United States
Environmental Protection
Agency

EMERGENCY PLANNING AND COMMUNITY RIGHT-TO-KNOW ACT SECTION 313

EPCRA/TRI TRAINING MATERIALS:

Spring 1999

EMERGENCY PLANNING AND COMMUNITY RIGHT TO KNOW ACT (EPCRA) OVERVIEW AND PURPOSE

WHY EPCRA?

- Key hazardous chemical releases
  - Bhopal, India (1984)
  - Institute, West Virginia (1985)
- Increased public concern
- Worker right-to-know laws
  - OSHA Hazard Communication Standard (HAZCOM)
- State right-to-know laws

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EPCRA OVERVIEW

- **Purpose of Emergency Planning**
  - Protect public health and safety, and the environment
  - Integrate with local emergency planning efforts
- **Purpose of Community Right-to-Know**
  - Support and focus state and local planning activities
  - Increase community awareness of chemical hazards
  - Support chemical accident and pollution prevention initiatives

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EPCRA OVERVIEW

- **Summary Chart of EPCRA Requirements for RY 1998 (as of January 1, 1999)**

SECTION	COVERAGE/ TOPIC	REQUIREMENT	RELEVANT CHEMICAL LIST	THRESHOLDS	SUBMIT TO
301-303	Emergency Planning	LEPC Emergency Plan, EHS Notification	356 Extremely Hazardous Substances	Specified Threshold Planning Quantities (TPQ: 1 to 10,000 lbs.)	SERC* LEPC
304	Emergency Notification	Accidental Release Reporting	EHSs and CERCLA §102(a) Substances	Specified Reportable Quantities	SERC* LEPC
311	Hazardous Chemical Inventory	MSDSs or List of Chemicals	OSHA Hazardous Chemicals (No Specific List)	10,000 lbs.; or, if EHS, 500 lbs. or TPQ - whichever is lower	SERC* LEPC Local Fire Dept.
312	Hazardous Chemical Inventory	Inventories, Hazards, and Locations (Tier I or II)	OSHA Hazardous Chemicals (No Specific List)	10,000 lbs.; or, if EHS, 500 lbs. or TPQ - whichever is lower	SERC* LEPC Local Fire Dept.
313	Toxic Chemical Release Reporting	Total Annual Release, Waste Management & Source Reduction Data - PPA (Form R)	Over 600 Toxic Chemicals and Chemical Categories	25,000 lbs. manufactured or processed; 10,000 lbs. otherwise used	EPA State

* or TERC, 55 FR 30632 (July 26, 1990)

EPCRA SECTIONS 301 - 303
EMERGENCY PLANNING

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EMERGENCY PLANNING REQUIREMENTS (EPCRA SECTIONS 301 - 303)

Section 301:	**Establish State Emergency Response Commissions (SERCs), designate local emergency planning districts, and appoint Local Emergency Planning Committees (LEPCs) for each district**
Section 302:	**Designate extremely hazardous substances (EHSs) and threshold planning quantities and notification requirements for covered facilities**
Section 303:	**Develop local emergency response plans**

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EMERGENCY PLANNING INFRASTRUCTURE

- How state and local emergency planning infrastructure is established
  - Governor designates state emergency response commission (SERC) and SERC membership; or Tribal chief executive officer designates tribal emergency response commission (TERC)
  - SERC designates local emergency planning districts within state
  - SERC appoints members of local emergency planning committee (LEPC) for each planning district
    - Membership includes industry, police department, fire department, elected officials, and the general public

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EXTREMELY HAZARDOUS SUBSTANCES (EPCRA SECTION 302)

- Selection criteria are based on acute lethal toxicity
- 356 chemicals currently designated as EHSs
  - Overlap of 138 chemicals with CERCLA hazardous substances
- EPA can revise the list by adding or deleting
- Substances identified in 40 CFR part 355

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FACILITY NOTIFICATION REQUIREMENTS (EPCRA SECTION 302)

- Facilities subject to emergency planning requirements
  - Any facility (e.g., warehouses, manufacturers) that:
    - » Has a quantity of EHS present at any one time that meets or exceeds specified threshold planning quantity (TPQ),

      or
    - » Is designated for participation by SERC

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EMERGENCY PLANNING REQUIREMENTS (EPCRA SECTIONS 302 - 303)

- Planning notification
  - Notify SERC or TERC and LEPC
  - Designate facility emergency coordinator
  - Supply LEPC with planning information, as requested
  - Coordinate emergency response planning with community

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EPCRA SECTION 304
EMERGENCY RELEASE NOTIFICATION

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EMERGENCY RELEASE NOTIFICATION

- **Releases of EHSs (40 CFR 355) or Hazardous Substances (40 CFR 302.4) in a reportable quantity (RQ)**
  - **RQ set by U.S. EPA through rulemaking**
  - **If RQ not set by EPA, statutory RQ of one pound applies**
  - **RQ is specified quantity released within a rolling 24-hour period**

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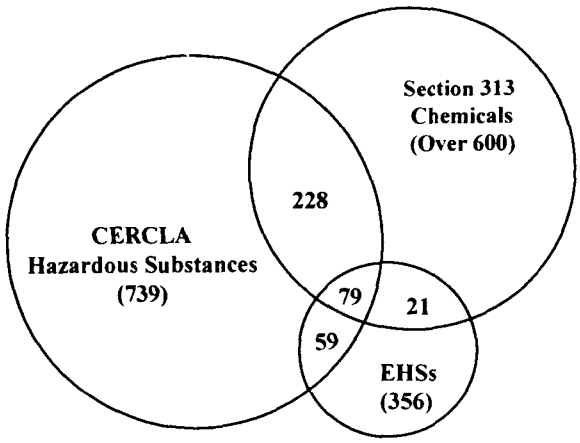
REGULATED SUBSTANCES



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EMERGENCY RELEASE NOTIFICATION

- Initial immediate notification (via telephone, radio, or in person)
  - For EPCRA section 304 chemicals & CERCLA section 103 chemicals, notify:
    - » SERCs or TERCs of any state or Tribe likely to be affected by release
    - » Emergency coordinators for LEPCs of any area likely to be affected by release
  - For CERCLA section 103 chemicals only, notify:
    - » National Response Center (NRC)
- Follow-up written notifications required for non-transportation related releases

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EMERGENCY RELEASE NOTIFICATION

- **Reduced reporting for continuous releases**
  - **Initial notification to the SERC, LEPC, and/or NRC**
  - **Initial written follow-up to SERC, LEPC, and/or EPA regional offices**
  - **One-time written follow-up report to EPA regional office one year later (for CERCLA hazardous substances only)**
  - **Subsequent notification of any statistically significant increases or other changes in the release**

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EMERGENCY RELEASE NOTIFICATION

- **Releases that are "continuous" and "stable in quantity and rate"**
  - **"Continuous"**
    - **Occurs without interruption or abatement; or**
    - **Is routine, anticipated, intermittent, and incidental to normal operations or treatment processes**
  - **"Stable in quantity and rate"**
    - **Is predictable and regular in amount and rate of emission**
- **Continuous releases exclude:**
  - **Accidents**
  - **System upsets and malfunctions**
  - **Statistically predicted upsets**

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EMERGENCY RELEASE NOTIFICATION

- CERCLA section 103 versus EPCRA section 304

	CERCLA Section 103	EPCRA Section 304
Chemicals Covered	CERCLA hazardous substances (40 CFR 302.4)	CERCLA hazardous substances (40 CFR 302.4) EPCRA Section 302 EHS (Appendix A to 40 CFR 355)
Releases Covered	Any release into the environment	Any release with potential for exposure to persons off-site
Notification Requirements	NRC	LEPC(s) SERC(s) TERC(s)

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EPCRA SECTIONS 311 - 312 HAZARDOUS CHEMICAL INVENTORY REPORTING

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EPCRA SECTIONS 311 - 312

- Chemical inventory reporting
  - Section 311 - Material Safety Data Sheets (MSDSs)
  - Section 312 - Tier I or Tier II forms

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EPCRA SECTIONS 311 - 312

- Regulated facilities
  - Facilities subject to OSHA's HAZCOM (29 CFR 1910.1200)
    - » No specific list of hazardous chemicals
    - » HAZCOM applies to broad categories of chemicals, including any chemical that poses a physical or health hazard

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EPCRA SECTIONS 311 - 312

- Regulated chemicals and reporting thresholds
  - 500 pounds or TPQ, whichever is less, for EHSs (include any EHS in a mixture)
  - 10,000 pounds for other OSHA hazardous chemicals
  - Maximum quantity on-site at any one time
    - » Must aggregate EHS quantities present in raw materials and all mixtures

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EPCRA SECTIONS 311 - 312

- Submit sections 311 and 312 information to:
  - SERC or TERC
  - LEPC
  - Local fire department

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EPCRA SECTIONS 311 - 312

- Reporting for mixtures
  - Report on mixtures as a whole or by hazardous components
  - Choose either reporting method
  - Maintain consistent method for reporting under EPCRA sections 311 and 312

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MSDS REPORTING (EPCRA SECTION 311)

- Section 311 reporting requirements
  - Material Safety Data Sheets (MSDSs), or
  - List of hazardous chemicals grouped by EPA's five physical and health hazard categories
    - » Fire
    - » Sudden release of pressure
    - » Reactivity
    - » Immediate (acute)
    - » Delayed (chronic)

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MSDS REPORTING (EPCRA SECTION 311)

- Submit original list or copies of MSDSs within 90 days of exceeding reporting thresholds
- Update submission within 90 days of obtaining significant new information

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TIER I AND TIER II REPORTING (EPCRA SECTION 312)

- Section 312 reporting requirements
  - Report chemical information by five hazard categories on Tier I form
  - Report chemical-specific information on Tier II form (optional under EPCRA, but required by many states)
  - Submit reports annually on or before March 1 for previous calendar year's activities

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Form Approved OMB No. 2050-0072

Revised June 1990

TIER ONE

EMERGENCY AND HAZARDOUS CHEMICAL INVENTORY

Aggregate Information by Hazard Type

FOR OFFICIAL USE ONLY

ID #

Date Received

Important: Read instructions before completing form

Reporting Period From January 1 to December 31, 19____

Facility Identification

Name _____

Street _____

City _____ County _____ State _____ Zip _____

SIC Code ☐☐ Dun & Brad # ☐☐ - ☐☐☐☐ - ☐☐

Emergency Contacts

Name _____
Title _____
Phone _____
24 Hour Phone _____

Name _____
Title _____
Phone _____
24 Hour Phone _____

☐ Check if information below is identical to the information submitted last year

Owner/Operator

Name _____
Mail Address _____
Phone _____

Hazard Type	*Max Amount**	*Average Daily Amount**	*Number of days On-Site*	*General Location*	☐ *Check if site plan is attached*
Fire	☐☐	☐☐	☐☐☐		
Sudden Release of Pressure	☐☐	☐☐	☐☐☐		
Reactivity	☐☐	☐☐	☐☐☐		
Immediate (acute)	☐☐	☐☐	☐☐☐		
Delayed (Chronic)	☐☐	☐☐	☐☐☐		

Certification (Read and sign after completing all sections)

I certify under penalty of law that I have personally examined and am familiar with the information submitted in pages one through _____, and that based on my inquiry of those individuals responsible for obtaining the information, I believe that the submitted information is true, accurate and complete.

_____
Name and official title of owner/operator OR owner/operator's authorized representative

_____ _____
Signature Date signed

* Reporting Ranges

Range Code	Weight Range in Pounds From ...	To ...
01	0	99
02	100	999
03	1000	9,999
04	10,000	99,999
05	100,000	999,999
06	1,000,000	9,999,999
07	10,000,000	49,999,999
08	50,000,000	99,999,999
09	100,000,000	499,999,999
10	500,000,000	999,999,999
11	1 billion	higher than 1 billion

Form Approved OMB No. 2050-0072

Tier Two EMERGENCY AND HAZARDOUS CHEMICAL INVENTORY

Specific Information by Chemical

Facility Identification

Name _____

Street _____

City _____ County _____ State _____ Zip _____

SIC Code _____ Dun & Brad Number _____

FOR OFFICIAL USE ONLY

ID # _____

Date Received _____

Owner/Operator Name

Name _____ Phone ( ) _____

Mail Address _____

Emergency Contact

Name _____ Title _____

Phone ( ) _____ 24 Hr. Phone ( ) _____

Name _____ Title _____

Phone ( ) _____ 24 Hr. Phone ( ) _____

Important: Read all instructions before completing form

Reporting Period From January 1 to December 31, 19 ____

[ ] Check if information below is identical to the information submitted last year.

Chemical Description

CAS _____ Trade Secret _____

Chem. Name _____

Check all that apply [ ] Pure [ ] Mix [ ] Solid [ ] Liquid [ ] Gas [ ] EHS

EHS Name _____

Physical and Health Hazards *(check all that apply)*

[ ] Fire
[ ] Sudden Release of Pressure
[ ] Reactivity
[ ] Immediate (acute)
[ ] Delayed (chronic)

Inventory

Max. Daily Amount (code) ____

Avg. Daily Amount (code) ____

No. of Days On-site (days) ____

Container Type | Pressure | Temperature

Storage Codes and Locations (Non-Confidential)

Storage Locations

Optional [ ]

CAS _____ Trade Secret _____

Chem. Name _____

Check all that apply [ ] Pure [ ] Mix [ ] Solid [ ] Liquid [ ] Gas [ ] EHS

EHS Name _____

[ ] Fire
[ ] Sudden Release of Pressure
[ ] Reactivity
[ ] Immediate (acute)
[ ] Delayed (chronic)

Max. Daily Amount (code) ____

Avg. Daily Amount (code) ____

No. of Days On-site (days) ____

Container Type | Pressure | Temperature

Optional [ ]

CAS _____ Trade Secret _____

Chem. Name _____

Check all that apply [ ] Pure [ ] Mix [ ] Solid [ ] Liquid [ ] Gas [ ] EHS

EHS Name _____

[ ] Fire
[ ] Sudden Release of Pressure
[ ] Reactivity
[ ] Immediate (acute)
[ ] Delayed (chronic)

Max. Daily Amount (code) ____

Avg. Daily Amount (code) ____

No. of Days On-site (days) ____

Container Type | Pressure | Temperature

Optional [ ]

Certification ***(Read and sign after completing all sections)***

I certify under penalty of law that I have personally examined and am familiar with the information submitted in pages one through _____, and that based on my inquiry of those individuals responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete.

Name and official title of owner/operator OR owner/operator's authorized representative _____ Signature _____ Date signed _____

Optional Attachments

[ ] I have attached a site plan
[ ] I have attached a list of site coordinate abbreviations
[ ] I have attached a description of dikes and other safeguards measures

Form Approved OMB No. 2050-0072

Tier Two EMERGENCY AND HAZARDOUS CHEMICAL INVENTORY

Specific Information by Chemical

Facility Identification
Name _____
Street _____
City _____ County _____ State _____ Zip _____
SIC Code _____ Dun & Brad Number _____

FOR OFFICIAL USE ONLY
ID # _____
Date Received _____

Owner/Operator Name
Name _____ Phone ( ) _____
Mail Address _____

Emergency Contact
Name _____ Title _____
Phone ( ) _____ 24 Hr. Phone ( ) _____

Name _____ Title _____
Phone ( ) _____ 24 Hr. Phone ( ) _____

Important: Read all instructions before completing form

Reporting Period From January 1 to December 31, 19 ____

[ ] Check if information below is identical to the information submitted last year.

Confidential Location Information Sheet

CAS#		Chem. Name	Container Type	Pressure	Temperature	Storage Codes and Locations (Confidential) *Storage Locations*	Optional
CAS#		Chem. Name					[ ]
CAS#		Chem. Name					[ ]
CAS#		Chem. Name					[ ]

Certification *(Read and sign after completing all sections)*

I certify under penalty of law that I have personally examined and am familiar with the information submitted in pages one through _____, and that based on my inquiry of those individuals responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete.

Name and official title of owner/operator OR owner/operator's authorized representative _____ Signature _____ Date signed _____

Optional Attachments
[ ] I have attached a site plan
[ ] I have attached a list of site coordinate abbreviations
[ ] I have attached a description of dikes and other safeguards measures

EPCRA SECTIONS 311 - 312

- States may require facilities to:
  - Submit Tier II form
  - Submit state reporting forms
  - Report lists of hazardous chemicals
  - Report exact quantities
  - Provide additional information (e.g., UN registry number)
- States may set lower reporting thresholds
- States may have a fee system

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EPCRA SECTIONS 311 - 312

- Public availability of inventory information
  - EPCRA sections 311 and 312 information available to the general public upon request from SERC/TERC or LEPC
  - General public has the right to request, through the LEPC or SERC/TERC, additional information

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TOXICS RELEASE INVENTORY REPORTING REQUIREMENTS

WHO MUST REPORT?

- **Facilities (Private- and Public-sector)**
  - **In covered SIC codes; and**
  - **With 10 or more full time employees (equivalent of 20,000 hours per year); and**
  - **That exceed manufacture, or process, or otherwise use thresholds for each Section 313 chemical**

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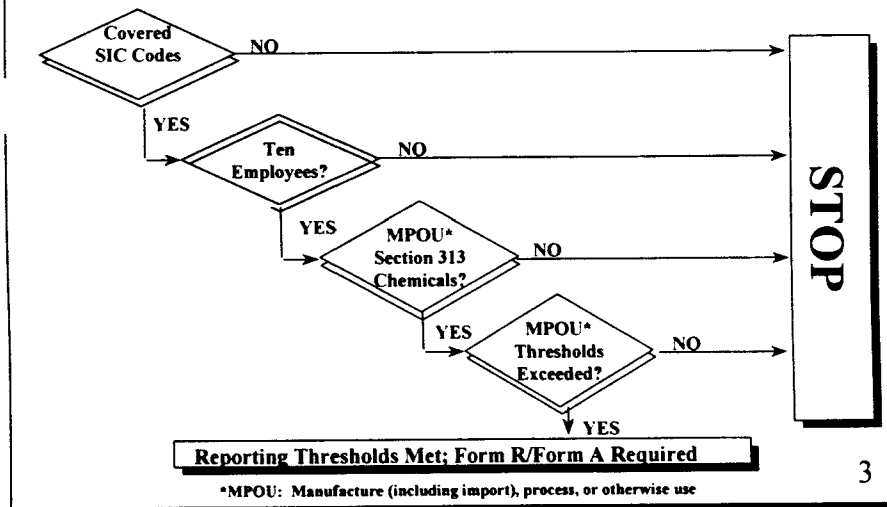
TRI REPORTING PROCESS



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COVERED SIC CODES

Industrial Sector	SIC code
Manufacturing	20-39
Metal mining	10 (except 1011, 1081, and 1094)
Coal mining	12 (except 1241)
Electrical utilities	4911, 4931, and 4939, limited to facilities that combust coal and/or oil for the purpose of generating electricity for distribution in commerce
Treatment, Storage, and Disposal facilities	4953, limited to RCRA Subtitle C permitted or interim status facilities
Solvent recovery services	7389, limited to facilities primarily engaged in solvent recovery services on a contract or fee basis
Chemical distributors	5169
Petroleum bulk terminals	5171

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FEDERAL FACILITIES

- Federal facilities
  - Owned or operated by Executive Branch agencies
    - » No restrictions based on SIC code
    - » Includes laboratories, prisons, parks, hospitals
  - With 10 or more full-time employees (equivalent of 20,000 hours per year)
  - That exceed manufacture, or process, or otherwise use thresholds
  - Agency responsible for reporting on activities at Federal facilities that are conducted by, for, or in support of the agency

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SIC CODES

- EPCRA Section 313 subjects facilities to reporting based on classification of primary activities in the Standard Industrial Classification (SIC) system (40 CFR 372.22)
- On April 9, 1997 (62 FR 17288) the North American Industry Classification (NAIC) System was implemented
- SIC codes are to be used until EPA transitions to new NAIC system in future reporting years
- A crosswalk exists between the SIC and new NAIC codes (see 62 FR 172188)

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DEFINITION OF "FACILITY"

- "Facility - all buildings, equipment, structures, and other stationary items which are located on a single site or contiguous or adjacent sites and which are owned or operated by the same person (or by any person which controls, is controlled by, or under common control with, such person)." (EPCRA §329(4))
- Establishment - an unique and separate economic unit of a "facility"
- Auxiliary facility - primarily supports another establishment's activities

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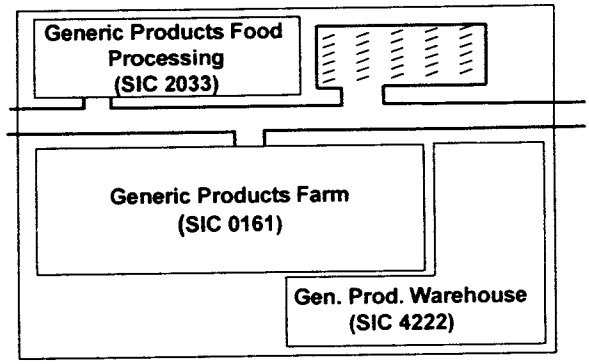
MULTI-ESTABLISHMENT FACILITY

Three separate establishments located on contiguous/adjacent property owned by same person(s), is one facility under EPCRA



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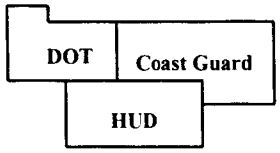
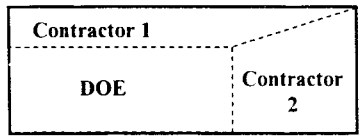
MULTI-ESTABLISHMENT FACILITY

- **Determining how facilities report**
  - **Federal facilities and GOCOs**



Ex. 1: Two separate reporting facilities (HUD and DOT including Coast Guard)



Ex. 2: One reporting facility (DOE)

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AUXILIARY FACILITY

- **Non-contiguous and non-adjacent to a covered establishment**
- **Primary function is to support a covered establishment's activities (e.g., warehouses, laboratories)**
- **Assumes SIC code of covered establishment for reporting purposes**
- **Employee and threshold determinations are separate!**

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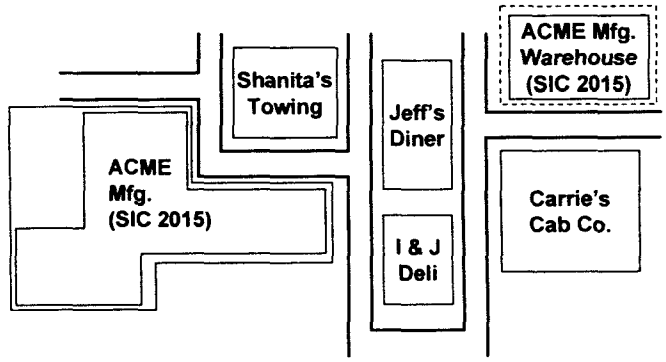
AUXILIARY FACILITY

ACME Mfg. Facilities
(Warehouse is auxiliary facility of ACME Mfg.)



