

US EPA ARCHIVE DOCUMENT

DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION

Interim Final 2/5/99

RCRA Corrective Action
Environmental Indicator (EI) RCRIS code (CA750)

Migration of Contaminated Groundwater Under Control

Facility Name: Carboline Company

Facility Address: 125 Fairgrounds Road, Xenia, OH 45385

Facility EPA ID #: OHD 030963615

1. Has all available relevant/significant information on known and reasonably suspected releases to the groundwater media, 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 AMigration of Contaminated Groundwater Under Control@ EI

A positive "Migration of Contaminated Groundwater Under Control" EI determination ("YE" status code) indicates that the migration of "contaminated" groundwater has stabilized, and that monitoring will be conducted to confirm that contaminated groundwater remains within the original "area of contaminated groundwater" (for all groundwater "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 "Migration of Contaminated Groundwater Under Control" EI pertains ONLY to the physical migration (i.e., further spread) of contaminated ground water and contaminants within groundwater (e.g., non-aqueous phase liquids or NAPLs). Achieving this EI does not substitute for achieving other stabilization or final remedy requirements and expectations associated with sources of contamination and the need to restore, wherever practicable, contaminated groundwater to be suitable for its designated current and future uses.

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. Is **groundwater** known or reasonably suspected to be **"contaminated"**¹ above appropriately protective "levels" (i.e., applicable promulgated standards, as well as other appropriate standards, guidelines, guidance, or criteria) from releases subject to RCRA Corrective Action, anywhere at, or from, the facility?

_____ If yes - continue after identifying key contaminants, citing appropriate "levels," and referencing supporting documentation.

 X If no - skip to #8 and enter "YE" status code, after citing appropriate "levels," and referencing supporting documentation to demonstrate that groundwater is not "contaminated."

_____ If unknown - skip to #8 and enter "IN" status code.

Rationale and Reference(s):

The earliest available land use records for the Carboline site indicate that a farm implement dealer conducted commercial activities on the site between 1944 and 1950. In 1953, the Moran Paint Company of Xenia, Ohio (Moran) initiated operations involving manufacturing of paint finishes for the automotive and appliance industries. The facility was purchased by Carboline in 1963, and continued manufacturing products under the Moran name (Ref. C-04).

Carboline specialized in manufacturing epoxy coatings. The facility blended various grades of liquid and solid paint materials and solvents to match the specifications of a particular order. The manufacturing process consisted of milling and high speed dispersal of raw materials (i.e., pigments, fillers, solvents, resins, and other additives) into a liquid or paste. Approximately 700 virgin chemicals were stored on site for production purposes (Refs. C-02 and C-04).

Carboline was purchased by Sun Chemical Company in 1980, and the Moran product line was sold in 1982. Manufacturing operations continued at the site for the remaining products. Sun Chemical sold the assets of the Carboline Division to RPM, Inc. (RPM), in 1986. RPM closed the facility in December 2000 (Refs. C-02 and C-04).

When in active operation, the Carboline facility consisted of four primary buildings: raw materials and product storage warehouse, a three-story manufacturing plant, a dry pigment warehouse, and an office building. The storage building on the northwestern side of the site was reportedly destroyed by a tornado between 2005 and 2008, and the former manufacturing building is currently being demolished. The site is presently occupied by two tenants who appear to utilize the majority of the property, with the exception of the former manufacturing building in the southeastern portion of the property, which is in the process of being demolished. The tenants are Elsome Trucking and Seek-n-Destroy Paintball (Refs. C-02 and C-05).

During active manufacturing operations, the facility generated multiple RCRA hazardous waste streams, including waste paint thinners (F001, F003, and F005), waste paint materials (F003, F005, D001, D005, D007, and D008), and miscellaneous dust (D007 and D008). A permit application completed by Carboline in 1980 also lists the following waste codes as applicable to hazardous wastes generated in various quantities at the site: F003, F005, K078, K079, K081, K082, U002, U013, U031, U069, U088, U102, U112, U124, U125, U140, U154, U159, U160, U161, U169, U220, U238, and U239. At the peak of production, Carboline was generating approximately 180 tons of waste paint thinners and 95 tons of waste paint materials per year (Refs. C-01 and C-02).

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 appropriate "levels" (appropriate for the protection of the groundwater resource and its beneficial uses).

Name	Description	Environmental Data
SWMU 1	Baghouse	Releases to soil and groundwater are unlikely.
SWMU 2	Hazardous Waste Storage Area	Cleanup was completed and inspected by OEPA in 2001.
SWMU 3	D-Waste Storage Tank	Cleanup was completed and inspected by OEPA in 2001.
SWMU 4	F-Waste Storage Tank	Releases to soil and groundwater are unlikely.
SWMU 5	Kettle Cleaning Area	Releases to soil and groundwater are unlikely.
SWMU 6	Back Pad	Cleanup was completed and inspected by OEPA in 2001.
AOC 1	Solvent Blending Tank	Cleanup was completed and inspected by OEPA in 2001.
AOC 2	NPDES Outfall	Cleanup was completed and inspected by OEPA in 2001.
Miscellaneous Unit	Underground Storage Tank	Tanks were removed in 1978; no further investigation needed.
Miscellaneous Unit	Building No. 6	Cleanup was completed; no further investigation needed.
Miscellaneous Unit	Burn Pit	Cleanup was completed; no further investigation needed.

