US ERA ARCHIVE DOCUMENT

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 Ad	ss: 2325 Daniels Street, Madison, Wisconsin 53718
Facility EP	D#: WID 980 896 633
gro Ma	l available relevant/significant information on known and reasonably suspected releases to soil, water, surface water/sediments, and air, subject to RCRA Corrective Action (e.g., from Solid Waste ement Units (SWMU), Regulated Units (RU), and Areas of Concern (AOC)), been considered in this rmination?
	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

Facility Name:

Definition of Environmental Indicators (for the RCRA Corrective Action)

Safety-Kleen Madison

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" 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)?

Groundwater	<u>Yes</u> ✓	<u>No</u>	?	Rationale / Key Contaminants Cis 1,2-DCE once above MCL, consistantly above WI PAL. Methylene chloride, PCE, TCE, and vinyl chloride above the WI PAL.
Air (indoors) ²		/		Air releases from units with potential actively controlled by CC regs.
Surface Soil (e.g., <2 ft)		•		Releases to soil, not exceeding human exposure screening criterion. Several detections do exceed release to groundwater screening levels. Groundwater is already under investigation.
Surface Water		•		PA/VSI indicates low to moderate potential for release to SW. Releases to soil were detected but low.
Sediment		•		PA/VSI indicates low to moderate potential for release to SW. Releases to soil were detected but low.
Subsurf. Soil (e.g., >2 ft)		/		See response to surface soils above.
Air (outdoors)		•		Air releases from units with potential actively controlled by CC regs.

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.



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):

A.T. Kearney, Inc., RCRA Facility Assessment, Preliminary Review/Visual Site Inspection, March 1989

Low to moderate potential for release to surface water.

Canonie Environmental Services Corporation, *Release Assessment Report for the Safety-Kleen Madison, Wisconsin Service Center*, December 1991, and Periodic groundwater monitoring analytical reports from 1995 through 1999.

Cis 1,2-DCE detections in groundwater (up to 96 μ g/L) exceed the MCL of 70 μ g/L in 1991. Cis 1,2-DCE always above (up to 44 μ g/L) the WI PAL of 7 μ g/L in MW3 and MW4 (downgradient) since 1995. Methylene chloride, PCE, TCE, and vinyl chloride have appeared consistantly above the WI PAL since June 1998 in MW4. Methylene chloride as high as 1.8 μ g/L exceeding a WI PAL of 0.5 μ g/L. PCE as high as 1.9 μ g/L exceeding a WI PAL of 0.5 μ g/L. TCE as high as 1.1 μ g/L exceeding a PAL of 0.5 μ g/L. Vinyl chloride as high as 1.0 μ g/L exceeding a WI PAL of 0.02 μ g/L. (Canonie Environmental Services Corporation, *Release Assessment Report for the Safety-Kleen Madison, Wisconsin Service Center*, December 1991, and periodic groundwater monitoring analytical reports from 1995 through 1999.

There is no information that currently indicates that the low level VOCs in groundwater are causing indoor air problems at the facility. This condition is deemed sufficient by the Region for justifying that indoor air is currently under control. However, future investigations at the facility will iclude air sampling in on-site buildings to further demonstrate this justification.

The facility proviided more recent information on spills and releases of wastes. The spills were all relatively small

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spills which the facility stated were promptly remediated (October 6, 1999, phone conversation with Bob Schoepke, Safety-Kleen).

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

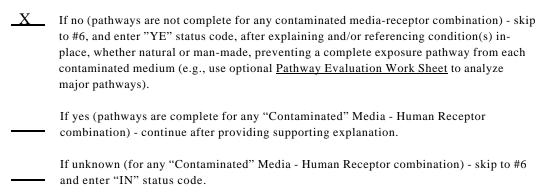
Potential **Human Receptors** (Under Current Conditions)

"Contaminated" Media Residen	nts	Workers	Day-Care	Construction	Trespassers	Recreation	$Food^3$
Groundwater	X	no	X	X	no	X	X
Air (indoors)	X	X	X	X	X	X	X
Soil (surface, e.g., <2 ft)	X	X	X	X	X	X	X
Surface Water	X	X	X	X	X	X	X
Sediment	X	X	X	X	X	X	X
Soil (subsurface e.g., >2 ft)	X	X	X	X	X	X	X
Air (outdoors)	X	X	X	X	x	X	X

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.



