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Interim Final 2/5/99

DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION
RCRA Corrective Action
Environmental Indicator (EI) RCRIS code (CA725)

Current Human Exposures Under Control

Facility Name: Arch Chemicals
Facility Address: 350 Knotter Drive; Cheshire, CT
Facility EPA ID #: CTD980916799

1. Has all available relevant/significant information on known and reasonably suspected releases to soil, groundwater, surface water/sediments, and air, subject to RCRA Corrective Action (e.g., from Solid Waste Management Units (SWMU), Regulated Units (RU), and Areas of Concern (AOC)), been considered in this EI determination?

   _x_ If yes - check here and continue with #2 below.

   ____ If no - re-evaluate existing data, or

   ____ if data are not available skip to #6 and enter "IN" (more information needed) status code.

BACKGROUND

Definition of Environmental Indicators (for the RCRA Corrective Action)

Environmental Indicators (EI) are measures being used by the RCRA Corrective Action program to go beyond programmatic activity measures (e.g., reports received and approved, etc.) to track changes in the quality of the environment. The two EI developed to-date indicate the quality of the environment in relation to current human exposures to contamination and the migration of contaminated groundwater. An EI for non-human (ecological) receptors is intended to be developed in the future.

Definition of "Current Human Exposures Under Control" EI

A positive "Current Human Exposures Under Control" EI determination ("YE" status code) indicates that there are no "unacceptable" human exposures to "contamination" (i.e., contaminants in concentrations in excess of appropriate risk-based levels) that can be reasonably expected under current land- and groundwater-use conditions (for all "contamination" subject to RCRA corrective action at or from the identified facility (i.e., site-wide)).

Relationship of EI to Final Remedies

While Final remedies remain the long-term objective of the RCRA Corrective Action program the EI are near-term objectives which are currently being used as Program measures for the Government Performance and Results Act of 1993, GPRA). The "Current Human Exposures Under Control" EI are for reasonably expected human exposures under current land- and groundwater-use conditions ONLY, and do not consider potential future land- or groundwater-use conditions or ecological receptors. The RCRA Corrective Action programs overall mission to protect human health and the environment requires that Final remedies address these issues (i.e., potential future human exposure scenarios, future land and groundwater uses, and ecological receptors).

RCRA RECORDS CENTER
FACILITY Arch Chemicals
I.D. NO. CTD980916799
FILE LOC. R-13
OTHER #108398

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Duration / Applicability of EI Determinations

EI Determinations status codes should remain in RCRIS national database ONLY as long as they remain true (i.e., RCRIS status codes must be changed when the regulatory authorities become aware of contrary information).

2. Are groundwater, soil, surface water, sediments, or air media known or reasonably suspected to be "**contaminated**"[1] above appropriately protective risk-based 'levels" (applicable promulgated standards, as well as other appropriate standards, guidelines, guidance, or criteria) from releases subject to RCRA Corrective Action (from SWMUs, RUs or AOCs)?

	Yes	No	?	Rationale / Key Contaminants
Groundwater	___	x	___	Concentrations below CT RSRs.
Air (indoors)[2]	___	x	___	No known plumes below buildings.
Surface Soil (e.g., <2 ft)	___	x	___	Concs < CT Residential & mobility RSRs.
Surface Water	___	x	___	No known plumes releasing to waterbodies.
Sediment	___	x	___	No known plumes releasing to waterbodies.
Subsurf. Soil (e.g., >2 ft)	___	x	___	Concs. < CT Residential. & mobility RSRs.
Air (outdoors)	___	x	___	No known plumes.

__x__ If no (for all media) - skip to #6, and enter "YE," status code after providing or citing appropriate "levels," and referencing sufficient supporting documentation demonstrating that these "levels" are not exceeded.

_____ If yes (for any media) - continue after identifying key contaminants in each "contaminated" medium, citing appropriate "levels" (or provide an explanation for the determination that the medium could pose an unacceptable risk), and referencing supporting documentation.

_____ If unknown (for any media) - skip to #6 and enter "IN" status code.

Rationale and reference(s):
The following documents have been previously submitted to Connecticut Department of Environmental Protection (CTDEP) and have been used to support the verification of site compliance with prevailing guidelines and CT Remediation Standard Regulations (RSRs).

