

STATE OF DELAWARE

DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENTAL CONTROL-  
SITE INVESTIGATION AND RESTORATION BRANCH

AMENDED FINAL PLAN OF REMEDIAL ACTION



**Reichhold Chemical Site  
Cheswold, DE**

**DNREC Project No. DE-0245**

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This amended final plan of remedial action (amended final plan) presents the Department of Natural Resources and Environmental Control's (DNREC) preferred cleanup alternative to complete the remediation of Reichhold Chemical (site) in Cheswold, Delaware. The final plan is issued under the provisions of the Delaware Hazardous Substances Cleanup Act, 7 Del. C Chapter 91 (HSCA) and the Regulations Governing Hazardous Substance Cleanup (Regulations). As described in Section 12 of the Regulations, DNREC provided notice to the public and an opportunity for the public to comment on the amended proposed plan of remedial action (amended proposed plan). During the comment period of June 28, 2004 through July 19, 2004, DNREC did not receive any comments on the amended proposed plan, therefore the amended proposed plan has been adopted as the amended final plan. The amended final plan designates the selected remedy for the site. All investigations of the site, the amended proposed plan and the amended final plan will constitute the Remedial Decision Record.

This amended final plan includes background information and a description of the changes to the current remedial action requirements. Copies of all documents that constitute the Remedial Decision Record can be obtained or viewed by contacting DNREC.

## **INTRODUCTION & BACKGROUND**

In September 1999, under the Hazardous Substance Cleanup Act (HSCA), the Department of Natural Resources and Environmental Control (DNREC) issued the final plan of remedial action for the site. The final plan presented the required remedial actions for each of the three areas of concern at the site: 1) Southwest Corner: No Action, 2) Marsh Area: Re-Route Drainage Ditch with Natural Attenuation, Access Restriction, and Monitoring in Marsh Area, and 3) Drainage Ditch leading to the Fork Branch: Re-Route Drainage Ditch and Place Cover Material in Existing Ditch. These remedial actions also required that a deed restriction be placed on the property restricting it for industrial use. The deed restriction was recorded on December 7, 2001.

Since 2001, Reichhold, Inc. has been successfully implementing the required remedial actions as described in the final plan. By 2002, monitoring in the marsh area was the only remedy component not completed at the site, since this activity was planned to be implemented within the first two years of approval of the operation and maintenance plan, approved in January 2002.

In 2003, Reichhold's consultant CH2M Hill proposed filling the marsh area with six inches of clean soil as an alternative remedy to the approved monitoring program. This alternative remedy was initially evaluated in the 1999 feasibility study for the site and was determined to meet the site remedial objectives. However, this alternative was not selected because of the burden of having to obtain wetland permits. Since the time the original final plan was issued, wetland permitting rules have changed, and now filling of a portion of the marsh does not require a wetland permit. Therefore, Reichhold has again proposed filling a portion of the marsh as a remedy component. After evaluating the proposal and requiring a habitat restoration plan as part of the proposal, DNREC approved the proposal for filling the marsh area on February 11, 2004.

## **SITE DESCRIPTION AND HISTORY**

The Reichhold Chemical, Inc., Cheswold facility, comprises nearly 110 acres situated between Cheswold and Dover, Delaware. Approximately 30 acres have been developed and are fenced. The site lies 0.5 miles west of U.S. Rt. 13 and borders County Road 153 at the Hughes Crossing intersection. The site is bounded to the north by County Road 153, to the west by railroad tracks and Fork Branch. To the east is an open field and along the southern and southwestern boundaries lie a series of drainage ditches and marshes.

The marsh in question is approximately two (2) acres of woodland area. It is an isolated freshwater non-tidal wetland, considered to be relatively low quality habitat due to its proximity to surrounding development that includes the active railroad, railroad spur and industrial facility. There is a predominance of invasive plant species such as phragmites within open areas in the marsh and a lack of understory vegetation that comprises the herbaceous and shrub layers of the nearby forested wetlands contiguous to Fork Branch. As a required remedial action, the marsh area was fenced in 2002 restricting access to authorized personnel only.