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EMPLOYEE THRESHOLD

- **10 full-time employee (20,000 hours) threshold**
  - **Worked at or directly for facility**
  - **Includes operational staff, administrative staff, contractors, dedicated sales staff, company drivers, off-site direct corporate support**
  - **Does NOT include contract drivers, janitorial contractors, off-site corporate overhead (indirect) support**
- **Determinations based on available time management systems/data**

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THRESHOLDS TRIGGERING SECTION 313 REPORTING

- A facility meeting all criteria must file a Form R report for a Section 313 chemical if the facility:
  - Manufactured (including imported) more than 25,000 pounds per year, or
  - Processed more than 25,000 pounds per year, or
  - Otherwise used more than 10,000 pounds per year
- Activity thresholds are mutually exclusive
- Threshold calculations are based on cumulative quantities per Section 313 chemical over the reporting year

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CATEGORIES OF MANUFACTURING ACTIVITIES

- Manufacturing - generating a Section 313 chemical
  - Intentionally producing chemicals for:
    - » Sale
    - » Distribution
    - » On-site use or processing (e.g., intermediates)
  - Coincidentally producing chemicals as impurities or byproducts:
    - » At any point at the facility, including waste treatment and fuel combustion
  - Importing
    - » "Cause" to be imported

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MANUFACTURING WITHIN A CHEMICAL CATEGORY

- Chemical conversion within a metal or organic compound category must be counted towards the manufacturing threshold
- For Example:
  - A copper mine converts copper sulfide to copper sulfate in its beneficiation operations
    - » Copper sulfate, a member of the copper compounds category, is "manufactured"

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CATEGORIES OF PROCESSING ACTIVITIES

- Processing - preparation of a Section 313 chemical for further distribution in commerce
  - Using as a reactant to manufacture another substance or product
  - Adding as a formulation component
  - Incorporating as an article component
  - Repackaging for distribution
    - » Including quantities sent off-site for recycling

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REPACKAGING AS A PROCESSING ACTIVITY

- Repackaging a Section 313 chemical for distribution into commerce is considered processing
  - Repackaging includes transfer:
    - » From container to tanker truck and vica versa
    - » Between similar size containers
    - » Via pipeline to/from a tank
  - Repackaging does not include:
    - » Sampling without repackaging
    - » Relabeling
- Repackaging without distribution into commerce is not considered processing

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OTHERWISE USE

- Otherwise using - includes most activities that are <u>not</u> manufacturing or processing

  <u>Examples</u>
  - Chemical processing aid (e.g., solvents)
  - Manufacturing aid (e.g., lubricants, refrigerants)
  - Ancillary activities (e.g., chemicals used to remediate wastes)

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OTHERWISE USE (CONTINUED)

- Otherwise use of a Section 313 chemical also includes disposal, stabilization (without subsequent distribution in commerce), or treatment for destruction on-site if:
  - Section 313 chemical was received from off-site for the purposes of further waste management, or
  - Section 313 chemical was manufactured as a result of waste management activities on materials received from off-site for the purpose of further waste management
- Waste management activities include recycling, combustion for energy recovery, treatment for destruction, waste stabilization and release (including disposal)

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CALCULATING ACTIVITY THRESHOLDS

- Calculate total amount of Section 313 chemical INTENDED for a threshold activity
  - Example:
    - » A plant uses MEK to manufacture industrial adhesive for distribution in commerce. The plant adds 27,000 lbs of MEK to the adhesive-making operation during the reporting year, but 3,000 lbs are volitilized during the operation
    - » 27,000 lbs of MEK is processed, reporting required

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CALCULATING ACTIVITY THRESHOLDS

- Activities that do NOT constitute an activity threshold
  - Storage
  - Remediation of on-site contamination
  - Relabeling without repackaging

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SECTION 313 CHEMICAL LIST

SECTION 313 CHEMICAL LIST

- Dynamic, evolving list
  - Additions
  - Deletions
  - Modifications

2

SECTION 313 CHEMICALS AND CHEMICAL CATEGORIES

- Original list developed from Maryland "High Production Volume" and New Jersey "Right to Know" chemical lists
- Current list contains over 576 individual chemicals and chemical categories (40 CFR 372.65)
- Petition process to add or delete chemicals

EPCRA SECTION 313 CHEMICAL QUALIFIERS

- Qualifiers - Listed chemicals with parenthetic qualifiers subject to TRI reporting only if manufactured, processed, or otherwise used in specified form. Below are some examples:

CHEMICAL	CAS#	QUALIFIER
Aluminum	7429-90-5	Fume or dust
Aluminum oxide	1344-28-1	Fibrous forms
Asbestos	1332-21-4	Friable forms
Isopropyl alcohol	67-63-0	Manufactured by strong acid process
Phosphorus	7723-14-0	Yellow or white
Saccharin	81-07-2	Manufacture only
Hydrochloric acid	7647-01-0	Acid aerosols
Sulfuric acid	7664-93-9	Acid aerosols

METAL COMPOUND CATEGORIES

- Consider the entire weight of the compounds in the category when determining thresholds
- Include only the weight of the parent metal of the category (e.g., copper for copper compounds) when calculating releases and other waste management quantities

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DETERMINING THRESHOLDS FOR METAL COMPOUNDS

Example

A facility processes 200,000 pounds of a mixture containing 10% zinc chromate and 15% chromium dioxide by weight

- Quantity toward chromium compounds threshold

  (10% + 15%) x (200,000) = 50,000 pounds

- Quantity toward zinc compounds threshold

  (10%) x (200,000) = 20,000 pounds

- 25,000-pound processing threshold applies; chromium compounds are reportable and zinc compounds are not

6

NITRATE COMPOUNDS

- **Water dissociable nitrate compounds category**
  - **For threshold determinations, use the weight of the nitrate compound, but use only the weight of the nitrate ion portion when calculating releases and other waste management quantities**
  - **Nitrate compounds are produced when nitric acid is neutralized**
  - **Includes compounds like sodium nitrate, silver nitrate, and ammonium nitrate**

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DETERMINING THRESHOLDS FOR NITRATE COMPOUNDS

Example

- **20,000 pounds of nitric acid (HNO_3) are neutralized with sodium hydroxide (NaOH) in an on-site wastewater treatment system. Perform a threshold determination for nitrate compounds (water dissociable; in aqueous solution):**

  Assume:

  - **Neutralization 100% complete and generates sodium nitrate ($NaNO_3$), which is released to a waterbody**
  - **Molecular weight (MW) of HNO_3 = 63**
  - **MW of $NaNO_3$ = 85**
  - **1 mole of HNO_3 generates 1 mole of $NaNO_3$**

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DETERMINING THRESHOLDS FOR NITRATE COMPOUNDS

Example (continued)

Quantity of $NaNO_3$ manufactured = quantity of HNO_3 neutralized x (MW of $NaNO_3$/MW of HNO_3)

Quantity of $NaNO_3$ manufactured = 20,000 pounds x (85/63)

Quantity of $NaNO_3$ manufactured = 26,984 pounds

The 25,000 pound manufacturing threshold is exceeded!

9

CALCULATING RELEASES FOR NITRATE COMPOUNDS

Example (continued)

Releases are reported on nitrate ion (NO_3^-) basis. Calculate the quantity of nitrate ion (MW of NO_3^- = 62) released to a waterbody:

Pounds of NO_3^- = pounds of $NaNO_3$ x (MW of NO_3^-/MW of $NaNO_3$)

Pounds of NO_3^- = 26,984 pounds x (62/85)

Pounds of NO_3^- = 19,682 pounds (rounded to 20,000 pounds)

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ORGANIC COMPOUND CATEGORIES

- **Consider the entire weight of the compounds in these categories when determining thresholds**
- **Include the entire weight of the compounds in the category when calculating releases and other waste management quantities for all compounds in these categories**

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XYLENE AND XYLENE ISOMERS

- **If data does not specify o-, m-, or p- isomers of xylene, calculate thresholds, release and other waste management quantities based on "xylene (mixed isomers)"**
- **If data specifies o-xylene, m-xylene, or p-xylene individually, calculate thresholds, release and other waste management quantities based on the individual isomers**
  - **If thresholds are exceeded for more than one isomer, releases and other waste management quantities can be consolidated in one report as "xylene (mixed isomers)"**

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CHEMICALS MODIFIED

- Hydrochloric acid (CAS # 7647-01-0), effective RY 1995
  - Deleted non-aerosol forms of hydrochloric acid
    - » Aerosol forms include any airborne hydrochloric acid (including mists, vapors, gases or fogs) droplets without regard to particle size
- Sulfuric acid similarly modified, effective RY 1994

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ACID AEROSOLS THRESHOLD DETERMINATIONS

- Acid Aerosols Generated in Storage Tanks
  - The amount of acid aerosol manufactured is determined by the average amount that exists in the atmosphere above the acid solution during the year.
- Acid Aerosols Removed by Scrubbers
  - Non-aerosol forms of sulfuric/hydrochloric acid are not reportable under EPCRA Section 313; therefore, acid aerosols removed by scrubbers are converted to a non-reportable form, the quantity removed by the scrubber should be reported as having been treated for destruction

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ACID AEROSOLS THRESHOLD DETERMINATIONS

- **Sulfuric Acid Aerosols Formation in Stacks from Combustion Processes**
  - **Sulfuric acid aerosols are formed in flue gas during the combustion of fuel oil, coal, and other sulfur-containing fuels**
  - **Water and sulfur trioxide, products of fuel combustion, react quickly to form sulfuric acid**
  - **See *Guidance for Reporting Sulfuric Acid* (March 1998) for specific calculations**

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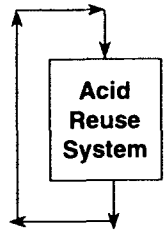
ACID AEROSOLS THRESHOLD DETERMINATIONS

- **Acid Reuse Systems (Sulfuric and hydrochloric acid only)**
  - **To calculate the amounts manufactured and otherwise used the facility may apply the total volume of acid in the system acid only once toward the threshold and the amount of virgin added to the system during the RY.**

Total System Volume + Total Virgin Acid Added

= Amount Acid Aerosols Manufactured/Otherwise Used



  - **See *Guidance for Reporting Sulfuric Acid* (March 1998) for specific calculations**

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CHEMICALS MODIFIED

- Ammonia
  - Requires threshold determination and release and other waste management quantity calculations for aqueous ammonia from any source (i.e., anhydrous ammonia in water or water dissociable ammonium salts) be based on 10 percent of the total ammonia present in aqueous solutions
  - Anhydrous ammonia - include 100% for thresholds and releases
    - » Including air releases from aqueous ammonia
  - Effective RY 1994

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CHEMICALS MODIFIED

- Glycol ethers category
  - Removed surfactant glycol ethers from category (59 FR 34386, 7/5/94)
  - Common glycol ethers still in category include:
    - » 2-Butoxyethanol (CAS # 111-76-2)
    - » Diethylene glycol monoethyl ether acetate (CAS # 112-15-2)
    - » Diethylene glycol monobutyl ether (CAS # 112-34-5)
  - Effective RY 1993

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ADMINISTRATIVE STAYS

- No reporting required for the following chemicals until further notice
  - 2,2-Dibromo-3-nitrilopropionamide (DBNPA) (CAS # 10222-01-2)
    - » Effective RY 1995
  - Hydrogen sulfide (CAS # 7783-06-4)
    - » Effective RY 1994
  - Methyl mercaptan (CAS # 74-93-1)
    - » Effective RY 1994

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PROPOSED MODIFICATION

- Persistent Bioaccumulative Toxic (PBT) Chemicals
  - Establish lower thresholds for PBT chemicals
    - » 10 or 100 pounds, except dioxin category (0.1 gram)
  - Add chemical category for "Dioxin and Dioxin-like Compounds"
  - Comments due March 8, 1999

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EXERCISE 1:
CALCULATING RELEASES OF AMMONIA AND NITRATE COMPOUNDS

During the calendar year, a facility uses 200,000 pounds of nitric acid solution containing 50 percent (by weight) nitric acid (HNO_3) in an etching process. All of the nitric acid is eventually transferred to an on-site treatment facility as part of an aqueous waste stream. The nitric acid is neutralized with pure (gaseous) anhydrous ammonia (NH_3). The facility uses an excess of ammonia to assure complete neutralization to pH 7 to 8. During the calendar year, the facility used 30,000 pounds of ammonia. As a result of the treatment process, a nitrate compound, ammonium nitrate (NH_4NO_3), is formed. The ammonium nitrate and any remaining ammonia are then released to a waterbody.

Using the additional information below, complete questions a through d.

Assumptions

For simplicity, assume air emissions are zero.

Chemical Name	**Molecular Weights**
Ammonium nitrate (NH_4NO_3)	= 80.04 lb/lbmol
Ammonia (NH_3)	= 17.03 lb/lbmol
Nitric acid (HNO_3)	= 63.01 lb/lbmol
Nitrate ion (NO_3^-)	= 62.01 lb/lbmol

Chemistry Fundamentals

Nitric acid (HNO_3) and anhydrous ammonia (NH_3) are monovalent and react in a 1:1 ratio. One mole of NH_3 is used to neutralize each mole of HNO_3 treated. When neutralized with anhydrous ammonia, nitric acid (HNO_3) produces ammonium nitrate (NH_4NO_3) in a 1:1 ratio. These substances are monovalent, so for each mole of HNO_3 neutralized, one mole of NH_4NO_3 is produced. As indicated in the following formula:

$$HNO_3 + NH_3 \rightleftharpoons NH_4NO_3$$

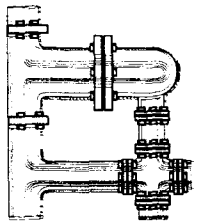
Therefore, 63.01 pounds of nitric acid reacts with 17.03 pounds of ammonia to produce 80.04 pounds of ammonium nitrate (which contains 62.01 pounds of nitrate ion).

a) Based on the above scenario and information available, determine which toxic chemicals would be subject to EPCRA section 313 threshold and release determinations.

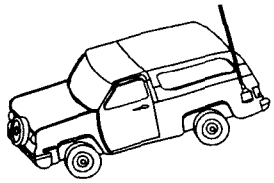
b) **Calculate the quantity of nitric acid applied towards threshold determinations and release calculations.**

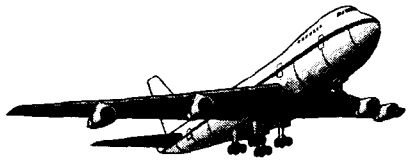
c) **Calculate the quantity of ammonia applied towards threshold determinations and release calculations.**

d) **Calculate the quantity of ammonium nitrate applied towards threshold determinations and release calculations.**



SECTION 313 REPORTING EXEMPTIONS





SECTION 313 EXEMPTIONS

- **Originally designed for manufacturing facilities to:**
  - **Reduce burden of reporting associated with <u>small or ancillary</u> chemical uses**
  - **If an exemption applies, then the amount of a Section 313 chemical subject to the exemption does not have to be included in:**
  - **Threshold determinations**
  - **Release and other waste management reporting**
  - **Supplier notification**
- **Recognize that exemptions only apply to <u>certain limited</u> circumstances**

SECTION 313 EXEMPTIONS

- **Types of exemptions**
  - **De minimis**
  - **Article**
  - **Laboratory activities**
  - **Motor vehicle maintenance**
  - **Routine janitorial or facility grounds maintenance**
  - **Structural components**
  - **Personal use**
  - **Intake water and air**

DE MINIMIS EXEMPTION

- **The quantity of a Section 313 chemical in a mixture or other trade name product is eligible for the exemption if the chemical is:**
  - **An OSHA-defined carcinogen present at a concentration of less than 0.1% by weight**

    or
  - **Any other Section 313 chemicals present at a concentration of less than 1% by weight**

DE MINIMIS EXEMPTION
How It Works

- De minimis exemption <u>can</u> apply to:
  - Chemicals in mixtures or other trade name products processed or otherwise used
  - Chemicals unintentionally manufactured as impurities that remain in products
  - Chemicals imported in mixtures or other trade name products

DE MINIMIS EXEMPTION
How It Works

- De minimis exemption does <u>not</u> apply to:
  - Manufacturing chemicals (in most cases)
  - Manufacturing chemicals as by-products
  - Unintentionally manufacturing chemicals
    - As by-products of waste treatment or fuel combustion

DE MINIMIS EXEMPTION
How It Works

- De minimis exemption does not apply to:
  - Wastes and waste streams that are processed or otherwise used
  - Releases and other waste management activities from mixtures or other trade name products that are not associated with a processing or otherwise use activity
    - » Material storage not associated with processing or otherwise use activities

DE MINIMIS EXEMPTION
How It Works

- De *minimis concentration for* toluene is 1.0% (not an OSHA carcinogen)

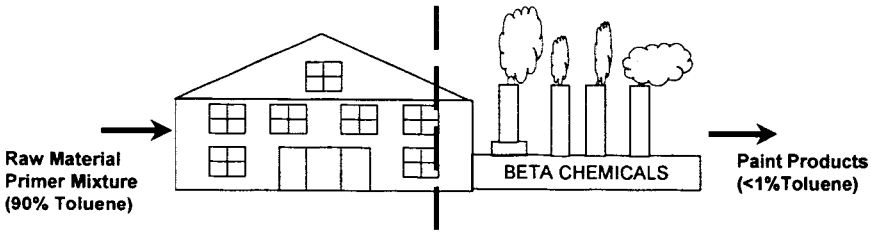
Cleaning Mixture
0.5 % Toluene (exempt)

Raw Material Mixture
90% Toluene (not exempt)

- Toluene in cleaning mixture is below de minimis concentration and is eligible for the exemption

DE MINIMIS EXEMPTION
How It Works

- Processing a Section 313 chemical in a mixture to below the de minimis concentration does not exempt the chemical from threshold determinations and release and other waste management calculations



Toluene > 1%

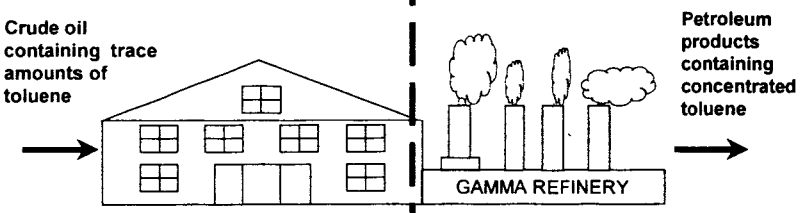
- De minimis exemption does not apply
- Threshold determination required
- Release and other waste management calculations required

Toluene <1%

- De minimis exemption does not apply
- Threshold determination required
- Release and other waste management calculations still required

DE MINIMIS EXEMPTION
How It Works

- Processing a Section 313 chemical in a mixture to above the de minimis concentration triggers threshold determinations and release and other waste management calculation requirements



Toluene < 1%

- De minimis exemption can apply
- Do not include in threshold
- Do not include in release and other waste management calculations

Toluene > 1%

- De minimis exemption does not apply
- Threshold determination required
- Release and other waste management calculations

ARTICLE EXEMPTION

- "Article" is defined as a manufactured item that:
  - Is formed into a specific shape or design during manufacture; and
  - Has end-use functions dependent in whole or in part on its shape or design during end-use; and
  - Does not release a Section 313 chemical under normal processing or use conditions at a facility
- The quantity of a Section 313 chemical used to manufacture an article is not exempt

ARTICLE EXEMPTION
How It Works

- Releases from an article may negate the exemption. To maintain the article status, total releases from all like items must be:
  - In a recognizable form
  - Recycled or
  - Less than or equal to 0.5 pounds (may be rounded down to zero)
- If more than 0.5 pounds of a Section 313 chemical is released from all like items in a non-recognizable form and is not recycled, none of the items meet the article exemption.