- GZA, Phase I and Phase II Environmental Site Assessment, November 1999.
- ENSR, Phase III Transfer Act Site Assessment, July 2001.
- ENSR, Quarterly Groundwater Monitoring Reports, July 2001, November 2001, and February 2002.
- ENSR, Additional Subsurface Investigation of the Former Interim Waste Storage Unit, February 2002.
- HRP Associates, Inc., RCRA Closure of Former <90 Day Hazardous Waste Container Storage Area, May 15, 2002.
- ENSR, Limited Dieldrin Investigation Near the Former Interim Waste Storage Unit, December 2003

1 "Contamination" and "contaminated" describes media containing contaminants (in any form, NAPL and/or dissolved, vapors, or solids, that are subject to RCRA) in concentrations in excess of appropriately protective risk-based "levels" (for the media, that identify risks within the acceptable risk range).

2 Recent evidence (from the Colorado Dept. of Public Health and Environment, and others) suggest that unacceptable indoor air concentrations are more common in structures above groundwater with volatile contaminants than previously believed. This is a rapidly developing field and reviewers are encouraged to look to the latest guidance for the appropriate methods and scale of demonstration necessary to be reasonably certain that indoor air (in structures located above (and adjacent to) groundwater with volatile contaminants) does not present unacceptable risks.

- ENSR, Verification Report, March 2004.
- AECOM, Ecological Risk Assessment, March 9, 2010.

A site wide evaluation the facility was required under the Connecticut Transfer Act when the facility was divested from Olin Chemical to Arch Chemical in February of 1999 and a second Transfer Act requirement was triggered when the facility was sold to Winstanley Enterprises (Winstanley) on July 21, 2000. The Transfer Act assessment involved the collection of soil and groundwater samples from areas of concern (AOCs) located throughout the site to evaluate whether the site was in compliance with the Connecticut Remediation Standard Regulation (RSR) or if remediation to achieve RSR compliance would be required. The investigations completed indicated that the site met all applicable RSR soil and groundwater criteria with no restrictions to land use and no remediation was necessary.

On March 30, 2004, ENSR submitted a Verification Report to the CTDEP to bring the investigation and demonstration of compliance with the Connecticut RSR of the facility to regulatory closure. The Verification Report was audited by CTDEP and on August 16, 2004 CTDEP issued a letter indicating that the Verification was acceptable.

The facility formerly contained an Interim Waste Storage (IWS) Unit. Arch operated this regulated unit under "interim status" as provided by 22a-449(c)-105 of the Regulations of Connecticut State Agencies and Section 3005 of RCRA. The IWS Unit was housed in a 575-square foot concrete and metal building with an eight-foot wide double door. The IWS Unit is on the eastern portion of the property. Wastes stored in the IWS Unit consisted of flammable liquids, acids, alkalis, mercury, and hazardous and non-hazardous solid wastes and liquids. The building is still present; however, it was decontaminated and was documented as a clean closure with no release to the environment identified. Public notice for the clean closure was published on August 3, 2005. However, as detailed by CTDEP in August 2006, full RCRA Corrective Action also required a (1) drinking water well survey, (2) filing of the Quality Assurance Project Plan (QAPP), and (3) an ecological risk assessment. The results of the ecological risk assessment indicate that exposure to Site-related constituents in surface soil and surface water does not appear to pose a potential for significant risk to terrestrial invertebrates, plants or aquatic receptors. Based on this evaluation no further evaluation of potential ecological risks is warranted as part of the site-wide RCRA Corrective Action process.

The Arch facility is located in the Cheshire Industrial Park in Cheshire, Connecticut. The facility is bordered on three sides by other industrial/commercial properties within the Cheshire Industrial Park and Knotter Drive. The subject site encompasses approximately 75 acres and is occupied by a 144,700 square foot building. The majority of the building is one story in height with small two story sections and is constructed of concrete block on a slab foundation. Approximately 45 acres is occupied by the building footprint, lawns, parking lot and service roads. The balance of the property, approximately 30 acres, is occupied by undeveloped wetlands, ponds, and wooded areas.

The site is located in an area where groundwater is classified by CTDEP as "GB", indicating that it is considered degraded and is not suitable for human consumption without treatment. The facility is serviced by public water, sanitary sewer, electric and natural gas utilities. Based on information provided by the Chesprocott Health District (serving the towns of Cheshire, Prospect and Wolcott, Connecticut), there are no documented uses of groundwater within the vicinity of the site. No visual evidence of water supply wells were observed during the windshield survey of the properties within approximately 500-feet of the subject property.

