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:	International Paper
Facility Address:	34040 Union Camp Drive, Franklin, VA 23851
Facility EPA ID #:	VAD003112265

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 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			See text below
Air (indoors) [2]		X		See text below
Surface Soil (e.g., <2 ft)	X			See text below
Surface Water	X			See text below
Sediment	X			See text below
Subsurf. Soil (e.g., >2 ft)	X			See text below
Air (outdoors)		X		See text below

___ 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):

International Paper has conducted investigations at the Facility between 1997 and 2000. These investigations have included the collection of surface and subsurface soil samples, sediment samples, surface water samples and the installation of temporary monitoring wells and collecting an initial round of groundwater samples.

Each media identified in this EI question is discussed briefly below:

Groundwater - Groundwater has been investigated and evaluated at each SWMU and area of the Facility. Chemicals have been detected in groundwater at concentrations slightly above regulatory levels (MCLs and the TTAL for lead). The key contaminants are benzene (38 ppb, regulatory level 5ppb), chromium (247ppb, regulatory level 100ppb), lead (64ppb, regulatory level 15ppb), thallium (7ppb, regulatory level 2ppb) and arsenic (170ppb, regulatory level 50ppb).

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.

Air (indoors) - Volatile organic chemicals (VOCs) are generally not chemicals of concern at the facility. The only location where VOCs are potential chemicals of concern are at SWMU 4 – Tall Oil Impoundments. This SWMU is not currently covered by a building, so indoor air is not of concern at this location.

Surface Soil (e.g., <2ft) - Surface soil has been investigated and evaluated at each SWMU and area of the Facility. Chemicals have been detected in surface soil at concentrations slightly above Region 3 Industrial and Residential RBCs. The key contaminants are arsenic (6.8ppm, regulatory level 3.8ppm) and benzo(a)pyrene (1.9ppm, regulatory level 0.78ppm

Surface Water - Surface water has been investigated at the SWMUs where surface water was present at the time of the site investigations (SWMU 4 – Tall Oil Impoundments and SWMU 8 – Wastewater Treatment System). In addition surface water samples were collected at Washole Creek and the Blackwater River, which border the site. Chemicals have been detected in surface water at concentrations slightly above screening levels (AWQCs, MCLs, and RBCs).

The key contaminant is thallium (4ppb, regulatory level 1.7ppb).

Sediment – Sediment has been investigated at SWMU 8, Wastewater Treatment System and the Bleach Plant Ditch, where sediment was present. In addition sediment samples were collected of Washole Creek and the Blackwater River, which border the site. Chemicals have been detected in sediment at concentrations slightly above Region 3 Industrial and Residential RBCs. The key contaminant is arsenic (10.6ppm, regulatory level 3.8ppm).

Subsurface Soil (e.g., >2 ft) - Subsurface soil has been investigated and evaluated at each SWMU and area of the Facility. Chemicals have been detected in subsurface soil at concentrations slightly above Region 3 Industrial and Residential RBCs. The key contaminants are arsenic (7.4ppm, regulatory level 3.8ppm) and benzo(a)pyrene (1.5ppm, regulatory level 0.78ppm)

Air (outdoors) - Volatile organic chemicals (VOCs) are generally not chemicals of concern at the Facility. The only location where VOCs are potential chemicals of concern are at SWMU 4 – Tall Oil Impoundments. The media containing the VOCs at this SWMU is a thick sludge and treatability tests have shown that significant levels of VOCs are not released under ambient conditions at this SWMU. Concentrations of SVOCs and inorganics in fugitive dust are expected to be minor and were not considered to be a pathway of concern.

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	NO	NO	NO	YES	NO	NO	NO
~~Air (indoors)~~	---	---	---	---	---	---	---
Soil (surface, e.g., <2 ft)	NO	YES	NO	YES	YES	NO	NO
Surface Water	NO	YES	NO	YES	YES	NO	NO
Sediment	NO	YES	NO	YES	YES	NO	NO
Soil (subsurface e.g., >2 ft)	NO	NO	NO	YES	NO	NO	NO
~~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).

