Documentation of Environmental Indicator Determination
Interim Final 2/5/99
RCRA Corrective Action
Environmental Indicator (EI) RCRA Info code (CA725)
Current Human Exposures Under Control

Facility Name: Former Emerson Electric Corporation (Formerly Alco Controls Division)
Facility Address: 555 Peppers Ferry Road, Wytheville, VA 24382
Facility EPA ID #: VAD 065 415 457

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?

   ✓ 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 program's 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).

Duration / Applicability of EI Determinations

EI Determinations status codes should remain in RCRA Info as long as they remain true (i.e., in RCRA Info 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	✓			1,1,1-TCA and degradation products (chloroethane, 1,1-dichloroethane, 1,1-dichloroethene) 1,4-dioxane, and MTBE
Air (indoors)[2]		✓		
Surface Soil (<2 ft)		✓		
Surface Water		✓		
Sediment		✓		
Subsurf. Soil (>2 ft)		✓		
Air (outdoors)		✓		

_____ 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):
See attached page

RCRA Site Visit Report, February 18, 2009
Voluntary Remediation Report, Lot 3, Former Alco Controls, March 1, 2007
Supplemental Groundwater Characterization Workplan, January 9, 2009
VDEQ project files

Footnotes:

[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.

Site Description:

The former Emerson Electric Corporation, Alco Controls Division (Emerson) facility is located at 555 Peppers Ferry Road, Wytheville, Virginia 24382. The former Emerson facility is located in a commercial and light industrial area on the north side of Wytheville. The facility is currently bordered by two hotels and Wytheville Community College to the north and east, the Wytheville Redevelopment and Housing Authority to the south, and Peppers Ferry Road to the north and west. Interstate 81 is located farther to the north (approximately 0.5 mile) of the site. Farm Credit and Country Mortgages, Oakwood Cemetery, King and King Enterprises, and several residences are located across Peppers Ferry Road to the west.

The facility initially operated as a textile mill and a knitting mill (Wyomissing Corporation) from 1935 until 1974. Emerson Electric Corporation purchased the Alco Control Company in 1967. Alco manufactured refrigeration valves and expansion valves. Tuttle Electric, which was purchased and owned by Emerson Electric, began production of open coil electric heating elements for commercial dryers and refrigerators at this site in 1974. In 1981, the Alco Controls Division of Emerson Electric, purchased the property and took over production operations at the site. Alco Controls, under the ownership of Emerson, manufactured refrigeration control valves on the property from the late 1970s until 2001, when the facility was closed. On January 27, 2008, Emerson Electric changed the name of the Alco Controls Division Products, to Emerson Climate Technologies Flow Controls. This name change occurred after Emerson terminated the operations at the Alco Controls Division Products at the Wytheville facility.

Before operations ceased at the facility in 2001, a staff of 32 people worked in the production areas and office. Primary operations at the site included turning, welding, honing, grinding, spray painting, assembling, testing, warehousing, and packaging.

The Emerson manufacturing facility consisted of four buildings that covered approximately 139,000 square feet of the 20.7-acre parcel. Outdoor features include a chip storage area and two paved parking lots. The entire Emerson facility contains three parcels (lots). Lot 1 is 1.5 acres in size and is located at the north end of the property, next to Peppers Ferry Road. The area was formerly used as an employee parking lot, and there are no buildings on the lot. Lot 2 is located to the southeast of the facility, and consists of 7.2 acres of undeveloped open land. Lot 3 consists of approximately 12 acres and contains the former Emerson plant and surrounding land. All manufacturing operations took place on Lot 3, where the original facility buildings were constructed. Lots 1 and 3 were never legally subdivided, but the distinction between the two lots was used during investigation and remediation of the property under the VDEQ's Voluntary Remediation Program (VRP).

The original facility buildings (Buildings 1, 2, and 3 on Lot 3) were constructed in 1935 on farmland. An addition was added to the southern portion of the facility in the early 1950s.