Rationale and Reference(s):

On-site exposures to contaminated groundwater do not occur because groundwater is not used for any purpose at the facility (October 6, 1999, phone conversation with Bob Schoepke, Safety-Kleen).

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" (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 "IN" status code Rationale and Reference(s):					
	Nationale and Neterine (8).					

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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	If yes (all "significant" exposures have been shown to be within acceptable limits) - continue and enter "YE" after summarizing <u>and</u> 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

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6.	(CA725), and ob	tain Supervis		nman Exposures Under Control EI event coor gnature and date on the EI determination be a map of the facility):	
	_X	review of the are expecte WID 980 89 reasonably	ne information contained in this I d to be "Under Control" at the Sa 96 633 located at 2325 Daniels S	Street, Madison, Wisconsin under current ar mination will be re-evaluated when the	
		NO - "Cur	rent Human Exposures" are NOT	T "Under Control."	
		IN - More	e information is needed to make	a determination.	
	Completed by	(signature)		Date 12/09/99	
		(print)	Todd D. Ramaly		
		(title)	Environmental Engineer		
	Supervisor	(signature)		Date	
		(print)	Harriet Croke		
		(title)	Section Chief		
		(EPA Regi	ion or State) Region 5		
	Locations where	e References	may be found:		
	77 West Jackso Chicago, Illinois				
	Contact telephor	ne and e-mail	numbers		
	(name)	Todd	l D. Ramaly		
	(phone	-	353-9317	_	
	(e-mail) rama	lly.todd@epa.gov		

FINAL NOTE: THE HUMAN EXPOSURES ELIS 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.

DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION

Interim Final 2/5/99

RCRA Corrective Action Environmental Indicator (EI) RCRIS code (CA750)

Migration of Contaminated Groundwater Under Control

Facility Address:	2325 Daniels Street, Madison, Wisconsin 53718
Facility EPA ID#	WID 980 896 633
groundwater i	ble relevant/significant information on known and reasonably suspected releases to the nedia, subject to RCRA Corrective Action (e.g., from Solid Waste Management Units gulated 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

Facility Name:

Definition of Environmental Indicators (for the RCRA Corrective Action)

Safety-Kleen Madison

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.

<u>Definition of "Migration of Contaminated Groundwater Under Control" EI</u>

A positive "Migration of Contaminated Groundwater Under Control" EI determination ("YE" status code) indicates that the migration of "contaminated" groundwater has stabilized, and that monitoring will be conducted to confirm that contaminated groundwater remains within the original "area of contaminated groundwater" (for all groundwater "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 "Migration of Contaminated Groundwater Under Control" EI pertains ONLY to the physical migration (i.e., further spread) of contaminated ground water and contaminants within groundwater (e.g., non-aqueous phase liquids or NAPLs). Achieving this EI does not substitute for achieving other stabilization or final remedy requirements and expectations associated with sources of contamination and the need to restore, wherever practicable, contaminated groundwater to be suitable for its designated current and future uses.

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.	Is groundwater known or reasonably suspected to be "contaminated" above appropriately protective
	"levels" (i.e., applicable promulgated standards, as well as other appropriate standards, guidelines,
	guidance, or criteria) from releases subject to RCRA Corrective Action, anywhere at, or from, the facility?

<u>/</u>	If yes - continue after identifying key contaminants, citing appropriate "levels," and referencing supporting documentation.
	If no - skip to #8 and enter "YE" status code, after citing appropriate "levels," and referencing supporting documentation to demonstrate that groundwater is not "contaminated."
	If unknown - skip to #8 and enter "IN" status code.

Rationale and Reference(s):

Canonie Environmental Services Corporation, Release Assessment Report for the Safety-Kleen Madison, Wisconsin Service Center, December 1991, and Periodic groundwater monitoring analytical reports from 1995 through 1999.

