DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION

Updated 9/1/99
RCRA Corrective Action
Environmental Indicator (EI) RCRIS code (CA725)
Current Human Exposures Under Control

Facility Name: Novartis Crop Protection, Inc.
Facility Address: PO Box 11, St. Gabriel, Louisiana 70776
Facility EPA ID #: LAD053783445-MO-1

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 cam 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 request 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 authorizes become aware of contrary information).

2. Are groundwater, soil, surface water, sediments, or air media known or reasonably suspected to be **"contaminated"** 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		O-toluidine, toluene, carbon tetrachloride
Air (indoors)		X	
Surface Soil (e.g., <2 ft)		X	
Surface Water		X	
Sediment		X	
Subsurf. Soil (e.g., >2 ft)	X		toluene, carbon tetrachloride
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.

Rationale and Reference(s): Location 4- O-toluidine concentration in groundwater exceeds RECAP MO-1 , risk-based level in one monitor well (L4USS-7R). Monitor well L4USS-7R has a total depth of about 16 ft. below land surface. The first drinking water aquifer (Plaquemine Aquifer) begins at a depth of about 110 ft below land surface. Novartis has removed the contaminated area soils to a cleanup level of 7.7 mg/Kg for O-toluidine and 1.2 mg/Kg for 5-chloroaminotoluene (5-CAT) (average of two final sampling events). This cleanup level in soil is below the LDEQ approved cleanup levels of 23.9 mg/Kg for both O-toluidine and 5-CAT. Novartis is presently evaluating LDEQ approved remedial alternatives to address the O-toluidine levels in Monitor Well L4USS-7R. O-toluidine is readily biodegradable, and since the contaminated soil has been removed, long term Natural Attenuation monitoring may be a viable remedial alternative. A report will be submitted to LDEQ by September 30, 1999 which will include Novartis' proposed corrective action for this well. The Location 4 area is monitored by clean, plume defining wells and future monitoring of these wells will verify that there has been no significant migration of contamination.

Tank 112F area- Toluene and carbon tetrachloride concentrations exceed RECAP MO-1, risk- based levels in subsurface soils and groundwater. The surficial soils below the tank have been removed and treated in the facility's onsite, permitted incinerator. Novartis has an LDEQ approved corrective action plan to remove subsurface soils which exceed the MO-1 levels for toluene and carbon tetrachloride. The soils will be removed in July/August 1999. Novartis also has an LDEQ approved corrective action plan to remediate toluene and carbon tetrachloride concentrations in groundwater via a pump and treat or a pump and treat/ vacuum extraction system. This phase of the corrective action is planned for implementation within the next 180 days. The groundwater remediation system will be operated until risk- based levels of toluene and carbon tetrachloride have been attained.

References: *Phase II RCRA Facility Investigation Report*, August 1996; *Status Update Tank 112F*, Including Corrective Action Plan, dated April 1999 and approved by LDEQ on May 20, 1999; *Status Update for Location 4*, dated February 18, 1998 and approved by LDEQ on July 9, 1998.

Footnotes:

[1] "Contamination" and "contaminated" describes media containing contaminants (m 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.

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? **NO**

Summary Exposure Pathway Evaluation Table

	Potential Human Receptors (Under Current Conditions)						
"Contaminated" Media	Residents	Workers	Daycare	Construction	Trespassers	Recreation	Food3
Groundwater	No	No	No	No			No
Soil (subsurface e.g., >2 ft)				No			No

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 #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): Location 4- Novartis has removed the contaminated area soils to a cleanup level of 7.7 mg/Kg for O-toluidine and 1.2 mg/Kg for 5-chloroaminotoluene (5-CAT) (average of two final sampling events). This cleanup level in soil is below the LDEQ approved cleanup levels of 23.9 mg/Kg for both O-toluidine and 5-CAT. O-toluidine concentration in one monitor well (L4USS-7R) exceeds risk based level. Novartis is presently evaluating LDEQ approved remedial alternatives to address the o-toluidine levels in Monitor Well L4USS-7R. O-toluidine is readily biodegradable, and since the contaminated soil has been removed, long term Natural Attenuation monitoring may be a viable remedial alternative. A report will be submitted to LDEQ by September 30, 1999 which will include Novartis' proposed corrective action for this well. The Location 4 area is monitored by clean, plume-defining wells and future monitoring of these wells will verify that there has been no significant migration of contamination. Novartis has institutional controls to ensure that workers and construction workers do not come into contact with groundwater and/or subsurface soils contaminated with o-toluidine and 5-CAT without the proper personnel protective equipment.

Tank 112F Area- Surface soils to approximately 2 feet below the tank have been removed and treated in the onsite incinerator. Novartis has an approved corrective action plan to remove subsurface soils which exceed the MO-1 levels for toluene and carbon tetrachloride. The soils will be removed in July/August 1999. Novartis also has an approved corrective action plan to remediate toluene and carbon tetrachloride concentrations in groundwater via a pump and treat or a pump and treat/ vacuum extraction system. This phase of the corrective action is planned for implementation within the next 180 days. Novartis has institutional controls to ensure that workers and construction workers do not come into contact with groundwater and/or subsurface soils contaminated with toluene and/or carbon tetrachloride without the proper personnel protective equipment.

References: *Phase II RCRA Facility Investigation Report*, August 1996; *Status Update Tank 112F*, Including Corrective Action Plan, dated April 1999 and approved by LDEQ on May 20, 1999; *Status Update for Location 4*, dated February 18, 1998 and approved by LDEQ on July 9, 1998.

[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"' (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)?

N/A _____ 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 be significant" exposures (identified in #4) be shown to be within acceptable limits?

N/A _____ 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"

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 Novartis Crop Protection, Inc.,St. Gabriel, La.facility, EPA ID#LAD053783445-MO-1 located at 3905 Hwy 75, St. Gabriel, La. 70776 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) Luzma Mata de Leder Date September 17, 1999
(print) Luzma Mata de Leder
(title) Geologist

Supervisor (signature) N M Dave Date September 17, 1999
(print) Narendra Dave
(title) Geology Supervisor
(EPA Region or State) Louisiana Department of Environmental Quality

Locations where References may be found:

1) Novartis Crop Protection, Inc.-St Gabriel, La. Plant Environmental Regulatory Affairs Group files.
2) Louisiana Department of Environmental Quality- Office of Waste Services-Hazardous Waste Division files

Contact telephone and e-mail numbers
(name) Luzma Mata de Leder –LDEQ- Environmental Technology Division.
(phone #) 225-765-0361
(e-mail) Luzmam@deq.state.la.us

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.