## **INVESTIGATION RESULTS**

The remedial investigation (RI) report, dated January 1999, identified low concentrations of formaldehyde, ethylbenzene and benzene in the shallow, Columbia groundwater table, and formaldehyde in deeper groundwater, but all at concentrations below drinking water standards. On-site soils contained toluene, formaldehyde, ethylbenzene, xylenes and phenolic compounds below restricted-use remediation standards, all of which were concentrated in the southwestern portion of the plant. Surface water and sediments contained varying concentrations of both organic and inorganic contaminants. Human health and ecological risk assessments, performed as part of the RI, concluded that arsenic and mercury in the drainage ditch and marsh area sediments posed potential threats and warranted further action. The human health risk for sediments for trespasser adults was calculated at  $1.6E-05$  cancer risk which is above to the DNREC  $1.0E-05$  established risk level. The ecological risk for drainage ditch sediments had a calculated hazard quotient (HQ) above 2.0. A HQ more that 1.0 indicates that the contaminant has the potential to cause adverse ecological effects. In addition, concentrations of zinc and PCBs in on-site drainage ditches also warranted further action from a perspective of ecological risk, but remediation at the drainage ditches has already been completed by Reichhold, Inc.

The following table summarized the detected concentrations of the two contaminants of concern for the site.

Contaminant	Media*	Concentration (mg/kg)	URS (mg/kg)	No. of samples that exceed URS
Arsenic (total)	Sediment	0.38 to 83.8	8 / 11	1/10**
Mercury	Sediment	0.13 to 278	0.2	8/10**

\* On-facility drainage ditches and marsh area

\*\* Samples collected at the same location twice, during two phases. Some analytes analyzed twice.

URS Uniform Risk-Based Remediation Standard for Protection of the Environment (8) and Protection of Human Health (11).

## REMEDIAL ACTION OBJECTIVES

Taking in consideration the industrial land use at the site, the following qualitative and quantitative objectives were determined to be appropriate for the site.

- Reduce concentrations and/or reduce exposure such that potential risks posed by the impacted media do not exceed DNREC's HSCA-established 1.0E-05 cancer risk or a hazard index value of one at each of the following areas of concern:
  1. Southwest corner of the facility adjacent to the flare stack,
  2. Marsh area adjacent the southwest corner of the facility, and
  3. Drainage ditches to Fork Branch.
- Prevent further degradation of affected media and the environment at each of the above areas of concern.

## AMENDED FINAL PLAN OF REMEDIAL ACTION

Based on DNREC's evaluation of the proposed alternative, the following remedial action has been approved for the site:

1. Filling the marsh area with six inches of clean soil as an alternative remedy to the original natural attenuation and monitoring program in the marsh area.

This alternative remedy was initially evaluated in the 1999 feasibility study for the site and determined that it would meet the site remedial objectives. However, this alternative was not selected because of the possible necessity of having to obtain permits for this activity.

As filling the marsh area pursuant to an ecological restoration plan does not require a permit from either the US Army Corps of Engineers or by DNREC Water Resources Division, Wetlands and Sub-aqueous Lands Section, and in view of the significant advantage for expediting the remediation process by adding six inches of cover material that will reduce exposure/migration to the contaminated sediments, DNREC believes that this remedial alternative is more efficient in achieving site remedial objectives than the ten-year monitoring program alternative contained in the original final plan.

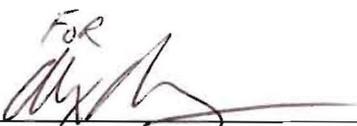
It is important to note that the remedial actions for the marsh area is the only component contained in the original final plan of remedial action that has been changed in this amended final plan. The original remedy for the site, as addressed in the original final plan, remains in effect and its implementation with the exception of the natural attenuation and monitoring program was successfully completed in 2002.

**PUBLIC PARTICIPATION**

The Department actively solicited written public comments and suggestions on the amended proposed plan of remedial action. The comment period began June 28, 2004, and ended July 19, 2004. No comments were received. If you have any questions or concerns regarding the Reichhold Chemical site, or if you would like to view reports or other information regarding this site, please contact the project manager, Wilmer Reyes, at 391 Lukens Drive, New Castle, Delaware 19720, or call at 302.395.2600.

**DECLARATION**

The amended final plan of remedial action for the Reichhold Chemical site is protective of human health, welfare and the environment, and is consistent with the requirements of the Delaware Hazardous Substance Cleanup Act.

*FOR*  
  
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John Blevins  
Director, Division of Air and Waste

*8/10/04*  
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Date

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