ARTICLE EXEMPTION
How It Works

- **Example:**
  Wire is cut to specified lengths. Wastes include off-spec cuts and dust.
  - **Dust and off-spec cuts not recognizable as articles, released from like items in quantities more than 0.5 pounds, and not recycled, negate the article status**
  - **Generation of off-spec cuts that are recognizable as articles will not, by itself, negate the article status**

LABORATORY ACTIVITY EXEMPTION

- **Section 313 chemicals manufactured, processed, or otherwise used in certain laboratory activities, performed under the supervision of a technically qualified individual, may be eligible for the exemption**
- **Laboratories, themselves, are not exempt**
- **Section 313 chemicals used in specialty chemical production, pilot plant scale operations, and laboratory support operations are not eligible for the exemption**

LABORATORY ACTIVITY EXEMPTION

- **Definition of technically qualified individual (40 CFR 720.3(ee))**
  - **Capable of understanding the health and environmental risks associated with the chemical substance which is used under his or her supervision because of education, training, or experience, or a combination of these factors;**
  - **Responsible for enforcing appropriate methods of conducting scientific experimentation, analysis, or chemical research to minimize such risks; and**
  - **Responsible for the safety assessments and clearances related to the procurement, storage, use, and disposal of the chemical substance as may be appropriate or required within the scope of conducting a research and development activity.**

LABORATORY ACTIVITY EXEMPTION
How It Works

Section 313 chemicals manufactured, processed, or otherwise used in these laboratory activities are eligible for the exemption

- **Sampling and analysis**
- **Quality assurance**
- **Quality control**

LABORATORY ACTIVITY EXEMPTION
How It Works

Section 313 chemicals manufactured, processed, or otherwise used in these laboratory activities are NOT exempt

- **Specialty chemical production**
- **Pilot-scale plant operations**
- **Support services**
  - **Photo processing**
  - **Equipment maintenance / cleaning**

MOTOR VEHICLE MAINTENANCE EXEMPTION

- **Section 313 chemicals used to maintain motor vehicles operated by the facility are eligible for the exemption**
- **Motor vehicles eligible for the exemption include cars, trucks, and forklifts**
- **Motor vehicle maintenance includes:**
  - **Body repairs**
  - **Parts washing and plating**
  - **Fueling and adding other fluids (e.g., ethylene glycol)**

ROUTINE JANITORIAL OR FACILITY GROUNDS MAINTENANCE EXEMPTION

- Section 313 chemicals contained in products used for non-process related routine janitorial or facility grounds maintenance are eligible for the exemption
  - Phenol in bathroom disinfectants
  - Pesticides in lawn care products
- Section 313 chemicals used in the following activities are not exempt
  - Facility equipment maintenance
  - Cleaning or maintenance activities that are integral to the production process of the facility

STRUCTURAL COMPONENT EXEMPTION

- Section 313 chemicals that are part of structural components of a facility are eligible for the exemption provided the structure is not process related
  - Copper in pipe used in construction of employees' bathroom facilities
  - Metals, pigments, and solvents in paint applied to facility structure

OTHER SECTION 313 EXEMPTIONS

- Section 313 chemicals contained in non-process related items for employee personal use
  - HCFC 22 in air conditioners used solely for employee comfort
  - Chlorine used to treat on-site potable water
  - Phenol in a facility medical dispensary
- Section 313 chemicals found in intake water and air

EXERCISE #2: THRESHOLD QUIZ

Purpose: Familiarize participants with the criteria for TRI reporting, including thresholds for manufacturing, processing or otherwise using listed chemicals, which determine whether or not a facility must submit a Form R for a listed chemical.

Take-Away: Knowledge and understanding of TRI reporting thresholds.

Instructions: Read each question carefully. Using your knowledge of TRI reporting thresholds, choose the **best** of the four answers.

1. **A facility begins the reporting year with an inventory of 24,600 pounds of copper sheets for its decorative mail box manufacturing operation, all of which is used in the reporting year. All sheets are cut and grinded into different diameters during the processing operation which generated less than 10 pounds of fugitive emissions of copper during the reporting year. In addition, the facility processes 500 pounds of copper ingots into wire which is sold to an electronics firm. However, the 500 pounds of copper ingots were obtained by on-site reuse of the scrap copper generated from the mail box manufacturing operation. Is this facility's processing of copper subject to EPCRA Section 313 reporting and why?**

   a. No, because, the facility is reprocessing 500 pounds of copper, only a total of 24,600 pounds of copper would be applied to the 25,000 pound threshold determination for processing.
   b. No, because the scrap was reused, the article exemption from threshold determinations is maintained for all uses of copper.
   c. Yes, because 24,600 pounds of copper sheets and 500 pounds of copper ingots were both processed, therefore the facility exceeded the 25,000 pound processing threshold.
   d. No, because the 24,600 pounds of copper sheets were present in the facility prior to the reporting year, it is not calculated for threshold determinations. Only amounts newly added to the facility are calculated for threshold determinations.

2. **A facility processes 100,000 pounds of a mixture containing 25% zinc chromate, and 25% chromium dioxide by weight. For purposes of Section 313 reporting, how much zinc and chromium were processed?**

   a. 25,000 pounds zinc compounds, and 25,000 pounds of chromium compounds
   b. 25,000 pounds zinc, and 25,000 pounds chromium
   c. 25,000 pounds zinc, and 50,000 pounds chromium
   d. 25,000 pounds zinc compounds, and 50,000 pounds chromium compounds

3. **A facility buys a solution containing 29 percent 1,1,1-trichloroethane and processes it as a constituent of a cleaning solution that they sell in retail stores. The 1,1,1-trichloroethane is present in final product at 0.5 percent. The product is packaged into one-gallon containers. What amounts of the 1,1,1-trichloroethane in mixtures must the facility consider for threshold determinations?**

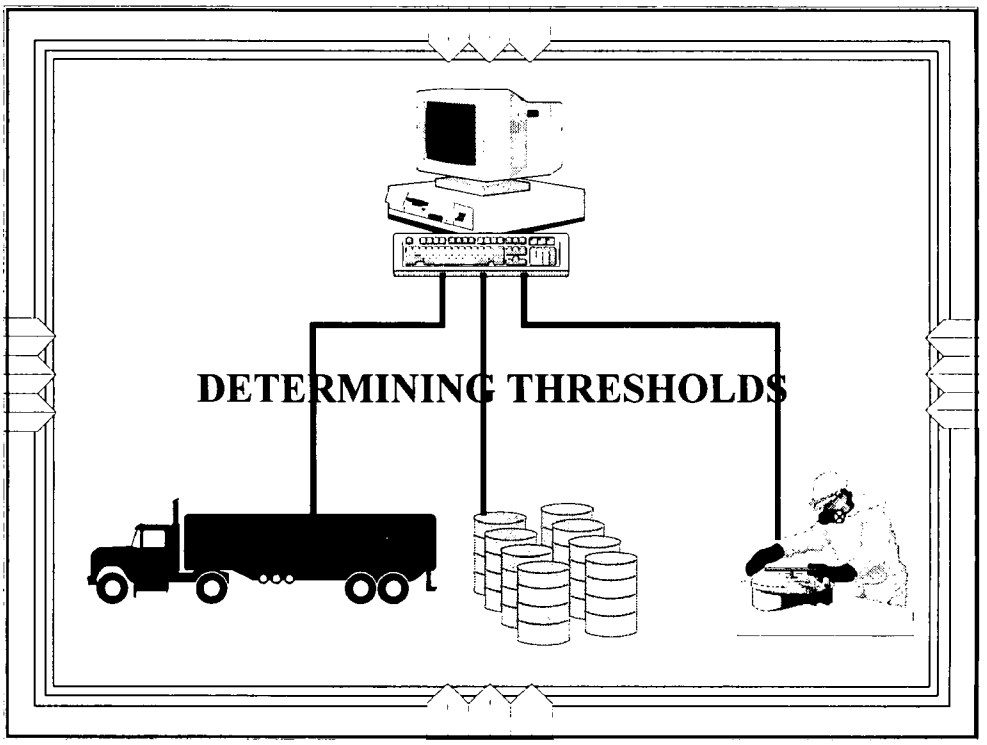
   a. Any amount used within the facility during the reporting year, except the amount distributed through retail outlets to consumers, must be considered processed.
   b. Because the mixture was otherwise used, it is not eligible for the de minimis exemption. The quantity used must be applied to the otherwise use threshold.
   c. Because the mixture was received and processed in concentrations above the de minimis for 1,1,1-trichloroethane, all quantities must be applied to the processing threshold.
   d. Only amounts distributed into commerce need to be considered towards the processing threshold, and because these quantities are present below the de minimis concentration, they are exempt.

4. **Which of the following qualifies as a section 313 reporting exemption?**

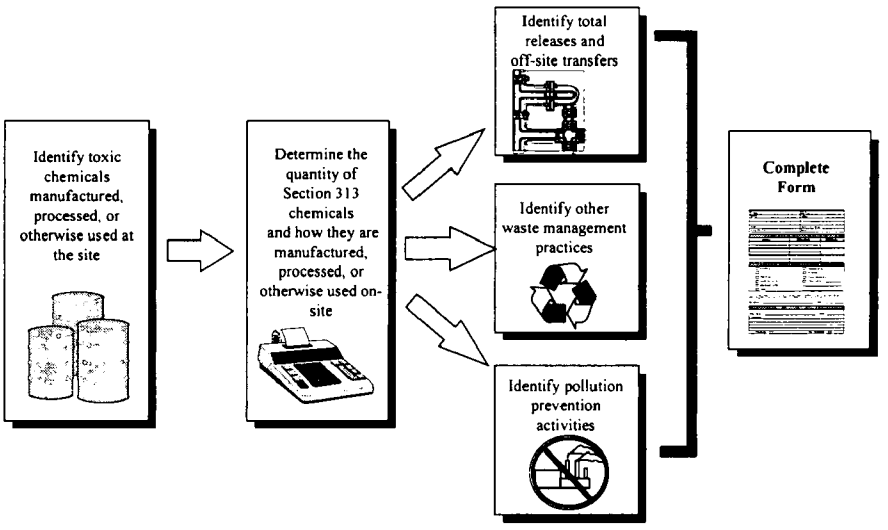
   a. Like "articles" that release over 10 pounds of a section 313 chemical, not recovered, under regular normal processing or use.
   b. Painting process equipment at the facility.
   c. Chemical use in non-process related routine janitorial or facility grounds maintenance.
   d. Laboratory support activities.

5. **During the reporting year, your facility receives 20,000 pounds of chlorine in solution. 10,000 pounds of the chlorine is transferred to a tank to make a bleaching mixture, where its concentration drops below the de minimis level, which is then sold and distributed in commerce. 5,000 pounds of the original mixture is used to treat the drinking water consumed by employees. The remaining 5,000 pounds of the original mixture is used throughout the plant to clean process equipment. Wastewater from the cleaning and bleach production operations is released with chlorine levels well below the de minimis level. Which of the following is true?**

   a. All uses of the chlorine are subject to section 313 reporting because the concentration of the received mixture is well above the de minimis level and the threshold limit for otherwise use has been met.
   b. Only the use of chlorine for drinking water is exempt from section 313 reporting.
   c. Only the drinking water and cleaning operations will be exempt from section 313 reporting due to the personal use and routine maintenance exemptions, respectively.
   d. The drinking water and cleaning uses are covered under the personal use and routine maintenance exemptions, respectively. The bleach production operation and the wastewater generated in conjunction with this operation are not exempt from section 313 reporting; however, the wastewater from the cleaning operations are exempt.



TRI REPORTING PROCESS



DETERMINING THRESHOLDS

- Identify what Section 313 chemicals are handled on-site
- Identify concentrations of Section 313 chemicals
- Collect data and calculate quantities towards each threshold

3

DETERMINING THRESHOLDS

Identify Chemicals and Concentrations:		Collect Data to Calculate Thresholds:
MSDS		Inventory Records
Specifications		Throughput/Production Data
Waste Profiles		Purchase Records
Process Knowledge		EPCRA or Other Env. Reports
Other References (AP-42, Merck Index)		Ask the User
		Call the Vendor
Supplier Notification		

4

DETERMINING CONCENTRATIONS OF SECTION 313 CHEMICALS

- **Chemical component - include in threshold "each listed Section 313 chemical known to be present" at a concentration greater than the *de minimis* limits (EPCRA §313 (g)(1)(C))**
  - **"Known" - knowledge based on MSDS, analytical data, process knowledge, labeling, literature, other vendor-supplied information, or existing analysis**
  - **If concentration is unknown, threshold determination for the Section 313 chemical is not required (40 CFR 372.30(b)(3))**

5

SUPPLIER NOTIFICATION FOR MIXTURES AND OTHER TRADE NAME PRODUCTS

- **Supplier Notification - requires suppliers to facilities described in 40 CFR 372.22 to:**
  - **Identify Section 313 chemical(s) by name and CAS number**
  - **Identify Section 313 chemical(s) as being subject to EPCRA Section 313 requirements**
  - **Provide concentration (or range) of Section 313 chemicals in mixtures and other trade name products (not wastes)**
  - **Provide notification at least annually in writing or attached to the MSDS**
  - **Update notification when changes occur**
  - **Only facilities in SIC codes 20-39 must initiate the notification**

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DETERMINING CONCENTRATIONS IN MIXTURES OR OTHER TRADE NAME PRODUCTS

- Include a Section 313 chemical in the threshold determinations if you know:
  - Exact concentration - use concentration provided
  - Upper bound - use upper limit
  - Range - use the midpoint of the range
  - Lower bound - subtract out other known constituents, create a range, and use the midpoint of range

Note: Thresholds are based on weight in pounds.

7

DETERMINING CONCENTRATIONS IN WASTES

- De minimis exemption does not apply to wastes that are processed or otherwise used
- If concentration is exact, upper bound, range, or lower bound, use the guidance for mixtures and other trade name products
- If concentration is below detection limit, use engineering judgment:
  - If the Section 313 chemical is expected to be present, assume 1/2 of full detection limit
  - If the Section 313 chemical is not expected to be present, assume 0

8

MEETING MULTIPLE THRESHOLDS

- There are many situations where one Section 313 chemical must be counted towards multiple activity thresholds
  - Section 313 chemicals manufactured or imported on-site, then used or incorporated into a product (processed)
  - Section 313 chemicals formed during destruction of wastes received from off-site and subsequently destroyed (manufactured and otherwise used)
  - Section 313 chemicals that are otherwise used on-site, recycled, then processed
- Section 313 chemicals should not be counted twice towards the same activity threshold

9

WATCH FOR DOUBLE COUNTING!!!

- For threshold determinations, Section 313 chemicals reused or recycled at a facility: count original amount used only once
  - Note: Section 313 chemicals sent off-site for recycling and returned to the facility are considered new materials and counted for threshold determinations
  - For materials in use from previous years: count only the quantity added during current reporting year

10

MULTI-ESTABLISHMENT FACILITY

- **Determining how facilities report**
  - **Multi-establishment facility**
    - » **Apply threshold determination on aggregate amount of chemicals used at facility**
    - » **Able to file separate Form R reports for each establishment if they are distinct economic entities (must be designated as part of a facility on Form R)**
    - » **Report all releases and other waste management activities of reportable Section 313 chemicals**
    - » **Avoid double-counting of chemicals involved in intra-facility transfers**

11

CALCULATING THRESHOLDS

- **Consider all activities**
  - **Chemicals used in neutralization, refrigerants, cleaners, paints, lubricants (for non-vehicles), fuel (for non-vehicles), refractory bricks**
  - **Consider all sources**
  - **Purchasing/Inventory Control**
  - **Contractors**
  - **Bulk deliveries**
  - **Capital purchases**
  - **"Credit card" or "emergency" purchases**

12

ORCHESTRATING DATA COLLECTION

- **Methods for orchestrating data collection**
  - **Coordinate with purchasing/vendors**
  - **Develop inventory controls**
  - **Require requisition or "sign out" procedure for Section 313 chemicals**
  - **Take year-end inventories**
- **Identify ALL chemical purchasing and usage**
- **Threshold determination worksheets**

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OPTIONAL SECTION 313 THRESHOLD DETERMINATION WORKSHEET

Facility Name: OMNI CHEMICAL
Toxic Chemical or Chemical Category: Toluene
Reporting Year: 1998
Date Worksheet Prepared: 2/13/99
Prepared By: I.S.P.

Step 1. Identify amounts of the toxic chemical manufactured, processed, or otherwise used.

Mixture Name or Other Identifier	Information Source	Percent by Weight	Total Weight (in lbs)	Amount of the Listed Toxic Chemical by Activity (in lbs		
				Manufactured	Processed	Otherwise Used
1. Joe's Degreaser	Purchasing	50	10,000			5,000
2. Yellow Safety Paint	Vendor	5	30,000			1,500
3. Parts Washer Fluid	Purchasing	40	10,000			4,000
4.						
5.						
6.						
7.						
Subtotal:				(A) _____ lbs.	(B) _____ lbs.	(C) 10,500 lbs.

Step 2. Identify exempt forms of the toxic chemical that have been included in Step 1.

Mixture Name as Listed Above	Applicable Exemption	Note Fraction or Percent Exempt (if Applicable)	Exempt Amount of the Toxic Chemical from Above (in lbs):		
			Manufactured	Processed	Otherwise Used
1. Yellow Safety Paint	Struct. Comp.	100			1,500
2.					
3.					
4.					
5.					
6.					
7.					
Subtotal:			(A_1) _____ lbs.	(B_1) _____ lbs.	(C_1) 1,500 lbs.