Cis 1,2-DCE detections in groundwater (up to 96 μ g/L) exceed the MCL of 70 μ g/L in 1991. Cis 1,2-DCE always above (up to 44 μ g/L) the WI PAL of 7 μ g/L in MW3 and MW4 (downgradient) since 1995. Methylene chloride, PCE, TCE, and vinyl chloride have appeared consistantly above the WI PAL since June 1998 in MW4. Methylene chloride as high as 1.8 μ g/L exceeding a WI PAL of 0.5 μ g/L. PCE as high as 1.9 μ g/L exceeding a WI PAL of 0.5 μ g/L. Vinyl chloride as high as 1.0 μ g/L exceeding a WI PAL of 0.02 μ g/L.

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 appropriate "levels" (appropriate for the protection of the groundwater resource and its beneficial uses).

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3.	expected to rema	on of contaminated groundwater stabilized (such that contaminated groundwater is in within "existing area of contaminated groundwater" as defined by the monitoring ated at the time of this determination)?
		If yes - continue, after presenting or referencing the physical evidence (e.g., groundwater sampling/measurement/migration barrier data) and rationale why contaminated groundwater is expected to remain within the (horizontal or vertical) dimensions of the "existing area of groundwater contamination" ²).
		If no (contaminated groundwater is observed or expected to migrate beyond the designated locations defining the "existing area of groundwater contamination" ²) - skip to #8 and enter "NO" status code, after providing an explanation.
		If unknown - skip to #8 and enter "IN" status code.
	Rationale and Re	eference(s):

Delineation of the vertical and horizontal extent of VOC contamination needs to completed before the plume can be evaluated as stabilized.

² "existing area of contaminated groundwater" is an area (with horizontal and vertical dimensions) that has been verifiably demonstrated to contain all relevant groundwater contamination for this determination, and is defined by designated (monitoring) locations proximate to the outer perimeter of "contamination" that can and will be sampled/tested in the future to physically verify that all "contaminated" groundwater remains within this area, and that the further migration of "contaminated" groundwater is not occurring. Reasonable allowances in the proximity of the monitoring locations are permissible to incorporate formal remedy decisions (i.e., including public participation) allowing a limited area for natural attenuation.

4.	Does "contaminated" groundwater discharge into surface water bodies?				
		If yes - continue after identifying potentially affected surface water bodies.			
		If no - skip to #7 (and enter a "YE" status code in #8, if #7 = yes) after providing an explanation and/or referencing documentation supporting that groundwater "contamination" does not enter surface water bodies.			
	<u> </u>	If unknown - skip to #8 and enter "IN" status code.			
	Rationale and Re	ference(s):			

Migration pathways for contaminated groundwater need to be further evaluated to determine the potential for discharge to surface water.

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5.	maximum concent appropriate groun discharging conta	of "contaminated" groundwater into surface water likely to be "insignificant" (i.e., the ration ³ of each contaminant discharging into surface water is less than 10 times their dwater "level," and there are no other conditions (e.g., the nature, and number, of minants, or environmental setting), which significantly increase the potential for acts to surface water, sediments, or eco-systems at these concentrations)?
		If yes - skip to #7 (and enter "YE" status code in #8 if #7 = yes), after documenting: 1) the maximum known or reasonably suspected concentration ³ of <u>key</u> contaminants discharged above their groundwater "level," the value of the appropriate "level(s)," and if there is evidence that the concentrations are increasing; and 2) provide a statement of professional judgement/explanation (or reference documentation) supporting that the discharge of groundwater contaminants into the surface water is not anticipated to have unacceptable impacts to the receiving surface water, sediments, or eco-system.
		If no - (the discharge of "contaminated" groundwater into surface water is potentially significant) - continue after documenting: 1) the maximum known or reasonably suspected concentration ³ of <u>each</u> contaminant discharged above its groundwater "level," the value of the appropriate "level(s)," and if there is evidence that the concentrations are increasing; and 2) for any contaminants discharging into surface water in concentrations greater than 100 times their appropriate groundwater "levels," the estimated total amount (mass in kg/yr) of each of these contaminants that are being discharged (loaded) into the surface water body (at the time of the determination), and identify if there is evidence that the amount of discharging contaminants is increasing.
	<u> </u>	If unknown - enter "IN" status code in #8.

 $^{^3}$ As measured in groundwater prior to entry to the groundwater-surface water/sediment interaction (e.g., hyporheic) zone.