As described in the Verification Report (ENSR, 2004), groundwater and soil data collected between 1999 and 2003 show compliance with all applicable RSR criteria for the site. The relatively narrow range of

concentrations of metals detected in soil at the site coupled with their widespread distribution at the site indicate that the concentrations detected are background. Nevertheless, the total metals concentrations were compared to 20 times the GB Pollutant Mobility Criteria (GB PMC) in order to see if the concentrations detected could potentially exceed these criteria. Based on this comparison it was observed that lead and chromium could potentially exceed their respective GB PMCs. As a result, soil samples with levels of lead and chromium in excess of 20 times the GB PMC were submitted for synthetic precipitation leaching procedure (SPLP) extraction and analysis. The results for these samples were below detection limits for both metals. Therefore the Verification Report (ENSR, 2004) concluded that compliance with the GB PMC has been demonstrated for all metals detected at the site.

In groundwater, 1,1-dichloroethene and chloroform are the only volatile organic compounds (VOCs) that have ever shown an exceedance of an RSR criteria at the site. Both of these compounds exceeded the residential volatilization criteria (RVC) in the October 1999 sampling round in only one AOC but were below the industrial/commercial volatilization criteria (I/C VC). In all subsequent sampling rounds neither of these compounds exceeded the RVC. Lead and cadmium exceeded the Surface Water Protection Criteria (SWPC) in the GZA sampling rounds. These samples were collected using bailers, which produce a silty sample. Four subsequent rounds collected by low flow techniques did not detect either metal. Cadmium exceeded the SWPC in February 2002 in a monitoring well located downgradient from the former swimming pool chemical test pools (GZ-7). This metal had not been detected previously in this well in five prior rounds. Since there is a well downgradient of GZ-7 in which cadmium has not been detected in four sampling rounds, the SWPC does not apply to the GZ-7 cadmium data from February 2002. The Verification Report (ENSR, 2004) concluded that compliance with RSR criteria for groundwater at the site had been demonstrated and that remediation was not necessary.

Site investigations have not identified evidence of VOCs in groundwater or soil that would be expected to be found in air. In addition, investigations have not identified a mobile plume that could impact surface water or sediment. Therefore, concentrations of soil, groundwater, surface soil and air are expected to be below appropriately protective risk-based 'levels" for human health exposure.

A screening level ecological risk assessment (SLERA) conducted at the site included evaluation of soil and groundwater. The SLERA was conducted to provide a conservative evaluation of potential ecological risks posed by site-related constituents as part of the site-wide RCRA Closure process. The results of the quantitative evaluation of the detected surface soil concentrations against ecological screening values and background concentrations, and the consideration of the detections limits, indicates that Site-related constituents do not appear to be posing a potential for significant risk to terrestrial invertebrates or plants. There is no evidence that a groundwater plume exists on-site or that it discharges to surface water. The results of the quantitative evaluation of the groundwater concentrations against ecological screening values, and the consideration of the detections limits, indicates that site-related constituents do not appear to be posing a potential for significant risk to aquatic organisms. The results of the SLERA indicate that exposure to site-related constituents in surface soil and groundwater at the Arch facility does not appear to pose a potential for significant risk to terrestrial invertebrates, plants or aquatic receptors.

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3. Are there **complete pathways** between "contamination" and human receptors such that exposures can be reasonably expected under the current (land- and groundwater-use) conditions?

Summary Exposure Pathway Evaluation Table

Potential **Human Receptors** (Under Current Conditions)

"Contaminated" Media	Residents	Workers	Day-Care	Construction	Trespassers	Recreation	Food[3]
Groundwater	___	___	___	___			___
Air (indoors)	___	___	___				
Soil (surface, e.g., <2 ft)	___	___	___	___	___	___	___
Surface Water	___	___			___	___	___
Sediment	___	___			___	___	___
Soil (subsurface e.g., >2 ft)				___			___
Air (outdoors)	___	___	___	___	___		

Instructions for Summary Exposure Pathway Evaluation Table:

1. Strike-out specific Media including Human Receptors spaces for Media which are not "contaminated") as identified in #2 above.

2. enter "yes" or "no" for potential "completeness" under each "Contaminated" Media -- Human Receptor combination (Pathway).

Note: In order to focus the evaluation to the most probable combinations some potential "Contaminated" Media - Human Receptor combinations (Pathways) do not have check spaces ("___"). While these combinations may not be probable in most situations they may be possible in some settings and should be added as necessary.