Step 3. Calculate the amount subject to threshold: ($A - A_1$) _____ lbs. ($B - B_1$) _____ lbs. ($C - C_1$) 9,000 lbs.

Compare to thresholds for section 313 reporting. 25,000 lbs. 25,000 lbs. 10,000 lbs.

If any threshold is met, reporting is required for all activities. Do not submit this worksheet with Form R. Retain for your records.

MANAGEMENT PRACTICES

- Begin early
  - Implement a program to gather "real-time" data on usage
  - Searches for historical information can be difficult
- Use a team approach
  - Include all relevant personnel (e.g., engineering, environmental, operations)
  - Spread the burden

15

RECORDKEEPING

- Detailed records
  - Improve reporting accuracy and data quality
  - Reduce replication of effort from year to year
- Well-labeled calculations and assumptions
  - Serve as standard operating procedures (SOPs) for future years
  - Ensure consistency from year to year, especially if personnel responsible for reporting change
- All records used to complete Form R must be kept for three years (40 CFR 372.10)
- EPA will review records during a data quality audit

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EXERCISE #3

IDENTIFYING EPCRA SECTION 313 CHEMICALS

Purpose: Familiarize participants with use of the Common Synonyms document. Develop ability to cross-reference chemical names and to identify correctly Section 313 chemicals.

Take-Aways: Experience with Common Synonyms document.
Understanding of nuances of chemical compositions.

Materials: Common Synonyms document
Material Safety Data Sheets (MSDS)

Instructions: Attached is a package of chemicals, chemical compounds, and chemical mixtures present at your facility. Determine if any of these chemicals or parts of these chemicals is on the EPCRA Section 313 list. Your Common Synonyms document will assist you. If you determine that a chemical or component of a product or mixture is on the list present at or above the appropriate de minimis level, prepare a list of the appropriate section 313 chemicals and CAS numbers as listed in the Common Synonyms document.

IDENTIFYING EPCRA SECTION 313 CHEMICALS

MSDS Name	Section 313 Chemical(s) Name	Concentration	Notes

MEADOWBROOK COMPANY

SPELTER, WEST VIRGINIA 26438

RAW MATERIAL SUPPLIER DATA SHEET

I. TRADE NAME CRUDE ZINC OXIDE

CHEMICAL NAME ZINC OXIDE EPA/GAS 1314-13-2

MANUFACTURER MEADOWBROOK COMPANY
DIV OF T. L. DIAMOND & CO., INC.

SPECIFICATIONS	GRADE A	GRADE B
Zn	50-59%	60%-68%
Fe	1-3%	1-3%
Al	.8-3.5%	.8-3.5%
Pb	0.1-0.5 Avg. 0.2	0.1-0.5 Avg.0.2%
Cl	0.0-0.3%	0.0-0.3%
Cd	Less Than .01	Less Than .01
Cu	0.04-0.40	0.04-0.40

II. NON TOXIC SOLID MATERIAL WITH A PARTICLE SIZE RANGE UP TO 1/4 INCH.

III. SPECIFIC GRAVITY 5.6
APPARENT DENSITY 130-160 LBS/CU FOOT
NON SOLUABLE IN WATER NON VOLATILE
LIGHT GRAY, ODORLESS COARSE POWDER

IV. NO FIRE OR EXPLOSION HAZARD. CAN REACT WITH MAGNESIUM OR CARBON WHEN HEATED.

V. NO PARTICULAR HEALTH HAZARD, TLV (S) FOR PRINCIPLE INGREDIENT
PEL 5 Mg/M³ FOR ZINC OXIDE FUME

VI. NON REACTIVE AT AMBIENT EXCEPT WITH MINERAL ACIDS

VII. SPILL OR LEAK PROCEDURES
Clean up & return to labeled containers

VII. PERSONAL PROTECTION
Niosh respirator suggested for comfort when material is dry & dusty

HANDLERS SHOULD WEAR GLOVES AND SAFETY GOGGLES.

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3M Center
St. Paul, Minnesota 55144-1000
612/733-1110

12743

MATERIAL SAFETY
DATA SHEET

3M

DIVISION: INDUSTRIAL MINERAL DIVISION
TRADE NAME:
3M BRAND ROOFING GRANULES (WAUSAU, WI)

3M I.D. NUMBER:

98-0111-1216-0	98-0111-1217-8	98-0111-1218-6	98-0111-1219-4
98-0111-1220-2	98-0111-1221-0	98-0111-1222-8	98-0111-1223-6
98-0111-1252-5	98-0111-1253-3	98-0111-1278-0	98-0111-1288-9
98-0111-1290-5	98-0111-1292-1	98-0111-1293-9	98-0111-1294-7
98-0111-1318-4	98-0111-1319-2	98-0111-1320-0	98-0111-1321-8
98-0111-1322-6	98-0111-1323-4	98-0111-1324-2	98-0111-1325-9
98-0111-1348-1	98-0111-1444-8	98-0111-1445-5	98-0111-1446-3
98-0111-1447-1	98-0111-1448-9	98-0111-1449-7	98-0111-1450-5
98-0111-1451-3	98-0111-1452-1	98-0111-1453-9	98-0111-1454-7
98-0111-1457-0	98-0111-1484-4	98-0111-1488-5	

ISSUED: SEPTEMBER 13, 1994
SUPERSEDES: NOVEMBER 23, 1993
DOCUMENT: 10-0170-0

1. INGREDIENT

INGREDIENT	C.A.S. NO.	PERCENT		
PLAGIOCLASE FELDSPAR	None	30.0	-	35.0
QUARTZ	14808-60-7	25	-	35
POTASSIUM FELDSPAR	None	20	-	25
SODIUM SILICATE	1344-09-8		<	5.0
KAOLIN	1332-58-7		<	5.0
CARBON BLACK	1333-86-4		<	0.9
CHROMIUM OXIDE (TRIVALENT CHROMIUM)	1308-38-9		<	0.9
HYDROTREATED HEAVY NAPHTHENIC PETROLEUM DISTILLATES	64742-52-5		<	0.9
RUTILE TITANIUM DIOXIDE	1317-80-2		<	0.9
IRON OXIDE (FE2O3)	1309-37-1		<	0.9
ZINC FERRITE	12063-19-3		<	0.9

NOTE: THE AMOUNT OF DUST GENERATED WHILE HANDLING THESE ROOFING GRANULES IS EXPECTED TO VARY DEPENDING ON THE USER'S OPERATION. THE LEVEL OF RESPIRABLE CRYSTALLINE SILICA IS EXPECTED TO BE LESS THAN 15% OF THE RESPIRABLE DUST.

THIS PRODUCT CONTAINS THE FOLLOWING TOXIC CHEMICAL OR CHEMICALS SUBJECT TO THE REPORTI REQUIREMENTS OF SECTION 313 OF TITLE III OF THE EMERGENCY PLANNING ANDCOMMUNITY RIGHT-ACT OF 1986 AND 40 CFR PART 372:
CHROMIUM OXIDE (TRIVALENT CHROMIUM)
ZINC FERRITE

2. PHYSICAL DATA

BOILING POINT:	N/A
VAPOR PRESSURE:	N/A
VAPOR DENSITY:	N/A
EVAPORATION RATE:	N/A
SOLUBILITY IN WATER:	N/A
SP. GRAVITY:	2.6-2.7
PERCENT VOLATILE:	N/A
VOLATILE ORGANICS:	N/A

Abbreviations: N/D - Not Determined N/A - Not Applicable

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MATERIAL SAFETY
DATA SHEET

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MSDS: 3M BRAND ROOFING GRANULES (WAUSAU, WI)
SEPTEMBER 13, 1994 **PAGE: 2 of 5**

2. PHYSICAL DATA (continued)

VOC LESS H2O & EXEMPT SOLVENT N/A
pH: ..... SL BASIC
VISCOSITY: ..... N/A
MELTING POINT..... N/A
APPEARANCE AND ODOR: Granules, Various colors, slightly oily odor

3. FIRE AND EXPLOSION HAZARD DATA

FLASH POINT:..... N/A
FLAMMABLE LIMITS - LEL: ..... N/A
FLAMMABLE LIMITS - UEL: ..... N/A
AUTOIGNITION TEMPERATURE: ... N/A
EXTINGUISHING MEDIA:
Non-combustible. Choose material suitable for surrounding fire.
SPECIAL FIRE FIGHTING PROCEDURES:
Not applicable
UNUSUAL FIRE AND EXPLOSION HAZARDS:
No unusual fire or explosion hazards are anticipated.

4. REACTIVITY DATA

STABILITY: Stable
INCOMPATIBILITY - MATERIALS TO AVOID:
Not applicable.
HAZARDOUS POLYMERIZATION: Will Not Occur
HAZARDOUS DECOMPOSITION PRODUCTS:
None known.

5. ENVIRONMENTAL INFORMATION

SPILL RESPONSE:
Observe precautions from other sections. Collect spilled material. Use wet sweeping compound or water to avoid dusting.

RECOMMENDED DISPOSAL:
Dispose of waste product in a sanitary landfill.

Since regulations vary, consult applicable regulations or authorities before disposal.

ENVIRONMENTAL DATA:
Not determined.

REGULATORY INFORMATION:
U.S. EPA Hazardous Waste Number = None (Not U.S. EPA Hazardous). In the event of an uncontrolled release of this material, the user should determine if the release qualifies as a reportable quantity.

EPCRA HAZARD CLASS:
FIRE HAZARD: No **PRESSURE:** No **REACTIVITY:** No **ACUTE:** Yes **CHRONIC:** Yes

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DATA SHEET

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6. SUGGESTED FIRST AID

EYE CONTACT:
Immediately flush eyes with large amounts of water. Get immediate medical attention.

SKIN CONTACT:
No need for first aid is anticipated in the event of skin contact.

INHALATION:
If signs/symptoms occur, remove person to fresh air. If signs/symptoms continue, call a physician.

IF SWALLOWED:
Drink two glasses of water. Call a physician.

7. PRECAUTIONARY INFORMATION

EYE PROTECTION:
Avoid eye contact. The following should be worn alone or in combination, as appropriate, to prevent eye contact: Wear safety glasses with side shields.

SKIN PROTECTION:
Avoid prolonged or repeated skin contact..

VENTILATION PROTECTION:
If exhaust ventilation is not available, use appropriate respiratory protection.

RESPIRATORY PROTECTION:
Avoid breathing of dust. Select one of the following NIOSH approved respirators based on airborne concentration of contaminants and in accordance with OSHA regulations: half-mask dust respirator.

PREVENTION OF ACCIDENTAL INGESTION:
Wash hands after handling and before eating.

RECOMMENDED STORAGE:
Not applicable.

FIRE AND EXPLOSION AVOIDANCE:
Not applicable.

EXPOSURE LIMITS

INGREDIENTS	VALUE	UNIT	TYPE	AUTH	SKIN*
PLAGIOCLASE FELDSPAR	NONE	NONE	NONE	NONE	
QUARTZ	0.1 as quartz resp.	mg/m3	TWA	ACGIH	

Abbreviations: N/D - Not Determined N/A - Not Applicable

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MATERIAL SAFETY
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MSDS: 3M BRAND ROOFING GRANULES (WAUSAU, WI)
SEPTEMBER 13, 1994

7. PRECAUTIONARY INFORMATION (continued)

EXPOSURE LIMITS

INGREDIENTS	VALUE	UNIT	TYPE	AUTH	SKIN*
QUARTZ	0.1 as quartz resp.	mg/m3	TWA	OSHA	
POTASSIUM FELDSPAR	NONE	NONE	NONE	NONE	
SODIUM SILICATE	NONE	NONE	NONE	NONE	
KAOLIN	2 respirable dust.	mg/m3	TWA	ACGIH	
KAOLIN	10	mg/m3	TWA	OSHA	
CARBON BLACK	3.5	mg/m3	TWA	ACGIH	
CARBON BLACK	3.5	mg/m3	TWA	OSHA	
CHROMIUM OXIDE (TRIVALENT CHROMIUM)	0.5 as Cr	mg/m3	TWA	ACGIH	
CHROMIUM OXIDE (TRIVALENT CHROMIUM)	0.5 as Cr	mg/m3	TWA	OSHA	
HYDROTREATED HEAVY NAPHTHENIC PETROLEUM DISTILLATES	5	mg/m3	TWA	CMRG	
HYDROTREATED HEAVY NAPHTHENIC PETROLEUM DISTILLATES	10	mg/m3	STEL	CMRG	
RUTILE TITANIUM DIOXIDE	10	mg/m3	TWA	ACGIH	
RUTILE TITANIUM DIOXIDE	10	mg/m3	TWA	OSHA	
IRON OXIDE (FE2O3)	5 as Fe	mg/m3	TWA	ACGIH	
IRON OXIDE (FE2O3)	10 as fume	mg/m3	TWA	OSHA	
IRON OXIDE (FE2O3)	5 as Fe	mg/m3	TWA	ACGIH	
ZINC FERRITE	NONE	NONE	NONE	NONE	

* **SKIN NOTATION:** Listed substances indicated with "Y" under SKIN refer to the potential contribution to the overall exposure by the cutaneous route including mucous membrane and eye, either by airborne or, more particularly, by direct contact with the substance. Vehicles can alter skin absorption.

SOURCE OF EXPOSURE LIMIT DATA:
- **ACGIH:** American Conference of Governmental Industrial Hygienists
- **OSHA:** Occupational Safety and Health Administration
- **CMRG:** Chemical Manufacture Recommended Guidelines
- **NONE:** None Established

8. HEALTH HAZARD DATA

EYE CONTACT:
May cause eye irritation if dust gets into eyes.

SKIN CONTACT:
No adverse health effects are expected from skin contact.

INHALATION:
Single overexposure, above recommended guidelines, may cause:

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8. HEALTH HAZARD DATA (continued)

Irritation (upper respiratory): signs/symptoms can include soreness of the nose and throat, coughing and sneezing.

Prolonged or repeated overexposure, above recommended guidelines, may cause:

Silicosis: signs/symptoms can include shortness of breath and persistent coughing.

Pneumoconiosis (general): signs/symptoms can include persistent coughing and shortness of breath.

IF SWALLOWED:
Ingestion is not a likely route of exposure to this product.

CANCER:
QUARTZ SILICA (14808-60-7) is a potential cancer hazard causing lung tumors by the inhalation and intratracheal routes of exposure in laboratory animal studies(NTP anticipated human carcinogen, IARC probable human carcinogen 2A, Calif. Proposition 65).

SECTION CHANGE DATES

HEADING	SECTION CHANGED SINCE	NOVEMBER 23, 1993 ISSUE
INGREDIENTS	SECTION CHANGED SINCE	NOVEMBER 23, 1993 ISSUE
ENVIRON. DATA	SECTION CHANGED SINCE	NOVEMBER 23, 1993 ISSUE
PRECAUT. INFO.	SECTION CHANGED SINCE	NOVEMBER 23, 1993 ISSUE
HEALTH HAZD. DATA	SECTION CHANGED SINCE	NOVEMBER 23, 1993 ISSUE

Abbreviations: N/D - Not Determined N/A - Not Applicable

The information on this Data Sheet represents our current data and best opinion as to the proper use in handling of this material under normal conditions. Any use of the material which is not in conformance with this Data Sheet or which involves using the material in combination with any other material or any other process is the responsibility of the user.

MATERIAL SAFETY DATA SHEET

Sealed Air Corporation
Engineered Products Division
0 Old Sherman Trpk., Danbury, CT 06810 (203) 791-3500

EMERGENCY TELEPHONE NO: (203) 791-3500 M-F 8:30-5:00 ET
CHEMTREC 1-800-424-9300 (for Chemical Emergency" spill, leak, fire exposure or accident, 24 hours)

SECTION 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name:	INSTAPAK • COMPONENT "A"
Chemical Name:	Polymethylene Polyphenylisocyanate
Trade Name:	Polymeric MDI
Chemical Family:	Aromatic Isocyanates
Chemical Formula:	N.A.

SECTION 2 - COMPOSITION / INFORMATION ON INGREDIENTS

Hazardous Ingredients:	CAS No.	Wt.%	OSHA-PEL	ACGIH-TLV
Polymeric Diphenylmethane Diisocyanate ("polymeric" MDI)	9016-87-9	100	N.E.	N.E.
Contains:				
4,4'-Diphenylmethane diisocyanate (4,4'-MDI; CAS 101-68-8; ≈ 45%)			0.02 ppm (Ceiling)	0.005 ppm (TWA)
Other MDI isomers and oligomers			N.E.	N.E.

SECTION 3 - HAZARDOUS IDENTIFICATION

EMERGENCY OVERVIEW

Health Hazards: Irritating to eyes, respiratory system and skin. Inhalation at levels above the occupational exposure limit could cause respiratory sensitization. The onset of the respiratory symptoms may be delayed for several hours after exposure. A hyper-reactive response to even minimal concentrations of MDI may develop in sensitized persons. Sensitized persons should not be exposed to any mixture containing unreacted MDI.

Physical Hazards: Reacts slowly with water to produce carbon dioxide which may rupture closed containers. This reaction accelerates at higher temperatures.

Appearance: Dark brown liquid.

Odor: Slightly aromatic (musty).

Note: Read the entire MSDS for a more thorough evaluation of the hazards.

SECTION 4 - FIRST AID MEASURES

Inhalation: Remove from further exposure and obtain medical attention. Treatment is symptomatic for primary irritation or difficulty in breathing. If breathing is labored, oxygen should be administered by qualified personnel. Apply artificial respiration if breathing has ceased or shows signs of failing. Asthmatic-like symptoms, if manifested, may develop immediately, or be delayed for up to several hours.

Skin Contact: Wash affected area thoroughly with soap and water. Launder contaminated clothing thoroughly before reuse. If irritation, redness, or a burning sensation develops and persists, obtain medical advice.

Eye Contact: Flush with copious amounts of water for at least 15 minutes, holding lids open with fingers. If irritation persists, repeat flushing. Refer individual to a physician for immediate follow-up.

Ingestion: Do NOT induce vomiting. Provided the patient is conscious, wash out mouth with water then give 1 or 2 glasses of water to drink. Refer person to medical personnel for immediate attention.

Note to Physicians: Symptomatic and supportive therapy as needed. Following severe exposure medical follow-up should be monitored for 48 hours. Pulmonary disorders may be aggravated by overexposure.

SECTION 5 - FIRE-FIGHTING MEASURES

Flash Point: 390° F (199° C) [Pensky-Martens Closed Cup]
Flammable Limits (lower): Not available
Flammable Limits (upper): Not available

Extinguishing Media: Carbon dioxide (CO_2), dry chemical, or chemical foam. If water is used, large quantities are required. Contain run-off water with temporary barriers.

Fire and Explosion Hazards: Containers may burst under intense heat. Avoid water contamination in closed containers; carbon dioxide is evolved which can cause pressure build-up. **Caution:** Reaction between water and hot isocyanate can be vigorous.

Special Fire Fighting Procedures: Firefighters must wear self-contained breathing apparatus to protect against toxic and irritating vapors; full protective clothing should also be worn.

NFPA Hazard Code:

Health:	2
Flammability:	1
Reactivity:	1
Special Hazard:	None

SECTION 6 - ACCIDENTAL RELEASE MEASURES

Evacuate area surrounding the spill and prevent further leakage, spillage or entry into drains. Eye and skin protection should be worn during spill cleanup and ventilation maintained. If the potential for airborne concentrations of MDI above the PEL exists, then respiratory protection should be worn.

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SECTION 6 - ACCIDENTAL RELEASE MEASURES (continued)

Contain and cover spill with loose absorbent (earth, sand, sawdust or other absorbent material), or absorbent pillows, pads or socks. Collect absorbed material in open containers or plastic bags, and treat with deactivating solution (90% water, 8% concentrated ammonia, 2% detergent). Allow to stand uncovered for 48-72 hours to permit carbon dioxide to escape and solidification to occur. Wash spill area with deactivating solution and let stand for 15 minutes or longer. Dispose of spilled material properly.