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6.	Can the discharge of "contaminated" groundwater into surface water be shown to be " currently acceptable " (i.e., not cause impacts to surface water, sediments or eco-systems that should not be allowed to continue until a final remedy decision can be made and implemented ⁴)?				
		If yes - continue after either: 1) identifying the Final Remedy decision incorporating these conditions, or other site-specific criteria (developed for the protection of the site's surface water, sediments, and eco-systems), and referencing supporting documentation demonstrating that these criteria are not exceeded by the discharging groundwater; OR 2) providing or referencing an interim-assessment, ⁵ appropriate to the potential for impact, that shows the discharge of groundwater contaminants into the surface water is (in the opinion of a trained specialists, including ecologist) adequately protective of receiving surface water, sediments, and eco-systems, until such time when a full assessment and final remedy decision can be made. Factors which should be considered in the interim-assessment (where appropriate to help identify the impact associated with discharging groundwater) include: surface water body size, flow, use/classification/habitats and contaminant loading limits, other sources of surface water/sediment contamination, surface water and sediment sample results and comparisons to available and appropriate surface water and sediment "levels," as well as any other factors, such as effects on ecological receptors (e.g., via bio-assays/benthic surveys or site-specific ecological Risk Assessments), that the overseeing regulatory agency would deem appropriate for making the EI determination.			
		If no - (the discharge of "contaminated" groundwater can not be shown to be " currently acceptable ") - skip to #8 and enter "NO" status code, after documenting the currently unacceptable impacts to the surface water body, sediments, and/or eco-systems.			
		If unknown - skip to 8 and enter "IN" status code.			

⁴ Note, because areas of inflowing groundwater can be critical habitats (e.g., nurseries or thermal refugia) for many species, appropriate specialist (e.g., ecologist) should be included in management decisions that could eliminate these areas by significantly altering or reversing groundwater flow pathways near surface water bodies.

⁵ The understanding of the impacts of contaminated groundwater discharges into surface water bodies is a rapidly developing field and reviewers are encouraged to look to the latest guidance for the appropriate methods and scale of demonstration to be reasonably certain that discharges are not causing currently unacceptable impacts to the surface waters, sediments or eco-systems.

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7.	Will groundwater monitoring / measurement data (and surface water/sediment/ecological data, as necessary) be collected in the future to verify that contaminated groundwater has remained within the horizontal (or vertical, as necessary) dimensions of the "existing area of contaminated groundwater?"				
	If yes - continue after providing or citing documentation for planned activities or future sampling/measurement events. Specifically identify the well/measurement locations which will be tested in the future to verify the expectation (identified in #3) that groundwater contamination will not be migrating horizontally (or vertically, as necessary) beyond the "existing area of groundwater contamination."				
	If no - enter "NO" status code in #8.				
	If unknown - enter "IN" status code in #8.				
	Detionals and Deference(s):				

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Check the appropriate RCRIS status codes for the Migration of Contaminated Groundwater Under Contage EI (event code CA750), and obtain Supervisor (or appropriate Manager) signature and date on the EI determination below (attach appropriate supporting documentation as well as a map of the facility).							
	verified. it has bee	YE - Yes, "Migration of Contaminated Groundwater Under Control" has been verified. Based on a review of the information contained in this EI determination, it has been determined that the "Migration of Contaminated Groundwater" is "Under Control" at the					
		facility , EPA ID #					
	at	Specifically, this					
	under con contamin groundwa	determination indicates that the migration of "contaminated" groundwater is under control, and that monitoring will be conducted to confirm that contaminated groundwater remains within the "existing area of contaminated groundwater" This determination will be re-evaluated when the Agency becomes aware of significant changes at the facility.					
NO - Unacceptable migration of contaminated groundwater is observed or example. IN - More information is needed to make a determination.							
Completed by	oy (signatu	re)	Date 9/30/99				
	(print)						
	(title)	Environmental Engineer					
Supervisor	(signatu	re)	Date				
	(print)	Harriet Croke					
	(title)	Section Chief					
	(EPA Re	egion or State) Region 5					
Locations where References may be found:							
77 West Jac Chicago, Illi							
Contact telep	hone and e-ma	ail numbers					
(na	me) <u>To</u>	dd D. Ramaly					
(ph	one #) (31	(312) 353-9317					
(e-1	nail) rar	maly.todd@epa.gov					