching, and treatment of contaminated soils via low temperature thermal stripping, or ex-situ solvent extraction are considered, as discussed below.

3.1 Excavation and Off-site Disposal in a Secure Landfill

Secure landfills are an established disposal technology with design and operating standards identified by federal and state regulatory requirements. There are three classes of secure landfills; municipal landfills, non-hazardous industrial waste landfills, and hazardous waste landfills. The design and construction of each of these landfills varies, but the common elements include an engineered liner, leachate collection and leak detection technology, gas management systems, controlled and segregated placement of wastes of like character, runon/runoff controls, daily and intermediate cover requirements, final cover requirements, and access restrictions. Contaminated soils may be disposed in one or more of these broad categories of landfills, depending on the chemical quality of the soils. The most severely contaminated soils are candidates for disposal at a RCRA-permitted landfill. Less contaminated soils are candidates for disposal at non-hazardous industrial waste landfills. Neither contaminated nor clean soils will be disposed of in a municipal landfill, per Akzo policy. Proper waste characterization is necessary to demonstrate wastes meet the permit-specified acceptance criteria for each category of landfill. The site would need to be

either regraded or backfilled with clean soils, as a net removal of soils from the site would occur in conjunction with application of this technology to the Akzo facility.

3.2 Recycling of Contaminated Soils in an Asphalt Batching Facility

Asphalt batching is a recycling technology that has proven effective in managing contaminated soils generated as a result of petroleum hydrocarbon underground storage tank (UST) remediations. In general, contaminated soils are batch treated to produce a saleable product, asphalt. The process involves formulation of a blended mixture of asphaltic cement and aggregate. The addition of soils is a substitute for other aggregates. The process involves heating the aggregate (contaminated soils in this instance) to drive off moisture and facilitate mixture with the asphaltic cement. Next, the aggregate is screened, followed by blending and mixing of the aggregate with heated asphaltic cement. Rotary dryers (kilns) are employed in a counter flow mode, and provide dryer heating of the aggregate. For contaminated soils, the off-gas from this process may be rich in VOCs and SVOCs. The off-gas is generally collected and treated in a thermal oxidizer, where these contaminants are oxidized to carbon dioxide, water, and in some cases acid gases. This technology is generally subject to state permitting requirements, and waste soils must meet acceptance criteria for processing. Similar to landfilling, the Akzo site would need to be either regraded or backfilled with clean soils due to the removal of soils from the site under the application of this technology.

3.3 Low Temperature Thermal Treatment of Contaminated Soils

Low temperature thermal destruction systems thermally desorb organic compounds from contaminated soils without heating the soil to combustion temperatures. The systems are available commercially as transportable and fixed systems, and thus can support on-site and off-site remediation of contaminated soils. The systems generally consist of three main treatment areas: soils treatment, emissions control, and condensate treatment. Soils are treated in a thermal processor, which typically consists of an enclosed reactor to which soils are fed at a controlled

rate. The soils are then mixed, transported, and heated internally by multiple screw conveyors. The heat is provided by a hot oil thermal conductive fluid which flows inside the screw conveyors. Treated soils are then discharged to a conditioning unit which applies water to the soils to cool them, and to control dust from the treated soils. Combustion gasses released from the reactor are drawn through a condenser (or series of condensers) and air pollution control devices consisting of one or more of the following: filters, activated carbon adsorbers, caustic scrubbers, and afterburners. Condensate is generally treated in a gravity separator, which allow for recovery of heavier than water and lighter than water liquids. The organics are disposed off-site as hazardous wastes, or reclaimed at off-site recycling facilities. The generated water is reused for conditioning. Soils treated with this technology could be reused on-site.

3.4 Ex-Situ Solvent Extraction of Contaminated Soils

Ex-situ solvent extraction is potentially effective in treating soils more heavily contaminated with semi-volatile organics which are not readily amenable to thermal treatment without combustion. The technology separates the contaminated soils into three fractions: organics including VOC and SVOC contaminants, water, and solids. As the fractions separate, contaminants are partitioned into specific phases. The concentrated streams can be then treated or recycled off-site, and solids can be returned as clean soils to the site. Solvent extraction treatment systems are modular and are usually mounted on a trailer for transportation allowing for onsite treatment of the contaminated medium. Solvent extraction processes usually involve three steps: soil washing, soil drying, and solvent regeneration. The extraction fluid (solvent) is circulated through contaminated soils within a reactor. The solvent breaks the oil-water-solid emulsions in the waste, and the solids are settled out. The solvent mixture is decanted and the fine particles are removed by centrifuging. The resulting dry solids are then conditioned and suitable for reuse at the facility as clean soils/fill. The solvent mixture from the reaction is then heated to separate the water from the organics and solvent. The organics-solvent fraction is decanted and sent to a stripping column, where the solvent is recycled, and the organics are discharged for disposal or

