OCTOBER - DECEMBER TECHNICAL REPORT
AMERICAN CYANAMID SUPERFUND SITE

CRISIS, Inc.
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Ross Stander, CRISIS' Executive Chairman and I participate on a bi-monthly telephone conference call with representatives of Pfizer, USEPA, NJDEP, and Bridgewater Township during which Pfizer provides an update on the status of many of the activities taking place at the American Cyanamid Superfund Site.

In recent months, much of the activity by Pfizer and its consultants has been regulatory, administrative and reporting, with many documents going back and forth to EPA. It's not that there has not been progress, but that much of the progress has been on paper rather than in the field at the Bridgewater Site. In that regard, I prepare a monthly status report for the members of the CRISIS Board, based on the monthly progress reports that Pfizer submits to EPA for OU 4, Site-Wide Remedial Design, and OU 8, Focused Feasibility Study for Impoundments 1 & 2.

During the conference calls, Pfizer reports on five (5) areas on the property under the heading "Critical Path Update on Major Components", which includes most of the issues that CRISIS is particularly concerned with, focusing on the activities in the field (or in some cases the laboratory), in design, or with the myriad of regulatory requirements to fulfill. This report is intended to bring each of these areas up to date for the public that is concerned with the final remediation at the AmCyan Site.

While these bi-monthly updates are useful for Ross and me to keep tabs on the many activities associated with this Superfund Site, we are chagrined that EPA does not release more information to the public at a faster pace.

1.0 GROUNDWATER

From my technical perspective, it appears that the level of progress made in the design of the site-wide ground water remediation system exceeds the progress attained to date in any of the other categories to be discussed in this report. My Technical Reports for October - November 2014 and May 2014 go into detail on the 3 components of the ground water remediation concept at AmCyan:

- Extraction (removing the contaminated water from the shallow overburden layer and from the deep bedrock formation)

- Treatment (removing the myriad of contaminants from the extracted ground water)
- Injection (discharging the treated water that meets NJDEP/USEPA quality standards) back into the ground water aquifer

Pfizer has received approval from EPA for its ground water Remedial Design Workplan, and submitted its 30% design report for treatment to EPA in October. The design includes a series of proven but advanced treatment technologies designed to attain a high level of removal of the principal organic contaminants in the ground water such as benzene and PAHs, as well as a variety of inorganic metal contaminants. The 30% design report for the extraction and injection of ground water are to be submitted to EPA by the end of this month.

The ground water treatment plant will be located where Pfizer's operations center (construction trailers, security, etc) is presently located. In the future, the operations center will be located within the building to be built to house the treatment facility, but for now it will be re-located onto an off-site property for which Pfizer is presently negotiating a lease agreement.

Originally Pfizer intended to keep the ground water extracted from the overburden totally separate from the water pumped from the bedrock, a concept that would have necessitated two separate treatment and injection facilities. However, this concept has been revised; there will be one combined influent water stream, one set of treatment processes, and one combined injection program with all of the treated ground water being discharged into the bedrock aquifer.

With the progress having been made with the 30% design phase, Pfizer and its consultants are now beginning the detailed design, which will include an estimated 10 miles of conveyance pipes, and a hydraulic barrier wall that will facilitate the collection of ground water from the shallow, highly contaminated overburden layer.

2.0 IMPOUNDMENTS 1 & 2

The field pilot study for remediation of Impoundments 1 & 2 was completed 18 months ago in June-July 2014. We have detailed the study in previous Technical Reports to the members of CRISIS, where based on earlier laboratory studies three technologies for remediating the very difficult wastes in these impoundments were to be tested:

- In-situ thermal treatment
- Stabilization/Solidification
- Combination of thermal treatment and stabilization/solidification

Earlier in 2015 Pfizer submitted its pilot study test data to EPA, and the data have been approved by EPA. Based on the results of the pilot study, Pfizer's consultants developed a list of technologies for the remediation of Impoundments 1 & 2, which has been reviewed and approved by EPA and is being used to develop alternatives and performance requirements for each technology. Additionally, a study is in progress to evaluate the compatibility of materials potentially to be used as liners for the impoundments with the very corrosive and toxic compounds contained in the impoundments – some of the most difficult waste streams on the entire American Cyanamid site.

Upon questioning from CRISIS, Pfizer and EPA agreed that the schedule for completing the Focused Feasibility Study (FFS) for OU 8 (Impoundments 1 & 2) has slipped from its original schedule goal. The current schedule calls for the FFS to be completed in the second half of 2016, and likely to go to the agency-wide Remedy Review Board in 2017. These steps all precede EPA's advertisement of the proposed plan, a public comment period, and finally EPA's release of a Record of Decision (ROD).

