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SUMMARY REPORT

on the

Palmerton Superfund Operable Unit 2 - the Cinder Bank

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for:

The Palmerton Citizens For A Clean Environment (PCCE)

INTRODUCTION

The following report summarizes the observations provided on the proposed alternatives for remediation planning purposes for O.U. 2, the Cinder Bank. The comments were provided by MKA Technical Advisors, Dr. Dale Bruns, Toxicologist, Dr. Brian Redmond, Sedimentologist and Dr. Bruce Rowell, Hydrologist and are presented respectively. The document reviewed is titled "Palmerton Zinc Site, Operable Unit II, Cinder Bank Decision Summary", and includes an overview of the completed sections of the Administrative File for the Cinder Bank Site. (the preparer of the document is not identified but it is assumed to be compiled by New Jersey Zinc Company, or their representative and appears to contain information from the Remedial Investigation/Feasibility Study Reports, prepared by the New Jersey Zinc Company, Palmerton, Pennsylvania 11/20/87.)

Prior to comments, a brief executive summary of the Cinder Bank Site and Study is provided as orientation to the alternatives analysis. (For further references, contact the Palmerton Public Library oR the Zinc Information Center, Palmerton, Pennsylvania)

EXECUTIVE SUMMARY

Site Description

The Palmerton Zinc Superfund Site, Operable Unit 2, is situated approximately 2.5 miles along Blue Mountain northeast of the confluence of the Lehigh River and Aquashicola Creek. The topography surrounding the site is mountainous lying in a deep valley within the Appalachian Mountains between Blue Mountain and Stoney Ridge. The Cinder Bank, consisting of at least 33,000,000 tons of slag has been the repository of process residues and other wastes from the Palmerton Zinc operation for the past 65 years and covers over 200 acres of the lower slope of Blue Mountain. Until 1970, all of Palmerton"s municipal waste was disposed by burying it in the residue. In 1987, the Cinder Bank ceased to be used as a depository for plant waste material.

The Cinder Bank area has been geographically zoned with regard to material types and environmental factors. In general, Zones A, B and C at the east end are the significant sources of environmental concern because leachate contaminated with heavy metals can enter the Aquashicola Creek. These zones are influenced the most by residues generated since 1950 when a substantial increase in the use of sulfur-bearing ores occurred.

Site Runoff and Seepage

The Cinder Bank residue is in a form of briquettes and contains residual metals and carbonaceous materials. As a result of incomplete quenching or spontaneous combustion large portions smolder continuously and several areas are posted as "Fire Areas".

Because the Cinder Bank has been contoured to a slope of 2 to 1 and is unstable, sometimes large blocks of residue crack off and tumble down into the Aquashicola Creek. As more cracks develop, steam and smoke are emitted from the main mass. The cracks and resulting broken surfaces allow for rapid infiltration of rain and snowmelt. This also facilitates leaching of soluble constituents from the Cinder Bank. The high concentrations of zinc in run-off and seepage from the east end of the Cinder Bank contributes to significant increases of zinc in Aquashicola Creek. Cadmium was also detected in water from seeps and springs near the base of the Cinder Bank.

Zinc and cadmium concentrations are also high in these areas as well as manganese, lead, and copper. All of these are higher concentrations than background average concentrations in south eastern Pennsylvania.

Groundwater Quality

Zinc was detected in all of seven wells tested on the East Plant Site and cadmium in four of the seven wells which were sampled. Because of its location and the presumed direction of natural groundwater flow from south (Blue Mountain) to north (Aquashicola Creek) it is likely that the high metal concentration in the wells resulted from leachate originating in the Cinder Bank.

DESCRIPTION OF ALTERNATIVES

The following alternatives were evaluated for effectiveness, implementability and cost.

1. No action

2. Capping using Soil Amendments and Vegetation

3. Collection and Treatment of Run-off and Run-on

4. Capping using Soil and Vegetation

Alternative 1 - No Action

Taking no action would not comply with requirements of Clean Water Act (CWA).

Alternative 2 - Capping Using Soil Amendments and Vegetation

This would consist of using a mixture of waste water treatment sludge, lime and fly ash to establish a vegetation cap. This would only address that portion of the Cinder Bank which EPA and PennDER determines to be subject to municipal regulations and PA state ARARs which require a minimum of 2 feet soil cover, over any municipal waste. Vegetation can significantly reduce the volume of run-off by plant up-take or transpiration when large amounts of water can be pumped back out of the soil and prevent erosion.

Alternative 3 - Collection and Treatment of Run-off and Run-on

Lime activated filtration lagoons would be used for collecting run-off. As lime becomes saturated with metals, it could be replaced or regenerated.

Alternative 4 - Capping Using Soil and Vegetation

This alternative would contour and apply a cap to the Cinder Bank. It would consist of 6 inches of soil and bentonite mixture covered by 18 inches of soil. Over the cap, a cover of soil, sludge, lime, potash and fly ash or some combination to establish a vegetation cover of shortrooted grasses for erosion control.

COMMENTS

Dr. Bruce F. Rowell, Hydrogeologist

o Alternative 1 is not acceptable.

o Alternative 3 needs to be combined with Alternative 2 for effectiveness in order to minimize direct contact with the Cinder Bank, reduce run-off volume, reduce run-on volume, reduce wind borne contaminated emissions, reduce particulate emissions. Alternative 3 cannot stand alone.

o Application of sewage sludge needs to be monitored in order not to aggravate existing conditions. Pilot tests are required in order to assess the field performance of this technology and its use on non RCRA areas of the bank.

o Lime filtration lagoons lose their efficiency over time due to decreased absorption rates. They need constant maintenance for spreading, reclaiming and reprocessing lime. Recurrent costs need to be figured into this alternative in order to compare cost/benefit ratios with competing alternatives.

o Quality Assurance was not presented in this report to compare, accept or reject the field performance of all the alternatives. Quantitative decisions cannot be made with out the presentation of quantitative field data. (Is this information available in another report?)

o Alternative 4 is not presented or discussed thoroughly, even though it is the one preferred by PennDER, nor is cost basis documented. This alternative needs further expansion since it appears to be the best technology and most cost effective with the absence of recurrent, hidden costs such as a leachate collection system.

o An interim remedy should not be acceptable because it may become permanent and ineffective for long term remediation.

o Recontouring and diversion channels are not discussed adequately.

o It should not be assumed that the entire Cinder Bank will be covered with a 6" clay/bentonite cap which will, in turn be overlain with a sludge soil vegetation secondary cover.

Dr. Dale Bruns, Toxicologist

o Even with the best combination of technologies it is very unlikely that 100% clean up is possible. It is important for local residents to accept this.

o If remedial actions are properly implemented, risk will be significantly lowered and managed through continued monitoring, assessment and communication with residents.

o Alternative 4 might be enhanced by using a symbiotic fungi (endomycorrhizae) that grow in conjunction with plant root systems and promote more rapid growth.

o The use of an aquatic biomonitoring program (algae, invertebrates, fishes) in site remediation is commendable, but the report did not provide sufficient details.

o It is important that local residents be educated in the basic principles of biomonitoring.

o It is recommended that a single conceptual (simplified) diagram that ties together all the environmental aspects of the site and proposed remediation be developed. This helps to visualize the site, to determine potential effects, to assess treatment options, and to facilitate communication among technical people and the general public.