Documentation of Environmental Indicator Determination
in accordance with EPA Interim Final Guidance 2/5/99

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

Current Human Exposures Under Control

Facility Name: INTERNATIONAL PAPER COMPANY
Facility Address: 2609 South Rangeline, Joplin, Missouri
Facility EPA ID #: MOD007129935

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 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 EIs 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 EIs 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 is 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 the RCRA Info national database ONLY as long as they remain true (i.e., RCRA Info 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 [e.g., Maximum Contaminant Levels (MCLs), the maximum permissible level of a contaminant in water delivered to any user of a public water system under the Safe Drinking Water Act]) from releases subject to RCRA Corrective Action (from SWMUs, RUs or AOCs)?

	Yes	No	?	Rationale / Key Contaminants
Groundwater	X	___	___	The groundwater has levels of hazardous constituents present that exceed the Groundwater Protection Standards established in the facility post-closure permit. These standards are based on applicable health-based criteria for drinking water systems. Hazardous constituents include naphthalenes, chloro-phenolic compounds, and other PAH's.
Air (indoors) [2]	___	X	___	The facility has no enclosed structures containing or overlying hazardous constituents, and the hazardous constituents present have a low volatility.
Surface Soil (e.g., <2 ft)	X	___	___	The landfarms contain hazardous constituents exceeding the Clean Up Levels for Missouri (CALM) Scenario C levels. Hazardous constituents include napthalenes, chloro-phenolic compounds, and other PAHs.

Surface Water	___	X	___	The 2002 Annual Corrective Action Effectiveness Report and first quarter 2003 sampling shows that dioxins/furans were present in 2002. However, when using 2378-TCDD Toxicity Equivalent Factors (TEFs) and summing up the concentrations of the compounds present, the totals on average meet the EPA Maximum Concentration Level (MCL) for drinking water, and this is intermittent surface water, not drinking water.
Sediment	___	X	___	The 2002 Annual Corrective Action Effectiveness Report and first quarter 2003 sampling shows that dioxins/furans were present in 2002. However, when using 2378-TCDD Toxicity Equivalent Factors (TEFs) and summing up the concentrations of the compounds present, the totals are below the levels set for residential soil in the EPA April 18, 1998 memorandum titled *Approach for Addressing Dioxin in Soil at CERCLA and RCRA Sites*.
Subsurf. Soil (e.g., >2 ft)	X	___	___	Subsurface soils are assumed to be affected by the occasional presence of non-aqueous phase liquid in groundwater. Soils in the range of groundwater fluctuation may contain the same contaminant constituents as are present in groundwater.
Air (outdoors)	___	X	___	A July 1998 risk-assessment performed by International Paper and approved by The Missouri Department of Health showed that risk of hazardous constituents in outdoor air was minimal due to the low volatility of the contaminants and the dust suppression techniques used by the facility. This risk has been further reduced due to a cap being placed over the soil treatment beds.

_____ 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): All data for the above media was taken from the International Paper document *2002 Annual Corrective Action Program Effectiveness Report,* the June 17, 1998 document entitled *Summary of Soil Trenching Data*, the August 2001 document entitled *Post-Closure Plan For Landfarms 5 and 7 and Closure Plan for Landfarms 1 and 4*, and the July 1998 document entitled *Technical Memorandum, Focused Risk Assessment for Treatment Cell Soils at the International Paper Treated Wood Products Facility in Joplin, Missouri*, except where noted. Tables showing the TEF calculations for surface water and sediment for 2002 and 2003, and tables showing the surface water monitoring for 2003 are attached.

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) suggests 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?

Summary Exposure Pathway Evaluation Table

Potential **Human Receptors** (Under Current Conditions)

"Contaminated" Media	Residents	Workers	Day-Care	Construction	Trespassers	Recreation	Food[3]
Groundwater	NO	YES	NO	NO			NO
~~Air (indoors)~~							
Soil (surface, e.g., <2 ft)	NO	NO	NO	NO	NO	NO	NO
~~Surface Water~~							
~~Sediment~~							

Soil (subsurface e.g., >2 ft) YES 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).

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):
Groundwater: The pumping system in place at the site keeps the contamination plume under hydraulic control and this groundwater is not used for drinking water or production purposes, so no exposure exists for residents, daycare, or food. The depth to groundwater under pumping conditions is from 10 to 15 feet below ground surface. This should eliminate the exposure pathway for construction. The only complete pathway that exists for groundwater is worker ingestion or dermal exposure during groundwater sampling and analysis procedures.

Surface Soil: Soil treatment Landfarms 5 and 7 have been covered with an HDPE liner, geotextile fabric, soil layer, and concrete cap. Landfarms 1 and 4 have been closed and all contaminated soil removed to levels prescribed in the approved closure plan. Some levels of pentachlorphenol exceeding CALM Scenario C do exist in soils remaining in the area of Landfarm 4, but both areas are covered with clean soil layer at least eight inches thick. Disturbance of both this soil layer and the caps over Landfarms 5 and 7 is prohibited under International Paper's hazardous waste facility permit. Therefore, no complete exposure pathways for surface soil exist at this facility.

Subsurface Soil: No food production is impacted by the operations of this facility. Due to the possible presence of subsurface soil contamination there is a possible exposure pathway to construction workers if construction activity disturbs subsurface soil.

[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)?

   __X__ If no (exposures cannot 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): All employees dealing with hazardous constituents, whether in soil or water, are OSHA trained environmental workers and use personal protective equipment when dealing with any contaminated areas or materials. Workers decontaminate or dispose of all protective wear after use. These same precautions are required of outside contractors brought in for construction activities on-site. Access to the site is strictly controlled. The entire facility is locked and gated, with security at the gate and periodic patrols of the facility. Warning signs are posted at all areas containing hazardous constituents.

[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 RCRA Info 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 Company facility, EPA ID #MOD007129935, located at Joplin, Missouri 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 Brian McCurren Date 8/27/03
(Print) Brian McCurren
(Title) Environmental Engineer II

Supervisor: Original Signed by Richard A. Nussbaum Date 8/27/03
(Print) Richard A. Nussbaum, P.E., R.G
(Title) Acting Chief, Land Disposal/PCB Permits Unit
Permits Section, Hazardous Waste Program
(EPA Region or State) Missouri Department of Natural Resources

Locations where References may be found:
Missouri Department of Natural Resources' Hazardous Waste Program TSD Files, International Paper Company, Joplin, Missouri

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.

ref: ***ca725epa.doc***