If it seems like this process is long and drawn out, it's because these are very difficult wastes to deal with, which is why they were separated from the ROD of 2012. It ***IS*** long and drawn out. CRISIS will be watching as it unfolds…slowly.

3.0 IMPOUNDMENTS 3, 4 & 5

Impoundments 3, 4, and 5 are located in an upland area on the western side of the property, adjacent to Cuckel's Brook. These impoundments contain "principal threat wastes" that require remediation. EPA's ROD of 2012 specifies in-situ stabilization/solidification for the full depth of the impoundment material prior to capping.

The laboratory study for Impoundments 3, 4 and 5 to identify the most effective treatment mixes is complete, and a Field Sampling and Analysis Report was submitted to EPA in November.

The next step is to prepare a Pre-Design Investigation Report to EPA which will describe the conceptual approach to applying the stabilization/solidification process to these impoundments, which is now in progress. Once approved, Pfizer will retain a design engineer for the detailed design which they expect to be completed in 2016.

4.0 IMPOUNDMENTS 13, 17 & 24

Contrasted with the work conducted on ground water, the pace of action on Impoundments 13, 17 & 24 seems somewhat glacial (although glaciers are unfortunately melting at an accelerating pace these days!).

EPA's 2012 Record of Decision specified "An ecological risk assessment will be conducted for Impoundments 13, 17 and 24 to confirm the appropriate treatment for these materials". As per the ROD, the results of an ecological risk assessment would determine whether the contents of these 3 impoundments would be allowed to remain at their current locations, or whether they would be relocated and consolidated in the upland North Area of the site. Impoundments 13, 17 & 24 are located in an area having a "flood potential". My two most recent Technical Reports in 2015 came on the heels of a meeting that CRISIS had with Pfizer and EPA in March 2015 at which the preliminary results of the ecological risk assessment were presented. Therefore, there is no need to present the technical details in this report.

Although not true in March when we met with Pfizer/EPA, baseline sampling for the ecological risk assessment has now been completed, and it has been concluded that "supplemental sampling is no longer necessary".

Pfizer is now scheduling geotechnical sampling at these 3 impoundments to determine the physical character of the material and its capability to physically support the equipment that would be used to relocate the materials on the surface of these impoundments and the possible capping of the contents below the surface. CRISIS supports the removal and relocation of the material in these 3 impoundments.

As indicated in its previous reports on this area of the American Cyanamid site, CRISIS has been alarmed by flood hazards at this site, and is particularly concerned with the prospect of capping soils and waste materials in impoundments in the flood plain. CRISIS will continue to push for a remediation approach at Impoundments 13, 17 & 24 that will minimize risks to the public from hazardous wastes being stored in flood prone areas.

5.0 OVERALL SOIL REMEDIATION

According to EPA, there are areas identified on the site apart from the impoundments discussed in previous sections that contain soils that require vapor controls. For these areas, EPA has determined that an impermeable multi-layered engineered cap with a vapor mitigation system will be constructed. The engineered vapor control cap will reduce infiltration (of water) and the vapor mitigation system will be designed and constructed to capture and treat emissions.

The need for a vapor control system stems from the presence in the soils on the property of volatile and semi-volatile organic compounds, many of them petroleum derivatives, that have the potential to migrate into the atmosphere.

The engineered caps are to be designed and constructed to protect against all site-specific hazards, such as flooding, inadequate drainage, slope instability, erosion freeze/thaw cycle effects and surface vegetation likely to occur in a flood hazard area.

This month Pfizer and EPA were to review the areas requiring vapor control based on mass flux field studies; a Field Sampling and Analysis Report will then be submitted to EPA for review. A design engineer for the overall soil remediation has yet to be retained, but will be once approval is received from EPA.

6.0 SUMMARY

Pfizer is simultaneously working on all of the major remaining components of remediation at the American Cyanamid site. Many elements of the work require approval from EPA (and in some cases NJDEP) before they can proceed with the next step toward completion along the critical path. Not all of the technical approaches by which remediation will be conducted have yet been selected and finalized, but some have, particularly with the ground water remediation. Progress is slow, partly because there are difficult technical challenges, and partly due to the many stages of regulatory oversight and EPA review.

In general, Pfizer has been sharing its technical findings with CRISIS, and the leadership of CRISIS has worked to stay on top of technical developments as they occur. However, many of the findings cannot be shared until EPA gives its approval, and we have been frustrated by how long this takes. We meet with Pfizer and EPA on the average of once or twice a year, and participate in 6 conference calls per year. And…we ask questions and state our concerns!

If you have any questions or comments, please contact CRISIS' Technical Advisor by email at iwhitman@whitmanco.com.

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