SECTION 7 - HANDLING AND STORAGE

Storage Temperature: Min. 50° F (10° C) Max. 100° F (38° C)

Average Shelf Life: 6 months

Special Sensitivity: Reacts with moisture to produce carbon dioxide gas.

Precautions to be Taken in Handling and Storage: Do not store drums uncovered outdoors. Do not reseal containers unless it is certain that no moisture contamination has occurred. Do not breathe vapors or allow skin contact.

SECTION 8 - EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Limits:	OSHA-PEL:	4,4'-Diphenylmethane diisocyanate;	Ceiling = 0.02 ppm
	ACGIH-TLV:	4,4'-Diphenylmethane diisocyanate;	TWA = 0.005 ppm

HMIS Hazard Code:	Health	3	
	Flammability	1	
	Reactivity	1	
	PPE	B	(Personal Protective Equipment)

Respiratory Protection: Due to the low vapor pressure of this material, the PEL is not likely to be exceeded under normal conditions. If the material is heated or spilled in a confined area, respiratory protection should be worn. Because of their short life and lack of breakthrough indicators, cartridge type respirators equipped for organic vapors are generally not recommended for use with isocyanates. They can be used for short term emergency situations at concentrations below the PEL where the presence of adequate breathing oxygen can be assured. Where concentrations exceed the PEL, air supplied respirators must be used.

Eye Protection: Goggles or safety glasses with side shields.

Protective Clothing: Chemical resistant butyl rubber, nitrile rubber, neoprene, or other suitable protective gloves.

Ventilation: Use local exhaust ventilation if necessary to maintain levels below the PEL. For guidance on engineering controls refer to the ACGIH publication "Industrial Ventilation".

Other: Eyewash station, safety shower and deactivating solution should be available. Refer to the "Recommendations for the Safe Use and Handling of Instapak® Foam-in-Place Chemicals" bulletin before handling Instapak® chemicals.

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

Form: Liquid
Color: Dark brown
Odor: Slightly aromatic (musty)
Vapor Density (Air = 1): 8.5
Molecular Weight: Approx. 350
Melting Point: N. E.

Boiling Point: 406° F (208° C)
Vapor Pressure: < 10^{-5} mm Hg @ 25° C (for Polymeric MDI)
Specific Gravity: 1.24 @ 25° C
Bulk Density: 10.3 lbs/gal
% Volatile by Volume: Nil
Solubility in Water: Not soluble. Reacts slowly with water to liberate CO_2 gas.

SECTION 10 - STABILITY AND REACTIVITY

Stability: Stable under normal conditions. Avoid temperatures above 110° F (43° C) or below 40° F (4° C).
Polymerization: May occur at elevated temperatures in the presence of moisture, alkalies, tertiary amines and metal compounds.
Conditions to Avoid: Contact with moisture and other materials which contain active hydrogen.
Incompatible Materials: Water, amines, strong bases and alcohols. The reaction with water is slow at temperatures less than 120°F (49°C) but is accelerated at higher temperatures.
Hazardous Decomposition Products: Highly unlikely under normal industrial use. Exposure to fire or extreme heat may generate oxides of carbon, oxides of nitrogen, and traces of hydrogen cyanide.

SECTION 11 - TOXICOLOGICAL INFORMATION

Polymeric MDI:

LD_{50}, Oral:	>15,800 mg/kg (rat)
LD_{50}, Dermal:	>5000 mg/kg (rabbit)
LC_{50}, Inhalation:	370 - 490 mg/m^3/4 hours (rat) for an aerosol of polymeric MDI

Primary Route(s) of Exposure: Skin contact from liquid. Inhalation. However, due to the low vapor pressure, overexposure is not expected under normal conditions unless material is heated or used in a poorly ventilated area.

Inhalation: This product is a respiratory irritant and potential respiratory sensitizer. Inhalation of vapor or aerosol at levels above the occupational exposure limit can cause respiratory sensitization. Symptoms may include irritation to the eyes, nose, throat, and lungs, possibly combined with dryness of the throat, tightness of chest and difficulty in breathing. The onset of respiratory symptoms may be delayed for several hours after exposure. A hyper-reactive response to even minimal concentrations of MDI may develop in sensitized persons. Sensitized persons should be removed from any further exposure. Persons with asthma-type conditions or other chronic respiratory diseases should be excluded from working with MDI. In a single evaluation of 5 men occupationally exposed to MDI and hydrocarbon solvent vapors under conditions where adequate ventilation or other safety precautions were not used, neuropsychologic findings were attributed to MDI.

Skin Contact: May cause irritation or rash. Can cause skin discoloration. Repeated and/or prolonged contact may result in skin sensitization. There is limited evidence from laboratory tests that skin contact may play a r[illegible] in respiratory sensitization. This data reinforces the need to prevent direct skin contact and the importance o[illegible] protective gloves.

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SECTION 11 - TOXICOLOGICAL INFORMATION (continued)

Eye Contact: Liquid can cause eye irritation, tearing, reddening and swelling. Permanent corneal injury is unlikely. Exposure to MDI vapors in excess of 0.02 ppm may cause irritation.

Ingestion: Ingestion is unlikely. Based on the acute oral LD_{50}, this product is considered practically non-toxic by ingestion. Ingestion can cause irritation and corrosive action in the mouth, stomach and digestive tract.

Chronic Effects: A study was conducted where groups of rats were exposed for 6 hours/day, 5 days/week for a lifetime to atmospheres of respirable polymeric MDI aerosol either at concentrations of 0, 0.2, 1, or 6 mg/m^3 (which corresponds to MDI levels equal to the OSHA-PEL, 5 times the OSHA-PEL and 30 times the OSHA-PEL). No adverse effects were observed at 0.2 mg/m^3 concentrations. At the 1 mg/m^3 concentration, minimal nasal and lung irritant effects were seen. Only at the top concentration (6 mg/m^3) was there an increased incidence of benign tumor of the lung (adenoma) and one malignant tumor (adenocarcinoma). Overall, the tumor incidence, both benign and malignant, and the number of animals with tumors were not different. The increased incidence of lung tumors is associated with prolonged respiratory irritation and the concurrent accumulation of yellow material in the lung. In the absence of prolonged exposure to high concentrations leading to chronic irritation and lung damage, it is highly unlikely that tumor formation will occur.

Carcinogenicity: The ingredients of this product (>0.1%) are not classified as carcinogenic by ACGIH or IARC, not regulated as carcinogens by OSHA and not listed as carcinogens by NTP.

Mutagenicity: There is no substantial evidence of mutagenic potential.

Reproductive Effects: No adverse reproductive effects are anticipated.

Teratogenicity and Fetotoxicity: No birth defects were seen in two independent animal (rat) studies. Fetotoxicity was observed at doses that were extremely toxic (including lethal) to the mother. The dose that produced this effect (1.2 ppm) is 60 times higher than the OSHA-PEL. Fetotoxicity was not observed at doses that were not maternally toxic. The doses used in these studies were maximal, respirable concentrations well in excess of the defined occupational exposure limits.

SECTION 12 - ECOLOGICAL INFORMATION

Environmental Fate and Distribution: It is unlikely that significant environmental exposure in the air or water will arise, based on consideration of the production and use of the substance.

Persistence and Degradation: Immiscible with water, but will react with water to produce carbon dioxide, and inert and non-biodegradable solids.

Aquatic Toxicity:

LC_{50}:	>1000 mg/l (Zebra fish) At the highest level of 1000 mg/l, there were no deaths.
EC_{50} (24 hour):	>1000 mg/l (Daphnea magna)
EC_{50}:	>100 mg/l (E. Coli)

SECTION 13 - DISPOSAL CONSIDERATIONS

Incinerate or dispose of in accordance with existing federal, state and local environmental control regulations. This material is not a hazardous waste under RCRA 40 CFR 261 when disposed of in its purchased form. Small quantities should be treated with deactivation solution outlined in Section 6. Refer to the "Recommendations for the Safe Use and Handling of Instapak® Foam-in-Place Chemicals" bulletin for additional information concerning disposal of wastes and empty containers. Chemical waste, regardless of quantity, should never be poured into drains, sewers or waterways.

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relates only to the specific material designated herein. Sealed Air Corporation assumes no legal responsibility for use or reliance upon these data.

SECTION 14 - TRANSPORT INFORMATION

DOT: Containers less than 5,000 pounds are not regulated.

IMO: Not regulated.

IATA/ICAO Class: Not regulated.

Reportable Quantity (RQ): 5,000 lbs. for Methylene diphenyl diisocyanate (MDI), CAS #101-68-8 (≈ 45% of product).

SECTION 15 - REGULATORY INFORMATION

OSHA Status: This product is considered hazardous under the Federal OSHA Hazard Communication Standard 29 CFR 1910.1200.

TSCA Status: All ingredients are listed or are not required to be listed.

SARA 302 Extremely Hazardous Substances: None

SARA 311/312 Hazard Categories: Immediate (acute) Health Hazard
Delayed (chronic) Health Hazard
Reactive Hazard

SARA 313 Listed Ingredients: This product contains the following chemicals subject to the reporting requirements: 100% Diisocyanate compounds (Category Code N120).

RCRA Status: Discarded product is not a hazardous waste under RCRA, 40 CFR 261, when disposed of in its purchased form.

SECTION 16 - OTHER INFORMATION

The following states have regulations that apply to the use of this product.

MA	Massachusetts Hazardous Substance List	NJ	New Jersey Hazardous Substance List
PA	Pennsylvania Hazardous Substance List		

The appropriate state agency should be contacted for further details on regulatory requirements for the substances shown below.

Ingredient	CAS No.	Wt. %
Methylene bisphenyl isocyanate (MDI) (Benzene, 1,1'-methylenebis[4-] isocyanato-)	101-68-8	45

Section(s) Revised: Format change

Printed on recycled paper (50% secondary material, minimum 10% post consumer) using vegetable based inks.
M-3 Rev. 4/97

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MOBIL OIL CORPORATION MATERIAL SAFETY DATA BULLETIN

I. PRODUCT IDENTIFICATION

UNLEADED GASOLINE

SUPPLIER:
MOBIL OIL CORP. (212) 883-4411
CHEMICAL NAMES AND SYNONYMS: TRANSPORT EMERGENCY TELEP
PETROLEUM HYDROCARBONS (800)-424-9300 (CHEM
USE OR DESCRIPTION:
MOTOR FUEL

II. TYPICAL CHEMICAL AND PHYSICAL PROPERTIES

APPEARANCE: CLEAR LIQUID COOR: HYDROCARBON PH: NA
VISCOSITY AT 100 F, SUS: <35.7 AT 40 C, CS: <1.0
VISCOSITY AT 210 F, SUS: NA AT 100 C, CS: NA
FLASH POINT F(C): -45(-40) (ASTM D-56)
MELTING POINT F(C): NA POUR POINT F(C): NA
BOILING POINT F(C): > 300(27)
RELATIVE DENSITY, 15/4 C: 0.7-0.76 SOLUBILITY IN WATER: NEGLIGIBL
VAPOR PRESSURE-MM HG 20C: 400.0
NA=NOT APPLICABLE. NE=NOT ESTABLISHED D=DECOMPOSES
FOR FURTHER INFORMATION, CONTACT YOUR LOCAL MARKETING OFFICE.

III. INGREDIENTS

	WT PCT (APPROX)	EXPOSURE LIMITS MG/M3	PPM	SOURCES (AND NOTE
HAZARDOUS INGREDIENTS:				
UNLEADED GASOLINE	100	900	300	A

KEY TO SOURCES: A=ACGIH-TLV, A=SUGGESTED-TLV, M=MOBIL, O=OSHA
NOTE: LIMITS SHOWN FOR GUIDANCE ONLY. FOLLOW APPLICABLE REGULATION

IV. HEALTH HAZARD DATA

EFFECTS OF OVEREXPOSURE: SLIGHT EYE IRRITATION. MODERATE SKIN IRRITATION. RESPIRATORY IRRITATION, DIZZINESS, NAUSEA, LOSS O CONSCIOUSNESS.

V. EMERGENCY AND FIRST AID PROCEDURES

EYE CONTACT: FLUSH WITH WATER.
SKIN CONTACT: WASH CONTACT AREAS WITH SOAP AND WATER. LAUNDER CONTAMINATED CLOTHING BEFORE REUSE.
INHALATION: REMOVE FROM FURTHER EXPOSURE. IF UNCONSCIOUSNESS OCCU SEEK IMMEDIATE MEDICAL ASSISTANCE AND CALL A PHYSICIAN. IF BREATHING HAS STOPPED, USE MOUTH TO MOUTH RESUSCITATION.
INGESTION: DO NOT INDUCE VOMITING. ADMINISTER VEGETABLE OIL. GE MEDICAL ASSISTANCE. (NOTE TO PHYSICIAN: MATERIAL IF ASPIRAT INTO THE LUNGS MAY CAUSE CHEMICAL PNEUMONITIS. TREAT APPROPR

********** VI. FIRE AND EXPLOSION HAZARD DATA **********
FLASH POINT F(C): -40(-40) (ASTM D-56)
FLAMMABLE LIMITS. LEL: 1.1 UEL: 7.6
EXTINGUISHING MEDIA: CARBON DIOXIDE, FOAM, DRY CHEMICAL AND WATER
SPECIAL FIRE FIGHTING PROCEDURES: FIREFIGHTERS MUST USE SELF-CON
BREATHING APPARATUS. COOL STORAGE DRUMS WITH WATER SPRAY.
EVACUATE AREA. PREVENT RUNOFF FROM FIRE CONTROL OR DILUTION FR
ENTERING STREAMS OR DRINKING WATER SUPPLY.
UNUSUAL FIRE AND EXPLOSION HAZARDS: EXTREMELY FLAMMABLE LIQUID. VA
ACCUMULATION COULD FLASH AND/OR EXPLODE IF IN CONTACT WITH OPEN
FLAME.
NFPA HAZARD ID: HEALTH: 1, FLAMMABILITY: 3, REACTIVITY: 0

********** VII. REACTIVITY DATA **********
STABILITY (THERMAL, LIGHT, ETC.): STABLE
CONDITIONS TO AVOID: HEAT, SPARKS, FLAME AND BUILD UP OF STATIC
ELECTRICITY.
INCOMPATIBILITY (MATERIALS TO AVOID): HALOGENS, STRONG ACIDS, ALKA
AND OXIDIZERS.
HAZARDOUS DECOMPOSITION PRODUCTS: CO.
HAZARDOUS POLYMERIZATION: WILL NOT OCCUR

********** VIII. SPILL OR LEAK PROCEDURE **********
ENVIRONMENTAL IMPACT: REPORT SPILLS AS REQUIRED TO APPROPRIATE
AUTHORITIES. U. S. COAST GUARD REGULATIONS REQUIRE IMMEDIAT
REPORTING OF SPILLS THAT COULD REACH ANY WATERWAY INCLUDING
INTERMITTENT DRY CREEKS. REPORT SPILL TO COAST GUARD TOLL FRE
NUMBER 800-424-8802. IN CASE OF ACCIDENT OR ROAD SPILL NOTIFY
CHEMTREC (800) 424-9300.
PROCEDURES IF MATERIAL IS RELEASED OR SPILLED: ELIMINATE ALL IG
SOURCES. REMOVE LEAKING CONTAINERS TO DETACHED AREA. ABSORB
FIRE RETARDANT TREATED SAWDUST, DIATOMACEOUS EARTH, ETC. SHO
AND DISPOSE OF AT AN APPROPRIATE WASTE DISPOSAL FACILITY IN
ACCORDANCE WITH CURRENT APPLICABLE LAWS AND REGULATIONS, AND
PRODUCT CHARACTERISTICS AT TIME OF DISPOSAL. RUNOFF MAY CREA
FIRE OR EXPLOSION HAZARD IN SEWER SYSTEM.
WASTE MANAGEMENT: PRODUCT IS SUITABLE FOR BURNING IN AN ENCLOSED,
CONTROLLED BURNER FOR FUEL VALUE OR DISPOSAL BY SUPERVISED
INCINERATION. IN ADDITION, THE PRODUCT IS SUITABLE FOR PROCE
BY AN APPROVED RECYCLING FACILITY OR CAN BE DISPOSED OF AT AN
GOVERNMENT APPROVED WASTE DISPOSAL FACILITY. USE OF THESE ME
IS SUBJECT TO USER COMPLIANCE WITH APPLICABLE LAWS AND REGUL
AND CONSIDERATION OF PRODUCT CHARACTERISTICS AT TIME OF DISP

********** IX. SPECIAL PROTECTION INFORMATION **********
EYE PROTECTION: GENERALLY EYE CONTACT IS UNLIKELY WITH THIS TYPE
MATERIAL. IF EYE CONTACT IS LIKELY, SAFETY GLASSES WITH SID
SHIELDS OR CHEMICAL TYPE GOGGLES SHOULD BE WORN.
SKIN PROTECTION: IF PROLONGED OR REPEATED SKIN CONTACT IS LIKELY
IMPERVIOUS GLOVES SHOULD BE WORN. GOOD PERSONAL HYGIENE PRA
SHOULD ALWAYS BE FOLLOWED.
RESPIRATORY PROTECTION: APPROVED RESPIRATORY EQUIPMENT MUST BE U
WHEN VAPOR OR MIST CONCENTRATIONS ARE UNKNOWN OR EXCEED THE
VENTILATION: VENTILATION REQUIRED AND EQUIPMENT MUST BE EXPLO
PROOF. USE AWAY FROM ALL IGNITION SOURCES.
OTHER: AVOID PROLONGED REPEATED SKIN CONTACT AND BREATHING
MISTS/VAPORS.

..... X. SPECIAL PRECAUTIONS .....

HANDLING: AVOID CONTACT WITH SKIN. AVOID INHALATION OF VAPORS OR MISTS. USE IN WELL VENTILATED AREA AWAY FROM ALL IGNITION SOURC

STORAGE: GROUND AND BOND ALL TRANSFER AND STORAGE EQUIPMENT; USE NON SPARKING TOOLS AND EQUIPMENT. DRUMS MUST BE GROUNDED AND BONDED AND EQUIPPED WITH SELF-CLOSING VALVES, PRESSURE VACUUM BUNGS AN FLAME ARRESTERS. STORE AWAY FROM ALL IGNITION SOURCES IN A CO. AREA EQUIPPED WITH AN AUTOMATIC SPRINKLING SYSTEM. OUTSIDE OR DETACHED STORAGE PREFERRED. SEE APPENDIX FOR PRECAUTIONARY LAB PL-154

STORED MATERIALS MUST BE LABELED AS: EXTREMELY FLAMMABLE. VAPOR HARMFUL.

..... XI. TOXICOLOGICAL DATA .....

---ACUTE---

ORAL TOXICITY (RATS): LD50: > 5 G/KG 1/10 RATS DIED AT THIS DOSAGE LEVEL. CONSIDERED TO BE NO MORE THAN SLIGHTLY TOXIC BASED ON SINGLE DOSE LEVEL TESTING AT 5 G/KG.

DERMAL TOXICITY (RABBITS): LD50: > 2 G/KG 0/10 RABBITS DIED AT THI DOSAGE LEVEL. CONSIDERED TO BE NO MORE THAN SLIGHTLY TOXIC BAS ON SINGLE DOSE LEVEL TESTING AT 2 G/KG.

INHALATION TOXICITY (RATS): TOXIC (ESTIMATED) ---BASED ON TESTING O SIMILAR PRODUCTS AND/OR THE COMPONENTS.

EYE IRRITATION (RABBITS): CAUSED SLIGHT IRRITATION TO RABBITS. EYE IRRITATION SCORES: 5.3 AT 1 HOUR, 2.3 AT 48 HOURS, 1.3 AT 48 1.0 AT 72 HOURS

SKIN IRRITATION (RABBITS): MODERATELY IRRITATING TO RABBITS. PRIM IRRITATION SCORE: 3.2/8.

