

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: Squibb Manufacturing Inc
Facility Address: State Road #3, Km 77.5, Humacao, Puerto Rico
Facility EPA ID #: PRD090021056

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?

Yes ___ 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”**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)?

	<u>Yes</u>	<u>No</u>	<u>?</u>	<u>Rationale / Key Contaminants</u>
Groundwater	X			Methylene Chloride and MIBK were both found throughout the plume emanating from SWMU #3 (the Former Underground Tank Farm Area) at levels exceeding the Region III Risk Based Concentration levels (RBCs). MIBK was found in the plume emanating from SWMU #20 (the Bubbling Puddle Study Area) above the RBC. Groundwater contamination has not been detected at any other area being addressed under corrective action (SWMU or AOC). However, a regulated unit (Brule Incinerator) has recently been closed and EPA intends to investigate the potential for groundwater contamination from that unit.[references RFI for Bubbling Puddle Study Area, May 1997, ENSR; Phase I and Phase II Pre-Design Investigation for the former Underground Tank Farm Area, March 1994 and August 1996, ENSR]
Air(indoor) ²		X		There are no buildings or structures built on top of contaminated soil or groundwater plumes.
Surface Soil (e.g., <2ft)		X		In the Former Underground Tank Farm Area, tanks were located below the surface and only soils deeper than 2 feet were affected. Surface soil sampling in the Bubbling area showed concentrations less than the RBC for soil. [references RFI for Bubbling Pond Area, May 1997, ENSR]
Surface Water	X			Frontera Creek is the closest surface water and it is approximately 300 ft from the Bubbling Puddle Study Area. Wells located between the Bubbling area and the creek show low levels of contamination, which are below the RBCs. Frontera Creek is also a Superfund site and has been extensively sampled. In 1995, clean-up of the site involved the excavation and off-site disposal of the mercury-contaminated soils and sediment were carried out. EPA determined that these actions were successful and removed the site from the NPL in 1998. There is no indication that the plume from the Bubbling Puddle areas or the former underground tank farm area has impacted

		the Creek. [references RFI for Bubbling Pond Area, May 1997, ENSR. Superfund ROD # R02-91/164]
Sediment	X	See above.
Subsurface (e.g., >2ft)	X	Methylene Chloride and MIBK were both found in the former tank farm area at levels exceeding the RBCs. MIBK was found at the Bubbling Puddle area above the RBC. [references RFI for Bubbling Pond Area, May 1997, ENSR; Phase I and Phase II Pre-Design Investigation for the former underground tank farm area, March 1994 and August 1996, ENSR]
Air (outdoor)	X	Health and safety data collected during the implementation of field studies did not indicate an ambient air problem related to the SWMUs or AOCs. [references RFI for Bubbling Puddle Study Area, May 1997, ENSR; Phase I and Phase II Pre-Design Investigation for the former tank farm, March 1994 and August 1996, ENSR]

_____ 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): An RCRA Facility Assessment was conducted in September 1987. It identified 19 SWMUs and AOCs. The RFA concluded 18 SWMUs and AOCs required no further action. The only CA unit requiring further investigation was the SWMU #3, the former underground tank farm area. In 1994, subsequent to the initiation of the RFI for the former tank farm, another SWMU area was identified where gas bubbles had been observed. This area, later designated as SWMU #20, Bubbling Puddle Study Area, was confirmed to be as a potential source of contamination. A regulated unit, Brule Incinerator (SWMU #21), has recently been closed and EPA intends to investigate the potential for groundwater contamination from that unit.

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.

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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)

“Contaminated” Media	Residents	Workers	Day-Care	Construction	Trespassers	Recreation	Food ³
Groundwater	N	N	N	Y	N	N	N
Air (indoors)							
Soil (surface, e.g., <2 ft)							
Surface Water	---	---			---	---	---
Sediment							
Soil (subsurface e.g., >2 ft)	N			Y			N
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).

X 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): ___ A complete pathway for exposure by residents, workers, day care and food does not exist. Groundwater contamination was found to be localized in the vicinity of the former underground tank farm and bubbling puddle areas. Drinking water in the area is obtained from a municipal water supply. If construction were to occur that included excavation in the former tank farm or bubbling puddle areas, construction workers could be exposed to contamination in subsurface soils and groundwater. As stated above, subsurface soil contamination is localized and these areas are located on Squibb property and are not used for food production.

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

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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)?

X 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): Construction in the Former Underground Tank Farm Area or Bubbling Puddle Study Area is not expected prior to remediation. Because these areas are subject to corrective action, construction in such areas could not be initiated without agreement from EPA. In the event that construction would be performed before cleanup could be completed, Squibb has indicated that appropriate health and safety procedures would be followed to protect any construction worker.

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.

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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): Not Applicable

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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 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 **Squibb Manufacturing Inc.** facility, EPA ID #**PRD090021056**, located at **State Road #3 KM77.5, Humaco, PR** 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 Original signed by _____ Date 09/30/99
Sin-Kie Tjho, Project Manager
RCRA Program Branch

Supervisor Original signed by _____ Date 09/30/99
Nicoletta DiForte, Section Chief
RCRA Program Branch
EPA Region 2

Approved by Original signed by _____ Date 09/30/99
Raymond Basso, Chief
RCRA Program Branch
EPA Region 2

Locations where References may be found:

U.S. Environmental Protection Agency - Region 2
RCRA File Room
290 Broadway - 15th Floor
New York, New York 10007

Contact telephone and e-mail numbers

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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.