DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION

Interim Final 2/5/99

RCRA Corrective Action
Environmental Indicator (EI) RCRIS code (CA725)

Current Human Exposures Under Control

Facility Name: GAR Electroforming, Inc.
Facility Address: 11 Augusta Road, Danbury, CT
Facility EPA ID #: CTD064834914

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.

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 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_	___	___	_____
Air (indoors)[2]	___	_x_	___	_____
Surface Soil (e.g., <2 ft)	___	_x_	___	_____
Surface Water	___	_x_	___	_____
Sediment	___	_x_	___	_____
Subsurf. Soil (e.g., >2 ft)	___	_x_	___	_____
Air (outdoors)	___	_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.

__x__ 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.

Background

GAR is a manufacturer of precision microforms. Wastewaters generated from facility operations included hexavalent chromium and cyanides as a result of plating operations. These wastewaters were treated to form metal hydroxide sludge wastes which were subsequently landfilled on site in two sludge lagoons. GAR closed the lagoons in June of 1988 under an approved closure plan. GAR also installed groundwater monitoring wells as part of an approved "Alternate Ground Water Monitoring System Plan." *Annual Ground Water Monitoring Report - 1989*, dated February, 1990. GAR "fulfill[ed]" its quarterly groundwater monitoring requirements in December of 1990 per Connecticut Hazardous Waste Management Regulations 22a-449(c)-28. *Fourth Quarter 1990 Post-Closure Ground Water Monitoring Report*, dated January 1991. Accordingly, no groundwater data is available since 1990.

GAR was informed of its Corrective Action requirements by letter dated January 25, 1996. EPA met with GAR on May 14, 1996 to discuss Corrective Action. GAR subsequently signed a Voluntary Corrective Action agreement on July 1, 1996. However, citing "The Small Business Regulatory Enforcement Fairness Act of 1996 (Act)" which purports to "grant[] substantial new rights to small businesses [and] other small entities," GAR appealed to the Honorable Joseph I. Lieberman, United States Senate, and the Honorable Gary A. Franks, Representative in Congress for the Fifth District of Connecticut, requesting regulatory relief under the Act. Apparently encouraged by communique with the offices of Joseph Lieberman and Gary Franks, GAR appealed to John DeVillars, director, EPA Region I for relief of its Corrective Action obligations. Pursuant to established procedural EPA policy, RCRA Facility Manager Raphael Cody and Corrective Action Section Chief, Matthew Hoagland, prepared a response to a "JDV gram" regarding GAR and forwarded said response to the EPA front office. After many attempts in contacting the front office regarding the status of this response, EPA's Corrective Action program decided to address other priorities until a more suitable opportunity arose to address Corrective Action requirements at GAR.

As of today, April 27, 1999, no resolution of this outstanding issue has occurred. Therefore, it is decided to use the available historical groundwater data and information on GAR obtained from records to evaluate GAR with respect to the environmental indicators.

Groundwater

GAR is located in an industrial park in Danbury, CT. Groundwater in the industrial park is classified "GB." CTDEP's Surface Water Protection Criteria (SWPC) applies to the site groundwater. GAR obtains its water from the city of Danbury.

A review of the available historic groundwater data for the site was conducted and is presented in the attached Table. The data indicates that two apparently transient exceedences of the SWPC for nickel and perchloroethylene (PCE) occurred in 1990. The available data and information also indicates that the presence of VOCs in the groundwater at the site are likely attributable to the general industrial background of the area. For instance, MW-1, which exhibited most of the higher concentrations of VOCs, is located upgradient of GAR. Risdon Corporation, CTD001168558, is located immediately upgradient of GAR. Note also that the sludge lagoons are located downgradient of the facility which lends further credence to the inference that the origin of VOCs in site groundwater is not the result of facility operations. Based on the ground water data and the available historical information concerning GAR operations it does not seem likely that a source of VOCs is located on the site or can be attributed to GAR operations.

With respect to the presence of metals at the site, in closing the sludge lagoons, GAR removed both the sludge and approximately two to three feet of underlying soils. After closure, the data indicates that dissolved-phase metal concentrations have remained below CTDEP SWPC with the exception of the single transient exceedence of nickel (MW-3 on 3/90).

Surface Water/Sediments

The groundwater elevation at GAR is shallow and the facility abuts a wetlands area located immediately downgradient of the sludge lagoons. Based on the available data and the apparent completeness with which GAR closed its sludge lagoons, surface water or sediment contamination as a result of groundwater migration to the wetlands is not "reasonably suspected." Also, since GAR is located in an industrial park, it is unlikely that there would be transient populations in or near the facility or wetlands area.

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.