reclamation. The water phase is typically passed to a second stripping column to recover residual solvent for recycling. Water wastes are generated and must be properly managed at either the on-site or an off-site facility.

4.0 REQUIRED SITE-SPECIFIC INFORMATION

The Akzo permit requires identification of all field data that needs to be collected in the facility investigation to facilitate the evaluation and selection of the final corrective measure or measures. The specific data needs of each candidate remedial technology are presented below. The RFI will generate chemical data as necessary to characterize soils contaminant nature and extent. This compound-specific chemical data will be utilized for evaluation of remedial technologies, in addition to data generated specifically for remedial technology applicability determination purposes.

4.1 Excavation and Off-site Disposal in a Secure Landfill

For the off-site disposal of contaminated soils, there are few design data requirements, since the receiving facility is assumed to be fully operational and permitted. However, the soils volume needs to be determined, and excavated soils would need to be characterized to determine the chemical quality of the material, in order to ensure that the soils are disposed in an appropriate landfill . The RFI chemical characterization data will be used for preliminary technology applicability screening. The chemical characterization data generated during the investigation would need to be supplemented by additional sampling of the excavated soils pile prior to disposal, to generate a representative analysis of excavated soils. This analysis would not be needed to be performed until after the RFI, and therefore no additional data needs for the RFI effort have been identified at this time.

4.2 Recycling of Contaminated Soils in an Asphalt Batching Facility

Acceptance criteria for off-site asphalt batching of contaminated soils typically includes testing of the excavated soils for flashpoint, metals, halogenated VOCs, non-halogenated VOCs, benzene, total petroleum hydrocarbons, pH, and specific semi-volatile contaminants if known to be present. Soils also need to be well drained and contain no free liquids. The RFI chemical characterization

data will be used for preliminary technology applicability screening. The data needs for confirming the viability of this remedial technology are limited to data that can be obtained readily from the excavated soils, and which need to be representative of the average properties of these soils in the ex-situ state. This data can be approximated by the chemical data gathered during the RFI. Preliminary data collection of soils samples for grain size distribution determination, and determination of soils pH in the field would be useful information for evaluation of the potential applicability of this technology. Other analyses would not be needed to be performed until after the RFI, and therefore no additional data needs for the RFI effort have been identified at this time.

4.3 Low Temperature Thermal Treatment of Contaminated Soils

Acceptance criteria for low temperature thermal treatment of contaminated soils typically includes testing of the excavated soils for particle size distribution, moisture content, chemical content, and pH. Soils moisture content can generally be controlled; soils need to be well drained and contain no free liquids. The RFI chemical characterization data will be used for preliminary technology applicability screening. With the exception of grain size analysis and soils pH, the data needs for confirming the viability of this remedial technology are limited to data that can be obtained readily from the excavated soils, and which need to be representative of the average properties of these soils in the ex-situ state. These data can be approximated suing the RFI chemical data. Actual excavated soils analysis would not be needed to be performed until after the RFI, and therefore no additional data needs for the RFI effort have been identified at this time.

4.4 Ex-Situ Solvent Extraction of Contaminated Soils

The ex-situ solvent extraction of contaminated soils requires data regarding the physical and chemical characteristics of the excavated soils. The RFI chemical characterization data will be used for preliminary technology applicability screening. Specific data needs are thus linked to the properties of soils in the ex-situ state. However, certain data can be gathered during the RFI to

assist in evaluation of the applicability of the technology. Soil grain size analysis and total organic carbon content data can be obtained, to determine clay content limitations from site soils, and organic chelate potential interferences. Soil moisture is also a limiting factor for this technology, but is related to soils grain size, and can be evaluated from boring log and grain size data gathered during the RFI. Remaining characterization for Akzo soils contaminants would be performed on the excavated soils, subsequent to the RFI.

5.0 REFERENCES

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