

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: Former Holgrath Medical Technologies Facility  
Facility Address: 30 Knotter Drive, Cheshire CT 06410  
Facility EPA ID #: CTD 001164334

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 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).

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2. Are groundwater, soil, surface water, sediments, or air media known or reasonably suspected to be "contaminated"<sup>1</sup> 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)?

	<u>Yes</u>	<u>No</u>	<u>?</u>	<u>Rationale / Key Contaminants</u>
Groundwater	<u>X</u>	—	—	_____
Air (indoors) <sup>2</sup>	—	<u>X</u>	—	_____
Surface Soil (e.g., <2 ft)	—	<u>X</u>	—	_____
Surface Water	—	<u>X</u>	—	_____
Sediment	—	<u>X</u>	—	_____
Subsurf. Soil (e.g., >2 ft)	<u>X</u>	—	—	_____
Air (outdoors)	—	<u>X</u>	—	_____

\_\_\_\_\_ 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.

Rationale and Reference(s): \_\_\_\_\_  
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See Item 2 Addendum  
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**Footnotes:**

<sup>1</sup> "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).

<sup>2</sup> 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.

Current Human Exposures Under Control --  
Item 2 Addendum:

References:

1. "Revised RCRA Hazardous Waste Closure and Post-Closure Plan for Hazardous Waste Management Area, Former Holgrath Medical Technologies Facility, Cheshire, Connecticut" prepared by ALTA Environmental Corporation dated October 1998.
2. "Summary of December 1998 Groundwater Monitoring Results, Former Holgrath Medical Technologies Facility, Cheshire, Connecticut" prepared by ALTA Environmental Corporation dated February 1999.
3. "Status of Remedial Efforts at the former Holgrath Facility" prepared by ALTA Environmental Corporation dated 23 March 1999.
4. "Summary of Tetrachloroethylene Emissions from Multi-Phase Extraction System, Former Holgrath Medical Technologies Facility, Cheshire, Connecticut", Table I, prepared by ALTA Environmental Corporation and transmitted to the DEP by facsimile on 3 August 1999.
5. "Analytical Data Summary, Former Holgrath Facility (08/02/99)" prepared by Matrix Analytical, Inc.

Surface soil, surface water, sediment and air media are not known or reasonably suspected to be contaminated above appropriately protective risk-based levels from releases from this facility subject to RCRA corrective action. Although surface soil contamination had previously existed in the former underground storage tank and container storage area at concentrations above risk-based levels, such volatile organic compound (VOC) contamination was remediated using a low vacuum vapor extraction system with confirmatory soil testing completed in November 1993 demonstrating compliance with the Connecticut Department of Environmental Protection (DEP) Remediation Standard Regulations (RSRs) (see Reference 1 for details regarding this contamination and its remediation).

Furthermore, testing of surface water and sediment samples from Judd Brook (the nearest surface water body) and its associated wetlands revealed non-detectable concentrations of VOCs (see Reference 1 for these data). Judd Brook flows into Tenmile River, and ALTA has inferred that deep overburden groundwater contamination could potentially discharge to Tenmile River (the nearest significant surface water drainage feature in the downgradient direction). Hence, ALTA recently collected a sample of surface water from Tenmile River at a location immediately downgradient of the on-site groundwater plume. This sample SW-1 was tested for VOCs, and VOCs were not detected above the laboratory reported detection limit (see attached analytical results - Reference 5).

Finally, VOC contamination has not been detected or suspected to occur beneath the on-site building, and hence impacts to indoor air quality are not suspected. Current site usage by a sheet metal welding business does not involve use or handling of VOCs. As mentioned previously, shallow VOC contamination in soil has been remediated, and given the low permeability nature of shallow soil at the site (silty clay and clayey silt), no impacts to outdoor air quality above risk-based levels are reasonably suspected from residual deep soil VOC contamination. Monitoring of emissions from the vapor extraction system and a multi-phase extraction system (currently operating to extract VOCs from the

deeper residually contaminated strata) has indicated that VOC emissions have been significantly below all Connecticut air emission limitations (see References 1 and 4).

#### Groundwater –

A groundwater plume stems from the former underground storage tank and container storage area which were located south of the on-site manufacturing building. Figure 2 attached shows on-site monitoring wells within or immediately downgradient of this plume, and the former waste management area. Table I attached summarizes groundwater quality data from the most recent monitoring event in December 1998 which included five on-site wells (extracted from Reference 2); Table XI attached (from Reference 1) summarizes additional, historic groundwater quality data from remaining on-site wells through the monitoring event in September 1997, the monitoring event which preceded the December 1998 event.