In May 1992, a subsurface investigation was conducted by Bowser-Morner near and downgradient of the Solvent Blending Tank Area to determine if soil and groundwater. According to the report associated with this investigation, photoionization detector readings indicated that the highest volatile organic compound (VOC) concentrations were located in the surface soil, and that it was unlikely that the spills had significantly impacted soils at depth (i.e., at depths greater than 2.5 feet below ground surface). Laboratory analysis on the surface soil samples confirmed only low levels of volatile organic compounds (VOCs) below regulatory levels, and no detectable VOCs in the groundwater sample. The report associated with this investigation concluded that VOC impacts to the subsurface were minimal (Refs. C-05).

According to a Final Inspection Letter dated March 14, 2001, no violations of Ohio CRO laws were identified at the facility during an inspection conducted on January 22, 2001. The letter also states that, "during [the] final closure period all contaminated equipment, structures, and soil were properly disposed of or decontaminated unless otherwise specified in OAC rules 3745-66-97, -67-28, -67-58, -67-80, -68-10" and "generated hazardous wastes were handled in accordance with all applicable requirements of Chapter 3745-52 of the Administrative Code." Ms. Cathy L. Altman of OEPA, who conducted the CRO Final Inspection, confirmed that no violations of Ohio CRO laws were identified and that all equipment and materials that could be removed at the facility had been removed (Refs. C-03).

3. Has the **migration** of contaminated groundwater **stabilized** (such that contaminated groundwater is expected to remain within "existing area of contaminated groundwater"² as defined by the monitoring locations designated at the time of this determination)?

- If yes - continue, after presenting or referencing the physical evidence (e.g., groundwater sampling/measurement/migration barrier data) and rationale why contaminated groundwater is expected to remain within the (horizontal or vertical) dimensions of the "existing area of groundwater contamination"².
- If no (contaminated groundwater is observed or expected to migrate beyond the designated locations defining the "existing area of groundwater contamination"²) - skip to #8 and enter "NO" status code, after providing an explanation.
- If unknown - skip to #8 and enter "IN" status code.

Rationale and Reference(s):

² "existing area of contaminated groundwater" is an area (with horizontal and vertical dimensions) that has been verifiably demonstrated to contain all relevant groundwater contamination for this determination, and is defined by designated (monitoring) locations proximate to the outer perimeter of "contamination" that can and will be sampled/tested in the future to physically verify that all "contaminated" groundwater remains within this area, and that the further migration of "contaminated" groundwater is not occurring. Reasonable allowances in the proximity of the monitoring locations are permissible to incorporate formal remedy decisions (i.e., including public participation) allowing a limited area for natural attenuation.

4. Does "contaminated" groundwater **discharge** into **surface water** bodies?

_____ If yes - continue after identifying potentially affected surface water bodies.

_____ If no - skip to #7 (and enter a "YE" status code in #8, if #7 = yes) after providing an explanation and/or referencing documentation supporting that groundwater "contamination" does not enter surface water bodies.

_____ If unknown - skip to #8 and enter "IN" status code.

Rationale and Reference(s):

5. Is the **discharge** of "contaminated" groundwater into surface water likely to be **"insignificant"** (i.e., the maximum concentration³ of each contaminant discharging into surface water is less than 10 times their appropriate groundwater "level," and there are no other conditions (e.g., the nature, and number, of discharging contaminants, or environmental setting), which significantly increase the potential for unacceptable impacts to surface water, sediments, or eco-systems at these concentrations)?

_____ If yes - skip to #7 (and enter "YE" status code in #8 if #7 = yes), after documenting: 1) the maximum known or reasonably suspected concentration³ of key contaminants discharged above their groundwater "level," the value of the appropriate "level(s)," and if there is evidence that the concentrations are increasing; and 2) provide a statement of professional judgement/explanation (or reference documentation) supporting that the discharge of groundwater contaminants into the surface water is not anticipated to have unacceptable impacts to the receiving surface water, sediments, or eco-system.

_____ If no - (the discharge of "contaminated" groundwater into surface water is potentially significant) - continue after documenting: 1) the maximum known or reasonably suspected concentration³ of each contaminant discharged above its groundwater "level," the value of the appropriate "level(s)," and if there is evidence that the concentrations are increasing; and 2) for any contaminants discharging into surface water in concentrations³ greater than 100 times their appropriate groundwater "levels," the estimated total amount (mass in kg/yr) of each of these contaminants that are being discharged (loaded) into the surface water body (at the time of the determination), and identify if there is evidence that the amount of discharging contaminants is increasing.