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

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):

Each human receptor idenntified in this EI question is discussed briefly below:

Workers & Construction - For all new construction projects the facility project sponsor must fill out an Environmental Checklist. This checklist provides the environmental group the opportunity to review the

environmental conditions and to develop protective measures, if any, that must be implemented during the construction project. This checklist will inform the group of any contaminants which may be encountered as well as the protective clothing which will be necessary to complete the project. Additionally, any visiting personnel, must view a training video (or have that information communicated to them) that describes the environmental hazards at the site. For on-site workers, International Paper adheres to all applicable OSHA regulations and conducts regular training seminars for compliance with environmental regulations. International Paper has prepared risk assessments, and has relied on them to evaluate the protectiveness of on-site workers. Additionally, International Paper will conduct a Hazard Analysis of routine operations that occur in all SWMUs and Areas of Concern. This analysis will evaluate each principal step of the operation and maintenance procedure, identify potential environmental hazards and recommend controls, equipment, and training requirements to conduct the work in a safe manner that protects the workers from unacceptable contact with hazardous media at the SWMUs. These processes, therefore, insure the protectiveness of both the construction workers and on-site workers.

Trespassers - All areas of the facility where SWMUs exist are actively visited by International Paper personnel a minimum of once during each of the three 8-hour shifts. The active portion of the Facility is largely secured from trespassers by fences and the steep bank of the Blackwater River. Remedial activities have been implemented at all SWMUs located outside the active area of the Facility (except for the waste water treatment system) to remove all significant sources of contamination. Facility security and maintenance personnel conduct tours of the waste water treatment system seven times per day (four times per day by Facility security and 3 times per day by Facility maintenance), or on the average of once every four hours, so the potential of an undetected trespasser is highly unlikely. In addition, the facility will be installing a camera and posting signs in order to prevent trespassers. Specifically, a camera will be installed at an elevation and position to monitor potential trespassers to facility property. This camera will be integrated into International Paper's existing camera security system as an additional station. No Trespassing Signs and Restricted Area Signs will also be posted at each SWMU that is not controlled by either a soil cover or fence and will state that access is limited to authorized personnel only.

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."

__X__ 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):

All chemicals of interest which exceeded screen screening criteria, as described in question 2, were evaluated in site specific risk assessments for the pathways identified in question 3.

[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?

X 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):

International Paper has prepared human health and ecological risk assessments for the areas investigated at the Facility. These risk assessments evaluated potential current and future receptors, including an on-site worker and a trespassing teenager. The risk assessments also evaluated potential future construction workers. For SWMUs and areas that discharge groundwater, or are adjacent to the Blackwater River, the risk assessments also included recreational use of the river. Chemicals of interest were selected for the on-site worker and construction worker by screening all soil and sediment data against US EPA Region 3 Risk Based Concentrations (RBCs) for industrial soils and for the trespasser by screening against the US EPA Region 3 RBCs for residential soils. Chemicals of interest for groundwater for the construction worker were selected by screening against MCLs and where MCLs were not available, against US EPA Region 3 tap water RBCs. Chemicals of interest in surface water for the recreational teenager were selected by screening surface water data against US EPA AWQCs, MCLs where AWQCs were not available, and US EPA Region tap water RBCs where AWQCs or MCLs were not available. All receptors were assumed to be potentially exposed to chemicals of interest in soil/sediment via ingestion and dermal contact, and, where applicable, to chemicals of interest in groundwater or surface water via incidental ingestion and dermal contact.

The results of the human health risk assessment indicated that no adverse potentially carcinogenic or noncarcinogenic health effects would be expected to occur for an on-site worker, construction worker, trespassing child, or recreational users of surface water under both current and reasonably foreseeable future conditions. The risk assessments indicate that direct contact with soil, sediment, groundwater, and surface water will not result in adverse health effects.

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 International Paper facility, EPA ID #VAD003112265, located at 34040 Union Camp Drive, Franklin, VA 23851 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)	/s/	Date 9/26/03
	(print)	Denis M. Zielinski	
	(title)	Senior RPM	

Supervisor	(signature)	/s/	Date 9/29/03
	(print)	Bob Greaves	
	(title)	Chief, RCRA Operations Branch	
	(EPA Region or State)	EPA Region III	

Locations where References may be found:

U.S. EPA, Region III
1650 Arch Street
Philadelphia, PA 19103

Contact telephone and e-mail numbers:

(name)	Denis M. Zielinski
(phone #)	215-814-3431
(e-mail)	zielinski.denis@epa.gov

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.