The groundwater plume has been found to contain several chlorinated VOCs on one or more occasions, but primarily consists of tetrachloroethylene (PCE). Other chlorinated VOCs detected in this plume include: trichloroethylene (TCE); cis- and trans-1,2-dichloroethylene (1,2-DCE); 1,1,1-trichloroethane (TCA); 1,2-dichloroethane (1,2-DCA); vinyl chloride; and chloroform. The only groundwater contaminants known to be present above risk-based levels in this plume are PCE and vinyl chloride. PCE concentrations in OW-5 (the most impacted well which is located within the release area and downgradient of the on-site building) exceed its volatilization criteria for groundwater, while PCE concentrations in downgradient well OW-10(S) have slightly exceeded its surface-water protection criterion on occasion. Vinyl chloride concentrations in OW-9(S) (located near the downgradient property boundary adjacent to the wetlands) have also slightly exceeded its volatilization criteria for groundwater on occasion.

A detailed description of the nature, degree and extent of groundwater contamination stemming from this former waste management area is contained in the aforementioned Reference 1. In summary, the highest groundwater contaminant concentrations exist in groundwater directly beneath/downgradient of the release area. This dissolved-phase contamination preferentially migrates in more permeable strata (sand/weathered bedrock) in the deeper portion of the overburden aquifer. Shallow groundwater quality farther downgradient of the release area (i.e., adjacent to the Judd Brook wetlands) is much less impacted, and has been naturally attenuating since completion of the shallow soil cleanup at the release area in 1993. The dilute shallow plume is inferred to discharge to Judd Brook and its associated wetlands.

The plume within the deeper portion of the overburden aquifer appears to be quite narrow, likely about 50 ft. wide near the former waste management area and narrower yet downgradient at OW-6 (located about 230 ft. downgradient of OW-5), and contained primarily within a relatively thin preferential flow zone at a depth of approximately 25 to 35 ft. below ground surface. Groundwater quality in shallow on-site bedrock monitoring wells is also less impacted than in the deeper portion of the overburden aquifer. The plume is migrating to the south atop/in weathered bedrock towards other industrial facilities in the Cheshire Industrial Park. Groundwater beneath this industrial park has been classified as "GB" indicating that it is presumed to be degraded and is not suitable for use for drinking water without treatment.

There are no other known groundwater plumes stemming from this site which contain contaminants at levels above appropriate risk-based levels (i.e., risk-based levels included in the DEP RSRs).

**Subsurface Soil –**

Several areas of concern (AOCs) were identified at this site by Haley & Aldrich, Inc. (H&A) during completion of its site-wide environmental assessment in 1991. Phase II and Phase III investigations of on-site AOCs have been completed by H&A or ALTA in connection with site-wide environmental investigations (1991 through 1995) or earlier RCRA closure investigations (1989 through 1991), and are described in detail in Reference 1.

These investigations have revealed the presence of subsurface soil contamination associated with the previously-discussed VOC release area that is inferred to exceed direct exposure criteria in localized areas (e.g., at P2 where over 1,000 ppm of PCE was detected in soil from 10 to 15 ft. bgs – see Reference 1). However, the multi-phase extraction system under operation is designed to remediate this contamination (see attached Reference 3 which describes this remedial system, its objectives, and its current status), and will prevent any human exposures while the system is operating (i.e., there will be no construction activities within the active remedial system area). Once this remediation has been completed, the potential human exposure to this contamination will have been eliminated.