Chromolox, a division of Emerson Electric, leased the southern portion of the building from approximately 1974 to 1977. The first courtyard, the location of the Emerson's Former bright dip operations, was enclosed in 1974. A second courtyard area was enclosed in approximately 1975.

Raw materials used at the site prior to 2001 included copper, brass, steel, nitric acid, sulfuric acid, hydrochloric acid, chromic acid, alkaline solution, freon, and 1,1,1-trichloroethane (1,1,1-TCA). Small quantities of nitric acid and sulfuric acid were used in the metal processing, electroplating, and manufacturing operations. Fuels used at the facility included gasoline, natural gas, No. 2 fuel oil, and propane. Oil, 1,1,1-TCA, gasoline, ammonia, argon, nitrogen, propane, and an alkaline solution were stored in tanks outside the facility. The major manufacturing activities at the facility included machining, brazing, welding, assembly, testing spray painting, parts washing, electroplating, packaging, shipping, and receiving.

The former Emerson Electric Corporation maintained a number of SWMUs. Releases and contamination were previously identified in several of these areas. Investigation of soil and groundwater on the Emerson property was completed under the VDEQ Voluntary Remediation Program (VRP) from 2003 to 2006. Affected soil was identified, excavated and shipped of-site for disposal. The VDEQ VRP issued a Certificate of Satisfactory Completion of Remediation on July 9, 2007. Since then, there has been no indication of new releases. Currently, surface soil and subsurface soil is not known or reasonably suspected to be contaminated above appropriately protective risk-based levels at the Emerson site. As Emerson is no longer operational at the facility, there is no indication of past or current air emissions that would negatively impact indoor and/or outdoor air quality.

Groundwater:

Investigations have been conducted to determine the maximum concentrations of hazardous constituents in groundwater and the source of the groundwater contamination. The investigations identified releases from two locations; the former aboveground solvent storage tank and a former gasoline underground storage tank.

TCA and 1,1-dichloroethene (DCE) concentrations greater than the MCLs were detected in samples collected from MW-4 and MW-2. Therefore, downgradient monitoring well MW-13B was installed on downgradient property owned by the town of Wytheville in March 2005. A groundwater sample collected from MW-13B in March 2005 contained a 1,1-DCE concentration greater than the MCL.

Samples from downgradient bedrock monitoring wells have contained TCA, TCA breakdown products (chloroethane, 1,1-DCA, and 1,1-DCE), and 1,4-dioxane.

The VOC concentrations in the off-site monitoring wells are less than the EPA MCLs, with the exception of 1,1-DCE in the sample from MW-13B. The VOC concentrations are also less than the EPA RBCs, with the exception of 1,4-Dioxane in the samples from MW-13B and MW-14B.

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	No	No	No	No	No	No	No
~~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. (potential contamination of subsurface soil and potential exposure pathway evaluation)

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

Rationale and Reference(s):
See attached page

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

Groundwater

There are no water supply wells on the former Emerson property or adjacent properties. Therefore, there is no complete pathway between affected groundwater and human receptor under current conditions. Groundwater on the site will not be used as a private potable water source in the future because a deed restriction prohibits any use of the groundwater for purposes other than environmental monitoring. Groundwater on the site and on adjacent properties will not be used as a private potable water source because a municipal ordinance prohibits the use of groundwater for drinking water because a public water supply is available. In addition, the former Emerson property is restricted to commercial or industrial development by local zoning and a deed restriction.

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 expected not to be "significant."

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

Rationale and Reference(s):

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[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.

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 and 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):

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6. Check the appropriate RCRA Info 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):

✓ 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 Former Emerson Electric Corporation facility, EPA ID #VAD 065 415 457, located in Wytheville, 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.

Completed by Ryan J. Kelly Date 9/28/09
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Supervisor Durwood D. Willis Date 9/28/09
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Locations where References may be found:

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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.