Summary of Grounawater Monitoring

GAR Electroforming, Danbury, CT

	Concentration (ug/l)								MCL	Amb. SW Qual. Std.	CTDEP SW	Exceed CTDEP?
	3/14/89	6/7/89	9/25/89	12/19/89	3/90	6/90	9/90	12/90	ug/l	ug/l	ug/l	
MW-1												
11-DCE	13	16	76	15	12	-	68	7.1	7	-	96	
11-DCA	6.7	13	50	13	12	14	31	7.7	-	-	-	
trans-12-DCE	19	22	93	21	17	15	72	13	70	-	-	
111-TCA	120	90	160	110	180	86	280	59	200	-	62000	
TCE	270	250	1300	270	250	250	1100	180	5	-	2340	
PCE	50	58	72	61	46	25	-	18	5	-	88	
chromium	-	-	-	-	10	-	-	-	100 (tot)	11 (Cr6+)	110 (Cr6+)	
nickel	190	230	190	180	200	250	230	320	100	160	880	
cyanide	-	-	-	-	-	-	-	-	200	5.2	52	
MW-2												
11-DCE	-	-	-	-	-	-	-	-			96	
11-DCA	-	-	-	-	-	-	-	-			-	
trans-12-DCE	2.8	6	4.3	2.8	2.6	-	4.2	4.1			-	
111-TCA	2	2.6	-	2.4	-	2.9	-	3.6			62000	
TCE	45	67	41	32	36	26	40	80			2340	
PCE	9.6	20	10	8.3	7.2	5	7.8	12			88	
chromium	-	-	-	-	10	-	-	-			110 (Cr6+)	
nickel	410	380	260	480	510	370	380	490			880	
cyanide	-	-	-	-	-	20	-	-			52	
MW-3												
11-DCE	-	-	-	-	-	-	-	-			96	
11-DCA	-	-	-	-	-	-	-	-			-	
trans-12-DCE	-	-	-	-	-	-	-	-			-	
111-TCA	-	-	-	-	-	-	-	-			62000	
TCE	10	18	29	16	13	18	17	15			2340	
PCE	2.1	3.7	4.7	3.1	2.6	-	-	-			88	
chromium	-	-	-	-	50	-	-	-			110 (Cr6+)	
nickel	-	80	110	80	990	60	200	110			880	Y
cyanide	-	-	-	-	-	-	-	-			52	
MW-4												
11-DCE	13	-	-	-	-	-	-	-			96	
11-DCA	6.7	-	-	-	-	-	-	-			-	
trans-12-DCE	19	-	-	-	-	-	-	-			-	
111-TCA	120	-	-	-	-	-	-	-			62000	
TCE	270	20	30	25	18	19	46	43			2340	
PCE	-	3.9	2.9	2.3	-	-	4.8	4.1			88	
chromium	-	-	-	-	30	-	-	-			110 (Cr6+)	
nickel	40	90	70	140	120	70	110	120			880	
cyanide	-	-	-	-	-	-	-	-			52	
MW-5												
11-DCE							-	-			96	
11-DCA							-	2.2			-	
trans-12-DCE							-	6			-	
111-TCA							48	8.9			62000	
TCE							350	96			2340	
PCE							240	51			88	Y
chromium							-	-			110 (Cr6+)	
nickel							50	120			880	
cyanide							-	-			52	
MW-6												
11-DCE							-	-			96	
11-DCA							-	-			-	
trans-12-DCE							3.9	3.7			-	
111-TCA							-	4.6			62000	
TCE							150	130			2340	
PCE							28	25			88	
chromium							-	-			110 (Cr6+)	
nickel							530	550			880	
cyanide							-	-			52	
MW-7												
11-DCE							-	-			96	
11-DCA							-	-			-	
trans-12-DCE							-	-			-	
111-TCA							2.8	2.4			62000	
TCE							73	65			2340	
PCE							5.5	7.8			88	
chromium							-	-			110 (Cr6+)	
nickel							560	610			880	
cyanide							-	-			52	

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: **"n" or blank =no; y=yes**

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.

__x__ 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):

The data does not suggest that "complete pathways" to site groundwater exist such that "exposures can be reasonably expected."

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

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):_____

[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):_____

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 **GAR Electroforming** facility, EPA ID #**CTD064834914**, located at **11 Augusta Road, Danbury, 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.

Completed by (signature) Raphael Cody Date: 4/30/99
(print) Raphael Cody Revised: _____
(title) RCRA Facility Manager

Supervisor (signature) Matt Hoagland Date 5/6/99
(print) Matt Hoagland
(title) Chief, RCRA Corrective Action
(EPA Region or State) Region I

Ray –
This EIE is approvable even though some questions have arisen regarding Subpart F groundwater monitoring. These questions will need to be addressed in the EIE for Groundwater Releases.
– MRH

Locations where References may be found:

____See facility files _____

STATE Contact telephone and e-mail numbers

(name)_____
(phone #)_____
(e-mail)_____

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.