_____ If unknown - enter "IN" status code in #8.

Rationale and Reference(s):

³ As measured in groundwater prior to entry to the groundwater-surface water/sediment interaction (e.g., hyporheic) zone.

6. Can the **discharge** of “contaminated” groundwater into surface water be shown to be “**currently acceptable**” (i.e., not cause impacts to surface water, sediments or eco-systems that should not be allowed to continue until a final remedy decision can be made and implemented⁴)?

_____ If yes - continue after either: 1) identifying the Final Remedy decision incorporating these conditions, or other site-specific criteria (developed for the protection of the site’s surface water, sediments, and eco-systems), and referencing supporting documentation demonstrating that these criteria are not exceeded by the discharging groundwater; OR
2) providing or referencing an interim-assessment,⁵ appropriate to the potential for impact, that shows the discharge of groundwater contaminants into the surface water is (in the opinion of a trained specialists, including ecologist) adequately protective of receiving surface water, sediments, and eco-systems, until such time when a full assessment and final remedy decision can be made. Factors which should be considered in the interim-assessment (where appropriate to help identify the impact associated with discharging groundwater) include: surface water body size, flow, use/classification/habitats and contaminant loading limits, other sources of surface water/sediment contamination, surface water and sediment sample results and comparisons to available and appropriate surface water and sediment “levels,” as well as any other factors, such as effects on ecological receptors (e.g., via bio-assays/benthic surveys or site-specific ecological Risk Assessments), that the overseeing regulatory agency would deem appropriate for making the EI determination.

_____ If no - (the discharge of “contaminated” groundwater can not be shown to be “**currently acceptable**”) - skip to #8 and enter “NO” status code, after documenting the currently unacceptable impacts to the surface water body, sediments, and/or eco-systems.

_____ If unknown - skip to 8 and enter “IN” status code.

Rationale and Reference(s):

⁴ Note, because areas of inflowing groundwater can be critical habitats (e.g., nurseries or thermal refugia) for many species, appropriate specialist (e.g., ecologist) should be included in management decisions that could eliminate these areas by significantly altering or reversing groundwater flow pathways near surface water bodies.

⁵ The understanding of the impacts of contaminated groundwater discharges into surface water bodies is a rapidly developing field and reviewers are encouraged to look to the latest guidance for the appropriate methods and scale of demonstration to be reasonably certain that discharges are not causing currently unacceptable impacts to the surface waters, sediments or eco-systems.

7. Will groundwater **monitoring** / measurement data (and surface water/sediment/ecological data, as necessary) be collected in the future to verify that contaminated groundwater has remained within the horizontal (or vertical, as necessary) dimensions of the "existing area of contaminated groundwater?"

_____ If yes - continue after providing or citing documentation for planned activities or future sampling/measurement events. Specifically identify the well/measurement locations which will be tested in the future to verify the expectation (identified in #3) that groundwater contamination will not be migrating horizontally (or vertically, as necessary) beyond the "existing area of groundwater contamination."

_____ If no - enter "NO" status code in #8.

_____ If unknown - enter "IN" status code in #8.

Rationale and Reference(s):

8. Check the appropriate RCRIS status codes for the Migration of Contaminated Groundwater Under Control EI (event code CA750), and obtain Supervisor (or appropriate Manager) signature and date on the EI determination below (attach appropriate supporting documentation as well as a map of the facility).

YE - Yes, "Migration of Contaminated Groundwater Under Control" has been verified. Based on a review of the information contained in this EI determination, it has been determined that the "Migration of Contaminated Groundwater" is "Under Control" at the Carboline Company facility, EPA ID # OHD 030963615, located at 125 Fairgrounds Road, Xenia, OH 45385. Specifically, this determination indicates that the migration of "contaminated" groundwater is under control. This determination will be re-evaluated when the Agency becomes aware of significant changes at the facility.

NO - Unacceptable migration of contaminated groundwater is observed

IN - More information is needed to make a determination.

Completed by (signature) *John Nordine* Date 8-11-09
(print) John Nordine
(title) Geologist

Supervisor (signature) *George Hamper* Date 8-11-09
(print) George Hamper
(title) Chief
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Locations where References may be found:

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References

Document Date	Title	Author	Reference (C-#)
August 15, 1980	Waste Report	Ardell E. Pitt	C-01
November 6, 1992	Preliminary Assessment / Visual Site Inspection Final Report	PRC Environmental Management, Inc.	C-02
March 14, 2001	Final Inspection Letter	OEPA	C-03
April 30, 2003	ASTM Transaction Screen Report	Brownfield Restoration Group, LLC	C-04
May 15, 2009	RE: RCRA Closure at RPM-Carboline Facility	Cherokee BGI, LLC	C-05