_____ If no (pathways are not complete for any contaminated media-receptor combination) - skip to #6, and enter "YE" status code, after explaining and/or referencing condition(s) in-place, whether natural or man-made, preventing a complete exposure pathway from each contaminated medium (e.g., use optional Pathway Evaluation Work Sheet to analyze major pathways).

_____ If yes (pathways are complete for any "Contaminated" Media - Human Receptor combination) - continue after providing supporting explanation.

_____ If unknown (for any "Contaminated" Media - Human Receptor combination) - skip to #6 and enter "IN" status code

Rationale and Reference(s):

3 Indirect Pathway/Receptor (e.g., vegetables, fruits, crops, meat and dairy products, fish, shellfish, etc.)

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4 Can the **exposures** from any of the complete pathways identified in #3 be reasonably expected to be **"significant"**[4] (i.e., potentially "unacceptable" because exposures can be reasonably expected to be: 1) greater in magnitude (intensity, frequency and/or duration) than assumed in the derivation of the acceptable "levels" (used to identify the "contamination"); or 2) the combination of exposure magnitude (perhaps even though low) and contaminant concentrations (which may be substantially above the acceptable "levels") could result in greater than acceptable risks)?

_____ If no (exposures can not be reasonably expected to be significant (i.e., potentially "unacceptable") for any complete exposure pathway) - skip to #6 and enter "YE" status code after explaining and/or referencing documentation justifying why the exposures (from each of the complete pathways) to "contamination" (identified in #3) are not expected to be "significant."

_____ If yes (exposures could be reasonably expected to be "significant" (i.e., potentially "unacceptable") for any complete exposure pathway) - continue after providing a description (of each potentially "unacceptable" exposure pathway) and explaining and/or referencing documentation justifying why the exposures (from each of the remaining complete pathways) to "contamination" (identified in #3) are not expected to be "significant."

_____ If unknown (for any complete pathway) - skip to #6 and enter "IN" status code

Rationale and Reference(s):

5. Can the "significant" **exposures** (identified in #4) be shown to be within **acceptable** limits?

_____ If yes (all "significant" exposures have been shown to be within acceptable limits) - continue and enter "YE" after summarizing <u>and</u> referencing documentation justifying why all "significant" exposures to "contamination" are within acceptable limits (e.g., a site-specific Human Health Risk Assessment).

_____ If no (there are current exposures that can be reasonably expected to be "unacceptable")- continue and enter "NO" status code after providing a description of each potentially "unacceptable" exposure.

_____ If unknown (for any potentially "unacceptable" exposure) - continue and enter "IN" status code

Rationale and Reference(s):

4 If there is any question on whether the identified exposures are "significant"(i.e., potentially "unacceptable") consult a human health Risk Assessment specialist with appropriate education, training and experience.

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6. Check the appropriate RCRIS status codes for the Current Human Exposures Under Control EI event code (CA725), and obtain Supervisor (or appropriate Manager) signature and date on the EI determination below (and attach appropriate supporting documentation as well as a map of the facility):

_x_ YE - Yes, 'Current Human Exposures Under Control" has been verified. Based on a review of the information contained in this EI Determination, "Current Human Exposures" are expected to be "Under Control" at the Arch Chemical facility, EPA ID # CTD980916799, located at 350 Knotter Drive; Cheshire, CT under current and reasonably expected conditions. This determination will be re-evaluated when the Agency/State becomes aware of significant changes at the facility.

____ NO - "Current Human Exposures" are NOT "Under Control."

____ IN - More information is needed to make a determination.

Prepared by (signature) _____ Date 6/14/10
(print) Kristen Durocher
(title) Senior Ecological Risk Assessor

DEP reviewed by (signature) _____ Date 6/21/10
(print) SANDY BRUNETTI
(title) EA3

DEP Supervisor (signature) _____ Date 6-30-10
(print) DAVID RINGQUIST
(title) Supervising Environ. Analyst

(EPA Region or State) CTDEP

All References may be found at:
Connecticut Department of Environmental Protection located at 79 Elm Street, Hartford, Connecticut

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FINAL NOTE: THE HUMAN EXPOSURES EI IS A QUALITATIVE SCREENING OF EXPOSURES AND THE DETERMINATIONS WITHIN THIS DOCUMENT SHOULD NOT BE USED AS THE SOLE BASIS FOR RESTRICTING THE SCOPE OF MORE DETAILED (E.G., SITE-SPECIFIC) ASSESSMENTS OF RISK.