---CHRONIC OR SPECIALIZED (SUMMARY)---

RECENT STUDIES WITH LABORATORY ANIMALS HAVE SHOWN THAT GASOLINE VAP WHEN ADMINISTERED IN HIGH CONCENTRATIONS OVER A PROLONGED PERI TIME, CAUSED KIDNEY DAMAGE AND KIDNEY CANCER IN RATS AND LIVER CANCER IN MICE. AS FAR AS SCIENTIST KNOW, LOW LEVEL OR INFREQ EXPOSURE TO GASOLINE VAPORS IS UNLIKELY TO BE ASSOCIATED WITH CANCER OR OTHER SERIOUS DISEASES IN HUMANS.

---OTHER DATA---

GASOLINE CONSISTS OF A COMPLEX BLEND OF PETROLEUM PROCESSING DERIVE PARAFFINIC, OLEFINIC, NAPHTHENIC, AND AROMATIC HYDROCARBONS WHI MAY CONTAIN UP TO 5 PERCENT BENZENE; AND DOSAGES OF MULTIFUNCT ADDITIVES.

********** XII. REGULATORY INFORMATION **********

TSCA INVENTORY STATUS: ALL COMPONENTS REGISTERED.
D.O.T. SHIPPING NAME: GASOLINE
D.O.T. HAZARD CLASS: FLAMMABLE LIQUID
ID NO: UN NO: 1203
US OSHA HAZARD COMMUNICATION STANDARD: PRODUCT ASSESSED IN ACCORDANC WITH OSHA CFR 1910.1200 AND DETERMINED TO BE HAZARDOUS.
RCRA INFORMATION: THE DISPOSAL OF THE UNUSED PRODUCT MAY BE SUBJECT TO RCRA REGULATIONS PER 40 CFR PART 261 FOR THE REASONS INCLUDIN BUT NOT LIMITED TO THOSE LISTED BELOW. DISPOSAL OF THE USED PRODUCT MAY BE REGULATED.
LEAD: 0.0016 PCT
FLASH: -43(-45) F(C)

THE FOLLOWING PRODUCT INGREDIENTS ARE CITED ON THE LISTS BELOW:

CHEMICAL NAME	CAS NUMBER	LIST CITATIONS
UNLEADED GASOLINE		7,8,9,11,12,13,1 16,17

--- KEY TO LIST CITATIONS ---

1 = OSHA Z, 2 = ACGIH, 3 = IARC, 4 = NTP, 5 = NCI
6 = EPA CARC, 7 = NFPA 49, 8 = NFPA 325M, 9 = DOT HMT, 10 = CA
11 = IL RTK, 12 = MA RTK, 13 = MN RTK, 14 = NJ RTK, 15 = NY
16 = FL RTK, 17 = PA RTK.

****

INFORMATION GIVEN HEREIN IS OFFERED IN GOOD FAITH AS ACCURATE, BUT WITHOUT GUARANTEE. CONDITIONS OF USE AND SUITABILITY OF THE PRODUCT PARTICULAR USES ARE BEYOND OUR CONTROL; ALL RISKS OF USE OF THE PRODU ARE THEREFORE ASSUMED BY THE USER AND WE EXPRESSLY DISCLAIM ALL WARRANTIES OF EVERY KIND AND NATURE, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE IN RESPECT TO T USE OR SUITABILITY OF THE PRODUCT. NOTHING IS INTENDED AS A RECOMMENDATION FOR USES WHICH INFRINGE VALID PATENTS OR AS EXTENDING LICENSE UNDER VALID PATENTS. APPROPRIATE WARNINGS AND SAFE HANDLING PROCEDURES SHOULD BE PROVIDED TO HANDLERS AND USERS.

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PREPARED BY: MOBIL OIL CORPORATION
ENVIRONMENTAL AFFAIRS AND TOXICOLOGY DEPARTMENT, PRINCETON, NJ
FOR FURTHER INFORMATION, CONTACT:
MOBIL OIL CORPORATION, PRODUCT FORMULATION AND QUALITY CONTROL
3225 GALLOWS ROAD, FAIRFAX, VA 22037 (703) 849-3265

APPENDIX

FOR MOBIL USE ONLY: MMC: 1 1 3 1 2 PREC: APPROVE REVISED: 10/24/

PRECAUTIONARY LABEL TEXT FOR PACKAGED PRODUCTS:

GASOLINE

DANGER.

EXTREMELY FLAMMABLE.
HARMFUL OR FATAL IF SWALLOWED.
VAPOR HARMFUL.

LONG-TERM EXPOSURE TO VAPORS HAS
CAUSED CANCER IN LABORATORY ANIMALS.

KEEP AWAY FROM HEAT, SPARKS AND FLAME.
AVOID PROLONGED BREATHING OF VAPOR.
KEEP CONTAINER CLOSED.
USE ONLY WITH ADEQUATE VENTILATION.
NOT TO BE USED AS A SKIN CLEANSING AGENT.
NEVER SIPHON BY MOUTH.
KEEP AWAY FROM EYES AND SKIN.
FAILURE TO USE CAUTION MAY CAUSE SERIOUS INJURY OR ILLNESS.

FIRST AID: IF SWALLOWED, DO NOT INDUCE VOMITING.
CALL A PHYSICIAN IMMEDIATELY.

IF INHALED, REMOVE TO FRESH AIR. IF NOT BREATHING,
GIVE ARTIFICIAL RESPIRATION, PREFERABLY MOUTH-TO-MOUTH AND
CALL A PHYSICIAN.

ATTENTION.

EMPTY CONTAINERS MAY CONTAIN PRODUCT RESIDUE, INCLUDING
FLAMMABLE OR EXPLOSIVE VAPORS. DO NOT CUT, PUNCTURE OR
WELD ON OR NEAR CONTAINER. ALL LABEL WARNINGS AND
PRECAUTIONS MUST BE OBSERVED UNTIL CONTAINER HAS BEEN
THOROUGHLY CLEANED OR DESTROYED.

REFER TO PRODUCT MATERIAL SAFETY DATA BULLETIN FOR
FURTHER SAFETY AND HEALTH INFORMATION.

MOBIL OIL CORPORATION, NEW YORK, N.Y. PL-1545(5-81)

D.O.T. SHIPPING NAME: GASOLINE
D.O.T. HAZARD CLASS: FLAMMABLE LIQUID
D.O.T. HAZARD IDENTIFICATION NUMBER: UN NO: 1203

24-HOUR EMERGENCY ASSISTANCE	GENERAL ASSISTANCE	NFPA FIRE HAZARD
BP America(In Ohio):800-362-8059	216-441-8106 (Technical)	Flammability: 3
(Outside Ohio):800-321-8642	216-586-8023 (MSDS)	Health : 1
CHEMTREC Assistance:800-424-9300		Reactivity : 0
		Spl.Hazards:

MSDS Number > 3079 Version # : 2

MANUFACTURER/SUPPLIER:
BP Oil Company
ADDRESS: 200 Public Square, Cleveland, OH 44114-2375

PRODUCT IDENTIFICATION =ID=

TRADE NAME:
LIGHT RAFFINATE
Date: 10/01/93

CAS NUMBER: 64741-84-0
SYNONYM(S):
SOLVENT REFINED NAPHTHA, LIGHT C5-11; NAPHTHA
CHEMICAL FAMILY:
PETROLEUM HYDROCARBONS
MOLECULAR FORMULA: MIXTURE
MOLECULAR WEIGHT: NA
PRODUCT CODE: P 0947
HIERARCHY: 030.000

PRODUCT HAZARD SUMMARY =PH=

HEALTH
DANGER!
HARMFUL OR FATAL IF SWALLOWED.
ASPIRATION HAZARD IF SWALLOWED--CAN ENTER LUNGS AND CAUSE DAMAGE.
VAPORS MAY BE HARMFUL.
MAY BE IRRITATING TO THE SKIN, EYES AND RESPIRATORY TRACT.
HEATED MATERIAL MAY CAUSE THERMAL BURNS.

FLAMMABILITY
WARNING!
FLAMMABLE LIQUID & VAPOR.

REACTIVITY
STABLE.

PRODUCT HEALTH HAZARD INFORMATION =HH=

INGESTION:
PRACTICALLY NON-TOXIC (ACUTE EXPOSURE). Aspiration into lungs may cause pneumonitis. May cause gastrointestinal disturbances. Symptoms may include irritation, nausea, vomiting and diarrhea. Exposure may cause symptoms similar to those listed under "Inhalation" (see Inhalation Section).

SKIN:
PRACTICALLY NON-TOXIC (ACUTE EXPOSURE). MODERATELY TO SEVERELY IRRITATING. Repeated or prolonged contact may result in defatting, redness, itching, pain, inflammation, cracking and possible secondary infection. Absorption from prolonged or massive skin contact may cause poisoning. Contact with heated material may cause thermal burns.

EYE:
SLIGHTLY IRRITATING. Exposure to vapors, fumes or mists may cause irritation. Contact with heated material may cause thermal burns.

========== PERSONAL PROTECTION INFORMATION ==========PI=

EYE PROTECTION:
A d eye contact with this material. Wear safety glasses or chemical g gles. Provide an eyewash station in the work area.

SKIN PROTECTION:
Prevent skin contact. Wear gloves found to be impervious under conditions of use. Additional protection may be necessary to prevent skin contact including use of apron, armcovers, face shield, boots, or full body protection. A safety deluge shower should be located in the work area.

RESPIRATORY PROTECTION:
If exposure limits are exceeded or if irritation is experienced, NIOSH approved respiratory protection should be worn. Ventilation and other forms of engineering controls are often the preferred means for controlling chemical exposures. Respiratory protection may be needed for non-routine or emergency situations.

========== PHYSICAL PROPERTIES ==========PR=

BOILING POINT: 55 - 115.5 C (131-240 F)
SPECIFIC GRAVITY: 0.69
MELTING POINT: NA
% VOLATILE: 100
VAPOR PRESSURE: 1 PSI
EVAPORATION RATE (WATER=1): ND
VAPOR DENSITY (AIR=1): ND
VISCOSITY: 2 CP
% SOLUBILITY IN WATER: NEGLIGIBLE
OCTANOL/WATER PARTITION COEFFICIENT:
POUR POINT: ND
pH: NA
APPEARANCE/ODOR:
CLEAR LIQUID WITH A STRONG HYDROCARBON ODOR.

========== FIRE AND EXPLOSION DATA ==========FE=

FLASH POINT: 10.000 C (50 F)
AUTOIGNITION TEMPERATURE: ND
FLAMMABILITY LIMITS IN AIR (% BY VOL.) LOWER:
1.000
FLAMMABILITY LIMITS IN AIR (% BY VOL.) UPPER:
8.000
BASIC FIREFIGHTING PROCEDURES:
Use dry chemical, foam or carbon dioxide to extinguish fire. Water may be ineffective but should be used to cool fire-exposed containers, structures and to protect personnel. If leak or spill has not ignited, ventilate area and use water spray to disperse gas or vapor and to protect personnel attempting to stop leak. Use water to flush spills away from sources of ignition. Do not flush down public sewers or other drainage systems.

UNUSUAL FIRE AND EXPLOSION HAZARDS:
Vapors form flammable or explosive mixtures with air at room temperature. Vapor or gas may spread to distant ignition sources and flash back. Dangerous when exposed to heat or flame. Runoff to sewer may cause fire or explosion hazard. Containers may explode in heat of fire. Irritating or toxic substances may be emitted upon thermal decomposition. Dangerous when exposed to heat or flame. Containers may explode in heat of fire. Vapors may concentrate in confined areas. Exposed firefighters must wear MSHA/NIOSH approved self-contained breathing apparatus with full face mask and full protective equipment.

========== REACTIVITY DATA ==========RD=

STABILITY/INCOMPATIBILTY:
Stable. Avoid contact with strong oxidizers.

HAZARDOUS REACTIONS/DECOMPOSITION PRODUCTS:
Combustion may produce CO, CO2 and reactive hydrocarbons.

========== ENVIRONMENTAL INFORMATION ==========EI=

SPILL OR RELEASE TO THE ENVIRONMENT:
If your facility or operation has an "Oil or Hazardous Substance Contingency Plan", activate its procedures.

-- Take immediate steps to stop and contain the spill. Caution should be exercised regarding personnel safety and exposure to the spilled material.

-- For technical advice and assistance related to chemicals, contact CHEMTREC (800/424-9300) and your local fire department.

-- Notify the National Response Center, if required. Also notify appropriate state and local regulatory agencies, the LEPC and the SERC. Contact the local Coast Guard if the release is into a waterway.

Emergency Action:
Keep unnecessary people away; isolate hazard area and deny entry. Stay upwind; keep out of low areas. (Also see Personal Protection Information section.) Isolate for 1/2 mile in all directions if tank, rail car or tank truck is involved in fire.

Spill or Leak Procedure:
Shut off ignition sources; no flares, smoking or flames in hazard area. Stop leak if you can do it without risk. Water spray may reduce vapor; but it may not prevent ignition in closed spaces. Small Spills: Take up with sand or other noncombustible absorbent material and place into containers for later disposal. Large Spills: Dike far ahead of liquid spill for later disposal.

Notification:
Any spill or release, or substantial threat of release, of this material to navigable water (virtually any surface water) sufficient to cause a visible sheen upon the water must be reported immediately to the National Response Center (800/424-8802), as required by U.S. Federal Law. Failure to report may result in substantial civil and criminal penalties. Also contact the Coast Guard and appropriate state and local regulatory agencies.

WASTE DISPOSAL:
This substance, when discarded or disposed of, is not specifically listed as a hazardous waste in Federal regulations; however it could be characteristically hazardous if it is considered toxic, corrosive, ignitable, or reactive according to Federal definitions (40 CFR 261). Additionally, it could be designated as hazardous according to state regulations. This substance could also become a hazardous waste if it is mixed with or comes in contact with a hazardous waste. Check 40 CFR 261 to determine whether it is a hazardous waste. If it is a hazardous waste, regulations at 40 CFR 262, 263, 264, 268 and 270 apply. Chemical additions, processing or otherwise altering this material may make the waste management information presented in this MSDS incomplete, inaccurate or otherwise inappropriate.

The transportation, storage, treatment, and disposal of this waste material must be conducted in compliance with all applicable Federal, state, and local regulations.

SARA TITLE III INFORMATION:
Listed below are the hazard categories for the Superfund Amendments and Reauthorization Act (SARA) Section 311/312 (40 CFR 370):
Immediate Hazard: X
Delayed Hazard: X
Fire Hazard: X
Pressure Hazard: -
Reactivity Hazard: -

ADDITIONAL ENVIRONMENTAL REGULATORY INFORMATION:
There may be specific regulations at the local, regional or state level that pertain to this material.

========== SPECIAL PRECAUTIONS/SUPPLEMENTAL INFORMATION ==========SP=
HANDLING/STORAGE:
Store in a well ventilated area away from sources of ignition and incompatibles

EMPTY CONTAINERS:
Empty containers may contain toxic, flammable/combustible or explosive residue or vapors. Do not cut, grind, drill, weld, reuse or dispose containers unless adequate precautions are taken against these hazards.

========== TRANSPORTATION REQUIREMENTS (DOMESTIC LAND) ==========TR=
D.O.T. PROPER SHIPPING NAME (49 CFR 172.101): FLAMMABLE LIQUID, N.O.S. (NAPHTHA), 3, UN 1993, PG I
D.O.T. HAZARD CLASS (49 CFR 172.101): 3
UN/NA CODE (49 CFR 172.101): UN 1993
PACKING GROUP (49 CFR 172.101): FLAMMABLE LIQUID
BILL OF LADING DESCRIPTION (49 CFR 172.202): FLAMMABLE LIQUID, N.O.S. (NAPHTHA), 3, UN 1993, PG I
D.O.T. LABELS REQUIRED (49 CFR 172.101): FLAMMABLE LIQUID
D.O.T. PLACARDS REQUIRED (49 CFR 172.504): FLAMMABLE LIQUID

========== INGREDIENTS/HEALTH HAZARD INFORMATION ==========IN=

COMPONENT	CAS NO.	%	EXPOSURE LIMITS - REF.
Solvent Refined Naphtha, Light ..C5-11	64741-84-0	99-100	300 ppm (1,370 mg/m3) TLV (ACGIH) for VM & P naphtha 300 ppm (1,350 mg/m3) PEL ; 400 ppm (1,800 mg/m3) STEL (OSHA) for VM & P naphtha 350 mg/m3 TWA; 1800 mg/m3 15-minute CEIL (NIOSH) for petroleum distillates (naphtha)
Hexane	110-54-3	10-15	50 ppm (176 mg/m3) TLV (ACGIH) 50 ppm (180 mg/m3) PEL (OSHA) 50 ppm (180 mg/m3) TWA (NIOSH)

Health Hazards: Classified as a primary skin irritant. Mild eye and respiratory tract irritant. Central nervous system depressant and neurotoxin.

Pentane, 3-Methyl	96-14-0	10-15	500 ppm (1760 mg/m3) TLV (ACGIH); 1000 ppm (3600 mg/m3) STEL (ACGIH); 500 ppm (1760 mg/m3) PEL (OSHA); 1000 ppm (3600 mg/m3) STEL (OSHA); 350 mg/m3 TWA (NIOSH); 1800 mg/m3 STEL (NIOSH) recommended for alkanes

Health Hazards: Irritating to mucous membranes. Can be aspirated into the lungs and absorbed through the skin. May cause narcotic effects.

HEXANE, 3-METHYL	589-34-4	10-15	400 ppm (1600 mg/m3) TLV (ACGIH); 500 ppm (2000 mg/m3) STEL (ACGIH); 350 mg/m3 TWA (NIOSH); 1800 mg/m3 15-minute CEIL (NIOSH) for for alkanes

Health Hazards: Classified as an eye, skin and mucous membrane irritant and central nervous system depressant.

Hexane, 2-Methyl	591-76-4	5-10	None established
Heptane (C7 & higher)	142-82-5	5-10	400 ppm (1640 mg/m3) TLV; 500 ppm (2050 mg/m3) STEL (ACGIH) 400 ppm (1600 mg/m3) PEL; 500 ppm (2000 mg/m3) STEL (OSHA) 85 ppm (350 mg/m3) TWA; 440 ppm (1800 mg/m3) 15-minute CEIL (NIOSH)

Health Hazards: Classified as a primary skin irritant. Mild eye and mucous membrane irritant. Central nervous system depressant and neurotoxin.

BUTANE, 2,2-DIMETHYL	75-83-2	1-5	500 ppm (1800 mg/m3) TLV & PEL; 1000 ppm (3600 mg/m3) STEL (ACGIH &

INHALATION:
PRACTICALLY NON-TOXIC TO SLIGHTLY TOXIC. May cause respiratory tract irritation and pulmonary edema. May cause harmful central nervous system effects. Effects may include excitation, euphoria, headache, dizziness, drowsiness, blurred vision, fatigue, tremors, convulsions, loss of consciousness, coma, respiratory arrest and death. Repeated or prolonged exposures may cause behavioral changes and kidney and central nervous system damage.

========== FIRST AID ==========FA=

INGESTION:
DO NOT INDUCE VOMITING BECAUSE OF DANGER OF ASPIRATING LIQUID INTO LUNGS. GET IMMEDIATE MEDICAL ATTENTION. If spontaneous vomiting occurs, monitor for breathing difficulty.

SKIN CONTACT:
Remove contaminated clothing immediately. Wash area of contact thoroughly with soap and water. Get medical attention if irritation persists. Thermal burns require immediate medical attention.

EYE CONTACT:
Flush immediately with large amounts of water for at least 15 minutes. Eyelids should be held away from the eyeball to ensure thorough rinsing. Get medical attention if irritation persists. Thermal burns require immediate medical attention.

INHALATION:
Remove exposed person from source of exposure. If not breathing, ensure clear airway and institute cardiopulmonary resuscitation (CPR). If breathing is difficult, administer oxygen if available. Get immediate medical attention.

========== NOTES TO PHYSICIAN ==========PN=

INGESTION: The most important risk to assess is the extent of aspiration of the product into the lungs since an acute chemical pneumonitis can rapidly progress to respiratory failure. Gasping, coughing, and choking are presumptive evidence of aspiration. It is suggested that all patients suspected of hydrocarbon aspiration have base line chest x-rays. Immediate hospitalization should be considered for asymptomatic children with an abnormal chest x-ray, obtunded or hypoxic patients, intentional or massive ingestions, and patients with abnormal chest x-rays with clinically significant pulmonary disease.