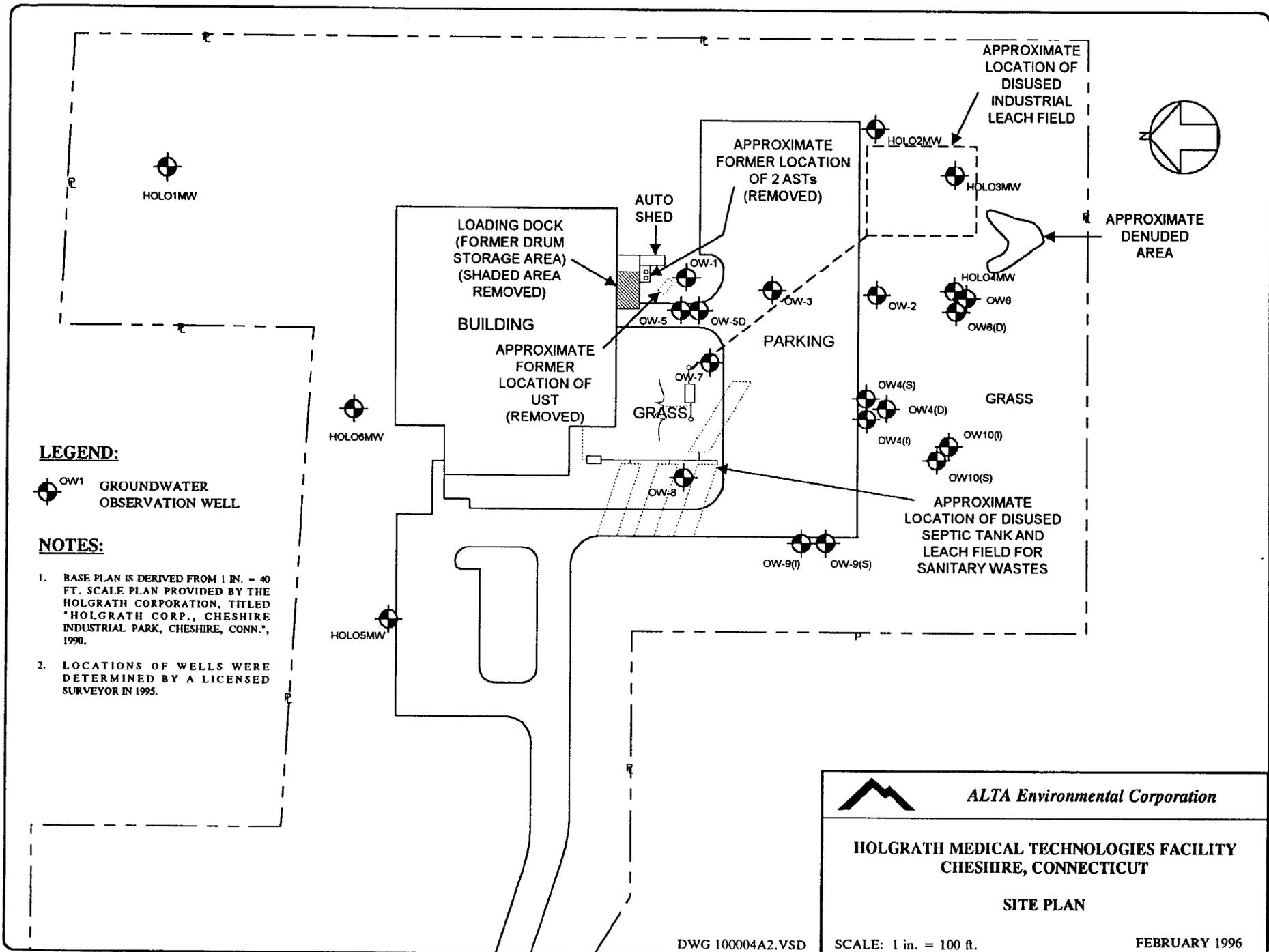


FIGURE 2

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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)

<u>"Contaminated" Media</u>	Residents	Workers	Day-Care	Construction	Trespassers	Recreation	Food <sup>3</sup>
Groundwater	<u>No</u>	<u>No</u>	<u>No</u>	<u>No</u>			<u>No</u>
Air (indoors)	—	—	—	—			
Soil (surface, e.g., < 2 ft)	—	—	—	—			
Surface Water	—	—	—	—	—	—	—
Sediment	—	—	—	—	—	—	—
Soil (subsurface e.g., > 2 ft)	—	—	—	<u>No</u>			<u>No</u>
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.

- X If no (pathways are not complete for any contaminated media-receptor combination) - skip to #5, 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):

See Item 3 Addendum

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

Current Human Exposures Under Control –  
Item 3 Addendum:

As discussed in Reference 1, groundwater beneath the site and adjacent industrial facilities to the south is not used for drinking water or process supply. Even though groundwater is contaminated and is migrating off site to the south, there are no known drinking water receptors within one mi. of the site to the south. This area is served by a municipal water supply distribution system. Additionally, there is no planned, anticipated, or ongoing excavation or construction work at this site. Hence, there are no identified complete pathways between such groundwater contamination and human receptors.

Two properties to the north of this site (a residence and the former Airpax Facility) were identified as part of a Federal NPL site designated as “Cheshire Groundwater Contamination”. Based on the findings of extensive area-wide investigations by the U.S. EPA, this NPL site was deleted and EPA determined that the former residential drinking water supply well on the abutting northern property was not, and would not be, impacted by the groundwater plume from the former Holgrath facility migrating in the opposite direction (to the south). So despite the connection of this residence to the municipal water supply system serving the area in the 1980s, EPA informed the residence in the 1990s that it could resume use of its bedrock water supply well including for drinking water supply.

Residual subsurface soil contamination is present in a localized, relatively deep area on site. No excavation or construction projects are planned, anticipated or ongoing in this area or on site. Additionally, an active multi-phase extraction remedial system is operating in this area which will not only mitigate such contamination but also prevent subsurface excavations in the impacted area due to potential damage any such work could cause to the expensive remedial system. Hence, ALTA does not consider there to be a potentially complete pathway between such subsurface soil contamination and human receptors.

4 Can the exposures from any of the complete pathways identified in #3 be reasonably expected to be "significant" (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 "DN" status code

Rationale and Reference(s): \_\_\_\_\_  
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<sup>4</sup> 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):

- 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 Holgrath Facility facility, EPA ID # CTD 001164334, located at 30 Knott Dr., Cheshire 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.

Reviewed  
Completed by

(signature) David Lim  
(print) David Lim  
(title) Env. Engineer

Date 4/14/2000

Supervisor

(signature) Matthew R. Hoagland  
(print) Matthew R. Hoagland  
(title) Section Chief  
(EPA Region or State) EPA-NE

Date 5/23/00

Locations where References may be found:

Connecticut DEP  
U.S. Environmental Protection Agency Region I  
ALTA Environmental Corporation - Colchester CT  
Virginia Industries - Rocky Hill, CT

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**