Gastrointestinal symptoms are usually minor and pathological changes of the liver and kidney are reported to be uncommon in acute intoxications. Decontamination (induced emesis or lavage) is controversial and should be considered on the merits of each individual case; of course the usual precaution of an endotracheal tube should be considered prior to lavage.

Hydrocarbons may increase the sensitivity of the myocardium to catecholamines; electrocardiographic monitoring may be indicated and careful consideration should be given to the selection of bronchodilators.

Acute central nervous system signs and symptoms may result from large ingestions or aspiration-induced hypoxia.

INHALATION ABUSE: Gasoline is one of the solvents used by chemical substance abusers. These patients may present with acute and/or chronic central nervous system signs or symptoms. They may also present with arrhythmias.

OSHA); 350 mg/m3 TWA; 180
0 mg/m3
STEL (NIOSH) recommended
for
alkanes

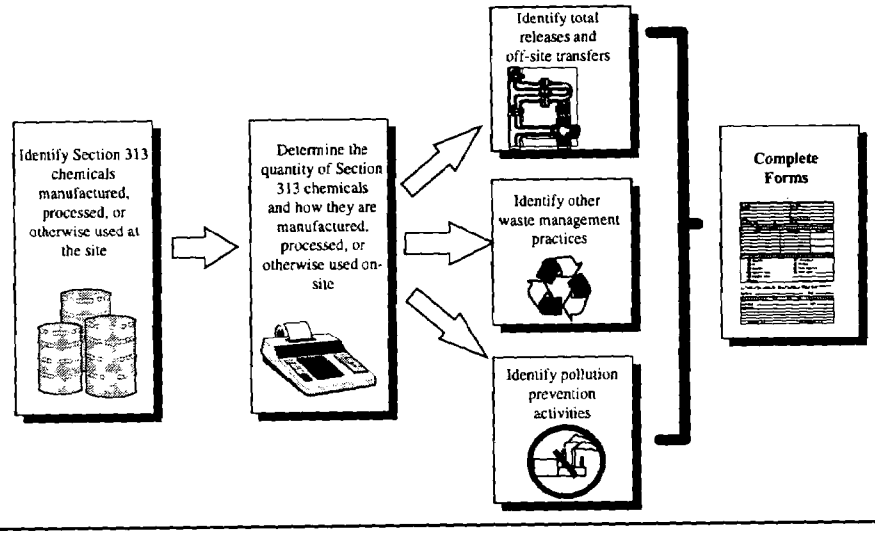
The OSHA Permissible Exposure Limits listed above were promulgated by OSHA in 1989. This standard was vacated by the U.S. Court of Appeals for the Eleventh Circuit. Exposure limits defined in specific chemical standards found in 29 CFR 1910.1001-1048 are not covered by this ruling and are still enforceable.

REVISION DATE: 01-oct-1993 REPLACES SHEET DATED: 17-aug-1990
COMPLETED BY: BP OIL HSEQ DEPARTMENT

NOTICE: The information presented herein is based on data considered to be accurate as of the date of preparation of this Material Safety Data Sheet. However, no warranty or representation, express or implied, is made as to the accuracy or completeness of the foregoing data and safety information, nor is any authorization given or implied to practice any patented invention without a license. In addition, no responsibility can be assumed by vendor for any damage or injury resulting from abnormal use, from any failure to adhere to recommended practices, or from any hazards inherent in the nature of the product.

TRI REPORTING

THE EPCRA SECTION 313 REPORTING PROCESS



SECTION 313 REPORTING

- Importance of a structured process for release and other waste management reporting
  - Ensures accurate data
  - Reduces burden in completing Form R report
    - Systematic approach reduces redundancy over time
    - Team approach distributes responsibility
  - Ensures compliance with TRI reporting requirements

3

REPORTING METHOD

- Identify potential release and other waste management sources
- Identify available data and tools
- Collect data
- Estimate quantity of chemical being released and otherwise managed as waste
- Document your work

4

TOOLS AND DATA SOURCES FOR CALCULATING REPORTING ESTIMATES

- Process flow diagrams
- Waste management manifests, invoices, and waste profiles
- Environmental monitoring data
- Permit applications
- RCRA (BRS), NPDES, CAA, CERCLA and other env. reports
- Engineering calculations and other notes
- EPA guidance
- Sector notebooks

5

CALCULATING REPORTING ESTIMATES

- Consider all sources (routine and non-routine)
- Reasonable estimates are required by law
- Facility determines best approach
- Data and approach must be documented

6

TECHNIQUES FOR ESTIMATING CHEMICAL QUANTITIES

- Use of monitoring data
- Mass balance calculation
- Use of emission factors
- Engineering calculations

7

ANALYSIS OF MONITORING DATA

- Product of measured concentrations, volumetric flow rates, and density equals pounds of chemical released per year
- Most commonly used for wastewater (Discharge monitoring reports (DMRs))
- Use Basis of Estimate code "M" if calculations based primarily on monitoring data

8

MASS BALANCE CALCULATION

- Mass Balance is based on the law of conservation of mass
- Input + Generation = Output + Amount Reacted + Accumulation
- Most useful in simple situations
- Use Basis of Estimate code "C"
  - Example: Esimating fugitive air emissions from storage containers and process equipment

9

USE OF PUBLISHED EMISSION FACTORS

- Values used to describe the quantity of chemical released as a function of:
  - Specific chemical used
  - Specific process used
  - Specific equipment used
- Available in *Compilation of Air Pollutant Emission Factors (AP-42)*
- Use Basis of Estimate code "E"

10

ENGINEERING CALCULATIONS

- Calculations based on best engineering judgment/assumptions
- Calculations based on process knowledge
- Use of non-chemical-specific emission factors
- Use of non-published emission factors
- Use Basis of Estimate code "O"

11

SIGNIFICANT FIGURES

- Significant figures should reflect the precision of the estimate
  - EPA recommends using two significant figures when reporting releases and other waste management estimates
  - If estimate is more precise, additional significant figures can be used
  - If estimate is less precise, can use one significant figure or a range code:
    - » A= 1-10 lbs; B = 11-499 lbs; C = 500-999 lbs

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"NA" VS. "0"

- Use "NA" (not applicable) when no possibility of Section 313 chemical being released to or othwerise managed as waste in that media
  - Example: Facility has no on-site landfill
- Use "0" when no release to or other waste management in the specific media occurs, but is possible
  - Example: Discharge to water is zero; however, release possible if control equipment fails
  - Must indicate a Basis of Estimate code (i.e., M, C, E, O) for all numerical estimates, including "0"

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FUGITIVE EMISSIONS

- Part II, Section 5.1: Fugitive or non-point air emissions
  - Approach: ID potential sources --> ID data/tools --> estimate
- Data Sources/Tools
  - Engineering calculations
  - Emission factors
  - Monitoring data
  - Mass balance

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STACK EMISSIONS

- Part II, Section 5.2: Stack or point-source air emissions
  - Approach: ID potential sources --> ID data/tools --> estimate
  - Data Sources/Tools
    - Air permit applications
    - CAA Title V air inventories
    - Process and production data
    - Engineering calculations
    - Mass balance
    - Emission factors

15

WASTEWATER DISCHARGES

- Part II, Section 5.3: Release to stream or water body and Part II, Section 6.1: Discharges to POTW
  - Approach: ID potential sources --> ID data/tools --> estimate
- Potential release sources
  - Wastewater treatment facility discharge
  - Storm Drains
- Data/Tools
  - Monitoring, if available
  - DMRs or other required monitoring data
  - NPDES permits/permit applications
  - Process knowledge and/or mass balance

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CALCULATING WASTEWATER DISCHARGES

- Calculate the yearly pounds of methanol discharged using the following data concerning wastewater discharges of methanol:

Date	Conc. (mg/L)	Flow (MGD)	Amt.(lbs/day)
3/1	1.0	1.0	8.33
9/8	0.2	0.2	.33
			Average = 4.33

(4.33 lbs/day) x (365 days/yr) = 1581 lbs/yr

MGD = million gallons per day

1 mg/L = 8.33 lbs/million gal

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RELEASED TO LAND ON-SITE

- Part II, Section 5.4
  - » 5.4.1 Underground Injection on-site to Class I Wells
  - » 5.4.2 Underground Injection on-site to Class II-V Wells
- Part II, Section 5.5: Releases to land
  - » 5.5.1A RCRA Subtitle C Landfills
  - » 5.5.1B Other Landfills
  - » 5.5.2 Land treatment/application farming
  - » 5.5.3 Surface impoundment
  - » 5.5.4 Other disposal

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RELEASED TO LAND ON-SITE

- Approach: ID potential sources --> ID data/tools -->estimate
- Potential sources of release to land
  - Landfills
  - Surface Impoundments
  - Spills
  - Leaks
- Data/tools:
  - Operating records/analytical data
  - Spill reports
  - Process knowledge

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WASTE RELEASED TO LAND ON-SITE-- MIGRATION

- Migration of a Section 313 chemical contained in waste released (including disposal) may occur
  - Migration of reportable chemical within one environmental medium (e.g., leachate from landfill)
    - Only required to report initial release of chemical to the environment
  - Migration of chemical from one environmental medium to another (e.g., volatilization from a landfill) within the reporting year
    - Release estimates should be calculated and reported for both media in Part II, Sections 5, 6, and 8 of Form R

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WASTE RELEASED TO LAND ON-SITE-- STORAGE

- Storage of wastes on the land
  - Regular shipment schedule
    - » Must transfer the waste off-site before that reporting year's Form R report is submitted or July 1, whichever comes first
    - » Report material transferred off-site during the year in Part II, Section 6 of Form R
  - No regular shipment schedule
    - » Report material added to pile that remains on-site during the year as the quantity released to land, Part II, Section 5.5.4 of Form R

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ON-SITE WASTE MANAGEMENT

Examples of waste treatment (Section 7)Air pollution control devices (Section 7A)

- Air Pollution control devices (Section 7A)
- Wastewater treatment processes (Section 7A)
- Energy recovery devices (Section 7B)
- Recycling devices (Section 7C)

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OFF-SITE WASTE MANAGEMENT

- Approach: ID potential sources --> ID data/tools --> estimate
- Potential sources of off-site waste management
  - Identify final disposition of Section 313 chemical
    - » Disposal
    - » Waste treatment
    - » Energy recovery
    - » Recycling
- Data/tools
  - Waste manifests and vendor receipts
  - RCRA reports
  - Waste characterization - analyses, profiles

MAXIMUM QUANTITY ON-SITE

- Part II, Section 4.1: Maximum amount on-site at any time during the calendar year
  - Based on amount in storage, process, and wastes
  - Not the same as Tier II maximum amount on site
    - » Tier II is usually by mixtures, Form R is chemical-specific
    - » Tier II excludes hazardous wastes, Form R does not
- Data sources
  - Tier II records/calculations
  - Waste inventory data

BEST PRACTICES

- Begin early
  - Implement a program to gather "real-time" data
  - Collect information throughout reporting year
- Team approach
  - Include all relevant personnel (e.g., engineering, environmental, waste management, operations)
  - Distribute the responsibility

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BEST PRACTICE: RECORDKEEPING

- Importance of good recordkeeping
  - Detailed records improve reporting accuracy and data quality
  - Well-labeled calculations and engineering assumptions serve as standard operating procedures for future years
    - » Reduce replication
    - » Ensure consistency
- Requirements
  - All records used to complete Form R reports must be kept for three years (40 CFR 372.10)
  - EPA will review records during a data quality audit

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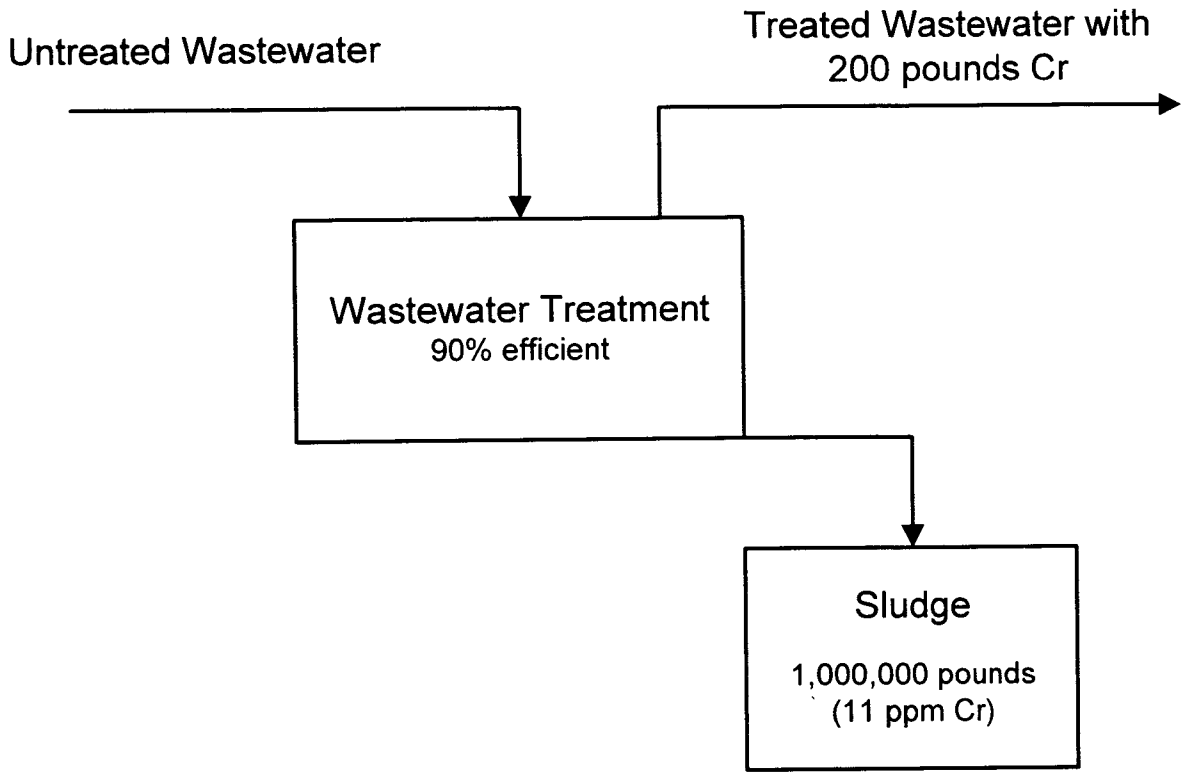
REFERENCE SOURCES

- *Estimating Releases and Waste Treatment Efficiencies*
- EPA Industry Guidance
- *AP-42: Compilation of Air Pollutant Emission Factors*
- Technology Transfer Network (http://www.epa.gov/ttn)
  - AP-42
  - Water 8/ChemDat 8 programs
  - TANKS program
- *Perry's Chemical Engineer's Handbook; CRC Handbook of Chemistry and Physics; Lange's Handbook of Chemistry*

EXERCISE #4: USING BEST AVAILABLE INFORMATION

Available Information: The facility processes chromium above the reporting threshold and must complete a Form R. A wastewater stream containing chromium enters a treatment system where the metals are precipitated out and shipped off site for disposal as a sludge. The system has been recently installed and the facility has documentation from the supplier of the system that it will achieve 90% precipitation of chromium. The untreated wastewater contains chromium but the concentration or quantity is unknown. Based on monitoring and flow data, the facility discharged treated wastewater to a water body that is known to have contained 200 pounds of chromium last year. The only available data on the sludge is TCLP[1] analysis that indicates the sludge contains 11 ppm chromium. One million pounds of sludge were generated and shipped off site last year for disposal in a landfill.

Question: Based on the data available, estimate the quantity of chromium shipped off-site in the sludge during the reporting year?



[1]If the total concentration of a reportable section 313 chemical is not known, but the leachable concentration, based on Toxicity Characteristic Leaching Procedure analysis is known, then the Dilution Factor Approach can be can be used as a tool to estimate total concentrations. This method provides a minimum value of the expected concentration of the chemical in the waste. The predictive equation is the following: $C_T=F*C_L$. Where: C_T=Total concentration, C_L=Leachate concentration, and F=factor to account for dilution. The F factor of '20' represents the dilution encountered in the TCLP: in the analysis, 2 liters of leaching solution is added to 100 grams of sample and assumes that all of the chemical of interest has been transferred to the solution.

OVERVIEW OF FORM R

AUTOMATED TRI REPORTING SYSTEM (ATRS)

- Voluntary option to submit form electronically
- Forms submitted on diskette and loaded directly into EPA's TRI Database
- DOS and Windows versions available
- ATRS may be used for original submissions and revisions
- ATRS has built-in data validation program and pick lists
- A signed cover letter is the sole paper requirement

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OVERVIEW OF FORM R

- Two principal types of information
  - Facility-specific
  - Chemical-specific
- One form must be submitted to EPA and to the SERC/TERC for each Section 313 chemical or chemical category exceeding applicable thresholds

3

PART I: FACILITY INFORMATION

- Identifies the facility
  - Name and address
  - TRI facility identification number
- Provides key data for linking information to other databases
  - SIC code(s)
  - Identification numbers (RCRA, NPDES, Dun & Bradstreet, Underground Injection Control)
- Identifies key personnel
  - Technical contact
  - Public contact

4

PART I. SECTIONS 1 AND 2

- Reporting year is the calendar year to which the reported information applies; not the year in which the form is submitted
- Trade secret submissions require substantiation
- Two forms are required for trade secret submissions:
  - One complete
  - One "sanitized" version
- Separate process for national security claims

PART I. FACILITY IDENTIFICATION INFORMATION			
SECTION 1. REPORTING YEAR 19 ___			
SECTION 2. TRADE SECRET INFORMATION			
2.1	Are you claiming the toxic chemical identified on page 2 trade secret? ☐ Yes (Answer question 2.2; Attach substantiation forms) ☐ No Do not answer 2.2; go to Section 3	2.2	Is this copy ☐ Sanitized ☐ Unsanitized (Answer only if "YES" in 2.1)

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PART I. SECTION 3

- An original signature is required
- Name must be legible (printed or typed)
- Title of the official who signs is also required

SECTION 3. CERTIFICATION (Important: Read and sign after completing all form sections.)		
I hearby certify that I have reviewed the attached documents and that, to the best of my knowledge and belief, the submitted information is true and complete and that the amounts and values in this report are accurate based on reasonable estimates using data available to the preparers of this report.		
Name and official title of owner/operator or senior management official:	Signature:	Date signed:

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PART I. SECTION 4.1

- **All parts of the facility name and address are essential**
- **Mailing address required if different from street address**
- **TRI facility identification number (if a form was filed in a previous reporting year) or "New Facility" (if reporting for the first time)**

SECTION 4. FACILITY IDENTIFICATION	TRI Facility ID Number
4.1 Facility or Establishment Name	Facility or Establishment Name or Mailing Address (if different from street address)
Street	Mailing Address
City/County/State/Zip Code	City/County/State/Zip Code

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PART I. SECTION 4.1

- **Federal facilities**
  - **Enter name of Federal department or agency standard acronym followed by the site name**

SECTION 4. FACILITY IDENTIFICATION

4.1 Facility or Establishment Name: U.S. DOE Kansas City Plant (EXAMPLE)

Street Address

City

State

Zip Code

TRI Facility ID Number

County

Mailing Address (if different from street address)

City

State

Zip Code

PUT LABEL HERE

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PART I. SECTION 4.2 THROUGH 4.4

- **Specify whether the form covers all or part of the facility**
  - **Federal facilities check "c", GOCOs check only "a" or "b"**
- **List name and phone number**
  - **Technical contact - should be able to explain data to EPA**
  - **Public contact - should be able to represent the facility's data to the public**

SECTION 4. FACILITY IDENTIFICATION (Continued)			
4.2	This report contains information for: (Important: check a or b, check c if applicable)	a. ☐ An entire facility b. ☐ Part of a facility c. ☐ A Federal facility	
4.3	Technical Contact Name		Telephone Number (include area code)
4.4	Public Contact Name		Telephone Number (include area code)

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PART I. SECTION 4.5 THROUGH 4.6

- **Enter 4-digit SIC code(s)**
  - **Use SIC code(s) that best describes activities being conducted, in decreasing order of significance**
- **Supply latitude and longitude coordinates**

4.5	SIC Code(s) (4-digits)	a.	b.	c.	d.	e.	f.

4.6	Latitude	Degrees	Minutes	Seconds	Longitude	Degrees	Minutes	Seconds

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PART I. SECTION 4.7 THROUGH 4.10

- **Enter the specified identification numbers or "NA" if not applicable**
  - Enter Dun and Bradstreet number(s)
  - EPA ID numbers (assigned mainly for RCRA-covered facilities)
  - NPDES permit number(s)
  - Underground Injection Well Code (UIC) I.D. number(s)

4.7	Dun & Bradstreet Number(s) (9 digits)	4.8	EPA Identification Number(s) (RCRA I.D. No.) (12 characters)	4.9	Facility NPDES Permit Number(s) (9 characters	4.10	Underground Injection Well Code (UIC) I.D. Number(s) (12 digits)
a		a		a		a	
b		b		b		b	

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PART I. SECTION 5

- **Private-sector and GOCO facilities**
  - Enter complete name and Dun & Bradstreet number of parent company
- **Federal facilities**
  - Enter the complete name of department or agency for parent company (e.g., U.S. Department of Interior)
  - Check "NA" for Dun & Bradstreet number of parent company

SECTION 5. PARENT COMPANY INFORMATION				
5.1	Name of Parent Company	☐ NA		
5.2	Parent Company's Dun & Bradstreet Number	☐ NA	(9 digits)	

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PART II: CHEMICAL-SPECIFIC INFORMATION

- Identifies the Section 313 chemical and its uses at the facility
  - Chemical identity
  - Activities and uses of the Section 313 chemical
  - Maximum amount on-site at one time
- Identifies quantities released and managed as wastes
  - Total release of the Section 313 chemical to each medium
  - Transfers of waste to off-site locations (excluding transfers for sale)
  - On-site waste treatment methods and efficiency(ies)
- Identifies other waste management and source reduction activities

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PART II. SECTIONS 1 AND 2: TOXIC CHEMICAL OR MIXTURE IDENTITY

SECTION 1. TOXIC CHEMICAL IDENTITY	(Important: DO NOT complete this section if you completed Section 2 below.)
1.1	CAS Number (IMPORTANT: Enter only one number exactly as it appears on the Section 313 list. Enter category code if reporting a chemical category.)
1.2	Toxic Chemical or Chemical Category Name (Important: Enter only one name exactly as it appears on the Section 313 list.)
1.3	Generic Chemical Name (Important: Complete only if Part I, Section 2.1 is checked "yes." Generic name must be structurally descriptive.)

- Complete either Section 1.1 & 1.2 or Section 1.3 or Section 2
- Enter CAS number or category code and name of Section 313 chemical or chemical category (except on "sanitized" form)
- Enter generic name only if claiming Section 313 chemical name as a trade secret (Section 1.3)

SECTION 2. MIXTURE COMPONENT IDENTITY	(Important: DO NOT complete this section if you complete Section 1 above.)
2.1	Generic Chemical Name Provided by Supplier (Important: Maximum of 70 characters, including numbers, letters, spaces, and punctuation.)

- If supplier claims trade secret, report generic name by supplier

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PART II. SECTION 3: ACTIVITIES AND USES OF THE CHEMICAL AT THE FACILITY (GENERAL)

- **Specify use(s) of the Section 313 chemical: manufacture, process, or otherwise use**
- **Report only activities taking place at reporting facility**
- **Check all applicable boxes**

SECTION 3. ACTIVITIES AND USES OF THE TOXIC CHEMICAL AT THE FACILITY
(Important: Check all that apply)

3.1 Manufacture the toxic chemical:	3.2 Process the toxic chemical:	3.3 Otherwise use the toxic chemical:
a. ☐ Produce b. ☐ Import		
If produce or import c. ☐ For on-site use/processing d. ☐ For sale/distribution e. ☐ As a byproduct f. ☐ As an impurity	a. ☐ As a reactant b. ☐ As a formulation component c. ☐ As an article component d. ☐ Repackaging	a. ☐ As a chemical processing aid b. ☐ As a manufacturing aid c. ☐ Ancillary or other use

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PART II. SECTION 4: MAXIMUM AMOUNT OF THE TOXIC CHEMICAL ON-SITE AT ANY TIME DURING YEAR

- **Insert appropriate code from instructions indicating the maximum quantity on-site**
- **Use maximum total amount present at one time during reporting year, even if Section 313 chemical is present at more than one location at the facility**
- **Include amounts in storage, processes, and wastes (but not those amounts which have been previously land disposed)**

SECTION 4. MAXIMUM AMOUNT OF THE TOXIC CHEMICAL ON-SITE AT ANY TIME DURING THE CALENDAR YEAR

4.1	☐ (Enter two-digit code from instruction package)	

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PART II. SECTION 5: QUANTITY OF THE TOXIC CHEMICAL ENTERING EACH ENVIRONMENTAL MEDIUM

- Total aggregate releases of Section 313 chemical to the environment from the facility during calendar year
  - Report total releases of Section 313 chemical to each environmental medium
- In column A, Total Releases, report total quantity
  - A range code can be used for quantities less than 1,000 pounds)
    - » A = 1 - 10 pounds
    - » B = 11 - 499 pounds
    - » C = 500 - 999 pounds

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PART II. SECTION 5: QUANTITY OF THE TOXIC CHEMICAL ENTERING EACH ENVIRONMENTAL MEDIUM

- Basis of estimate codes
  - Monitoring data (M)
  - Mass balance (C)
  - Emission factor (E)
  - Other approaches and engineering estimates (O)
- Use the code for the method used to estimate the largest portion of the release

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PART II. SECTION 5: QUANTITY OF THE TOXIC CHEMICAL ENTERING EACH ENVIRONMENTAL MEDIUM

- **Section 5.1 Fugitive or Non-Point Air Emissions**
  - Enter total fugitive releases of Section 313 chemical in column A, including leaks, evaporative losses, building ventilation, or other non-point air emissions
- **Section 5.2 Stack or Point Air Emissions**
  - Enter total releases to air from point sources, including stacks, vents, pipes, ducts, storage tanks, or other confined air streams

SECTION 5. QUANTITY OF THE TOXIC CHEMICAL ENTERING EACH ENVIRONMENTAL MEDIUM					
			A. Total Release (pounds/year) (enter range from instructions or estimate)	B. Basis of Estimate (enter code)	C. % From Stormwater
5.1	Fugitive or non-point air emissions	☐NA			
5.2	Stack or point air emissions	☐NA			

PART II. SECTION 5: QUANTITY OF THE TOXIC CHEMICAL ENTERING EACH ENVIRONMENTAL MEDIUM

- **Section 5.3 Releases to Streams or Water Bodies**
  - Enter names of streams or water bodies to which your facility directly discharges the Section 313 chemical
  - Enter total amount of releases to each receiving stream or water body in column A; include amounts from stormwater runoff, if available
  - Indicate in column C the percentage of the total quantity (by weight) of the Section 313 chemical contributed by stormwater

SECTION 5. QUANTITY OF THE TOXIC CHEMICAL ENTERING EACH ENVIRONMENTAL MEDIUM				
5.3	Discharges to receiving streams or water bodies (enter one name per box)			
Stream or Water Body Name		A. Total Release (pounds/year) (enter range from instructions or estimate)	B. Basis of Estimate (enter code)	C. % From Stormwater
5.3.1				
5.3.2				
5.3.3				

PART II. SECTION 5: QUANTITY OF THE TOXIC CHEMICAL ENTERING EACH ENVIRONMENTAL MEDIUM

- **Section 5.4.1 Underground Injection to Class I wells**
  - Enter total amount of Section 313 chemical injected into Class I wells at facility in column A and basis of estimate code in column B
- **Section 5.4.2 Underground Injection to Class II - V wells**
  - Enter total amount of Section 313 chemical injected into Class II - V wells at facility in column A and basis of estimate code in column B

SECTION 5. QUANTITY OF THE TOXIC CHEMICAL ENTERING EACH ENVIRONMENTAL MEDIUM					
			A. Total Release (pounds/year) (enter range from instructions or estimate)	B. Basis of Estimate (enter code)	C. % From Stormwater
5.4.1	Underground injections on-site to Class I Wells	☐ NA			
5.4.1	Underground injections on-site to Class II-V Wells	☐ NA			

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PART II. SECTION 5: QUANTITY OF THE TOXIC CHEMICAL ENTERING EACH ENV. MEDIUM

- **Section 5.5 Releases to Land On-Site**
  - Other disposal (5.5.4) includes spills or leaks of the Section 313 chemical to land
  - Quantities of Section 313 chemicals released to air or water after initial release to land (e.g., volatilization from surface impoundments) are not included here

SECTION 5. QUANTITY OF THE TOXIC CHEMICAL ENTERING EACH ENVIRONMENTAL MEDIUM				
		NA	A. Total Release (pounds/year) (enter range code from instructions or estimate)	B. Basis of Estimate (enter code)
5.5	Disposal to land on-site			
5.5.1A	RCRA Subtitle C landfills	☐		
5.5.1B	Other landfills	☐		
5.5.2	Land treatment/application farming	☐		
5.5.3	Surface impoundment	☐		
5.5.4	Other disposal	☐		

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PART II. SECTION 6: TRANSFERS OF THE TOXIC CHEMICAL IN WASTE STREAMS TO OFF-SITE LOCATIONS

- Includes both off-site location information and quantities of Section 313 chemicals transferred to off-site locations
- Report quantities of a Section 313 chemical sent off-site to any POTW or other location for recycling, energy recovery, waste treatment, or disposal
- Report only total quantity of a Section 313 chemical transferred off-site, not entire waste
- In Sections 6.1.A.1 and 6.2.A, Total Transfers, report total quantity
  - A range code can be used for quantities less than 1,000 pounds
    - » A = 1 - 10 pounds
    - » B = 11 - 499 pounds
    - » C = 500 - 999 pounds

PART II. SECTION 6: TRANSFERS OF THE TOXIC CHEMICAL IN WASTE STREAMS TO OFF-SITE LOCATIONS

- Section 6.1 Discharges to Publicly Owned Treatment Works
  - Enter total quantity of the Section 313 chemical transferred to all POTWs and basis of estimate

SECTION 6. TRANSFERS OF THE TOXIC CHEMICAL IN WASTES TO OFF-SITE LOCATIONS	
6.1 DISCHARGES TO PUBLICLY OWNED TREATMENT WORKS (POTWs)	
6.1.A Total Quantity Transferred to POTWs and Basis of Estimate	
6.1.A.1 Total Transfers (pounds/year) (enter range code or estimate)	6.1.A.2 Basis of Estimate (enter code)

PART II. SECTION 6: TRANSFERS OF THE TOXIC CHEMICAL IN WASTE STREAMS TO OFF-SITE LOCATIONS

- **Section 6.1.B POTW Name and Location**
  - **Include name and address of each POTW**
  - **Photocopy page 3 if reporting discharges to more than 2 POTWs (ATRS accommodates this without photocopying)**

SECTION 6. TRANSFERS OF THE TOXIC CHEMICAL IN WASTES TO OFF-SITE LOCATIONS							
6.1 DISCHARGES TO PUBLICLY OWNED TREATMENT WORKS (POTWs)							
6.1.B. ___	POTW Name						
	POTW Address						
City		State		County		Zip	
6.1.B. ___	POTW Name						
	POTW Address						
City		State		County		Zip	

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PART II. SECTION 6: TRANSFERS OF THE TOXIC CHEMICAL IN WASTE STREAMS TO OFF-SITE LOCATIONS

- **Section 6.2 Transfers to Other Off-Site Locations**
  - **Include name, address, and EPA identification (RCRA ID) number**
  - **Enter quantities, basis of estimate, and codes for multiple activities (waste treatment, disposal, recycling, and energy recovery) in Rows 1 through 4**
  - **Photocopy page 4 if reporting more than 2 off-site transfer locations (ATRS accomodates this without photocopying)**

SECTION 6.2 TRANSFERS TO OTHER OFF-SITE LOCATIONS					
6.2. ___ OFF-SITE EPA IDENTIFICATION NUMBER (RCRA ID NO.)					
Off-site Location Name					
Off-site Address					
City		State		County	Zip
Is location under control of reporting facility or parent company? ☐ Yes ☐ No					
A. Total Transfers (pounds/year) (enter range code or estimate)		B. Basis of Estimate (enter code)		C. Type of Waste Treatment Disposal/ Recycling/Energy Recovery (enter code)	
1.		1.		1.M	
2.		2.		2.M	
3.		3.		3.M	
4.		4.		4.M	

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PART II. SECTION 7A: ON-SITE WASTE TREATMENT METHODS AND EFFICIENCY

- General waste stream type containing the Section 313 chemical, treatment method(s), influent concentration range, estimate of treatment efficiency, and indication if information is based on operating data
- Report each waste treatment method that the Section 313 chemical undergoes
  - Include even if method has no effect on Section 313 chemical
- Only data element in Form R focusing on the entire waste stream rather than the Section 313 chemical in the waste stream

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PART II. SECTION 7A: ON-SITE WASTE TREATMENT METHODS AND EFFICIENCY

SECTION 7A. ON-SITE WASTE TREATMENT METHODS AND EFFICIENCY

☐ Not Applicable (NA) - Check here if no on-site waste treatment is applied to any waste stream containing the toxic chemical or chemical category.

a. General Waste Stream (enter code)	b. Waste Treatment Method(s) Sequence [enter 3-character code(s)]	c. Range of Influent Concentration	d. Waste Treatment Efficiency Estimate	e. Based on Operating Data?
7A.1a	7A.1b 1 2 3 4 5 6 7 8	7A.1c	7A.1d	7A.1e
			%	Yes ☐ No ☐

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PART II. SECTION 7A: ON-SITE WASTE TREATMENT METHODS AND EFFICIENCY

- Section 7A.a General Waste Stream
  - Enter a waste stream code for each waste treatment method sequence
    - » There are four waste stream types: Gaseous, Wastewater, Liquid Waste, Solid Waste
- Section 7A.b Waste Treatment Method(s) Sequence
  - Enter code(s) from EPA instructions document for on-site waste treatment method(s) used
  - Enter code(s) regardless of whether waste treatment actually affected the Section 313 chemical
  - Report waste treatment method(s) used on aggregate waste stream as single stream
  - If applicable, enter codes in sequence in which they occur

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PART II. SECTION 7A: ON-SITE WASTE TREATMENT METHODS AND EFFICIENCY

- Section 7A.c Range of Influent Concentration
  - Use range of concentration of the Section 313 chemical in waste stream as it typically enters treatment equipment
  - Enter code(s) for concentration ranges (parts per million) from EPA instructions document
- Section 7A.d Waste Treatment Efficiency Estimates
  - Waste treatment efficiency expressed as percent removal of Section 313 chemical from waste stream through biological degradation, chemical conversion, or physical removal
    - » Use overall efficiency of waste treatment sequence, not a specific waste treatment method
    - » Use percent removal of Section 313 chemical only, not other constituents of the waste stream

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PART II. SECTION 7A: ON-SITE WASTE TREATMENT METHODS AND EFFICIENCY

■ Section 7A.e Based on Operating Data?

- **Check "yes" if efficiency estimate is based on monitoring from typical operating conditions**
- **Check "no" if efficiency estimate is based on published data for similar processes or equipment supplier's literature, or if the influent or effluent waste comparison or the flow rate was otherwise estimated**

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PART II. SECTION 7A: ON-SITE WASTE TREATMENT METHODS AND EFFICIENCY

■ Procedures for using two lines of data to enter 9 or more sequential waste treatment methods

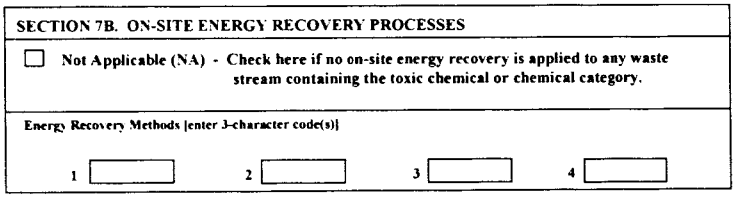
SECTION 7A. ON-SITE WASTE TREATMENT METHODS AND EFFICIENCY

☐ Not Applicable (NA) - Check here if no on-site waste treatment is applied to any waste stream containing the toxic chemical or chemical category.

a General Waste Stream (enter code)	b Waste Treatment Method(s) Sequence [enter 3-character code(s)]	c Range of Influent Concentration	d Waste Treatment Efficiency Estimate	e Based on Operating Data?
7A.1a	7A.1b 1 P12 2 P18	7A.1c	7A.1d	7A.1e
W	3 P17 4 P61 5 P42 6 P21 7 P21 8 P11	NA	%	Yes ☐ No ☐
7A.2a	7A.2b 9 C44 2 NA	7A.2c	7A.2d	7A.2e
	3 4 5 6 7 8	1	99 %	Yes ☑ No ☐
7A.3a	7A.1b 1 A01 2 NA	7A.3c	7A.3d	7A.3e
A	3 4 5 6 7 8	1	91 %	Yes ☑ No ☐

PART II. SECTION 7B: ON-SITE ENERGY RECOVERY PROCESSES

- **Enter on-site energy recovery methods for Section 313 chemical**
  - Section 313 chemical must be combustible and have a significant heating value (e.g., 5,000 BTU/lb.)
  - Combustion unit is integrated into an energy recovery system (e.g., industrial furnace, industrial kiln, or boiler)
- **Enter codes in descending order by quantities combusted**


SECTION 7B. ON-SITE ENERGY RECOVERY PROCESSES

☐ Not Applicable (NA) - Check here if no on-site energy recovery is applied to any waste stream containing the toxic chemical or chemical category.

Energy Recovery Methods [enter 3-character code(s)]

1 2 3 4

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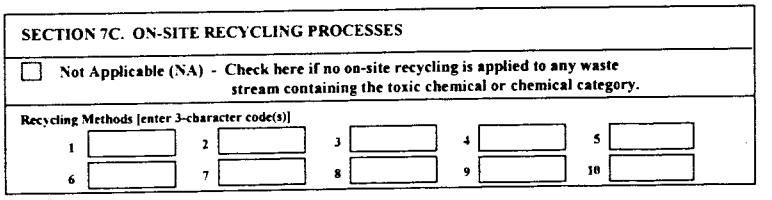
PART II. SECTION 7C: ON-SITE RECYCLING PROCESSES

- **Enter methods used for on-site recycling of Section 313 chemical**
  - Codes for recycling methods used are found in EPA instructions document
  - Do not include energy recovery processes
- **Enter codes in descending order by quantities recycled**


SECTION 7C. ON-SITE RECYCLING PROCESSES

☐ Not Applicable (NA) - Check here if no on-site recycling is applied to any waste stream containing the toxic chemical or chemical category.

Recycling Methods [enter 3-character code(s)]

1 2 3 4 5

6 7 8 9 10

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PHOTOCOPYING PAGES OF FORM R

- Form R pages may be photocopied if additional space is necessary to complete these sections (photocopying is not necessary with ATRS)
  - Section 6.1: Transfers to POTWs
  - Section 6.2: Transfers to Other Off-Site Locations
  - Section 7A: Waste Treatment Methods and Efficiency
- When photocopying pages, you must complete the box on each page to indicate the number of copies you are attaching
- For the page being photocopied, enter in the left box the total number of pages submitted including the original

  original + number photocopied = total pages submitted

  - In the second box, indicate the position of the individual page

Example:

If additional pages of Part II, Sections 6.2/7A are attached, indicate the total number of pages in this box ☐ and indicate which Part II, Sections 6.2/7A page this is, here. ☐ (example: 1.2.3. etc.)

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ATRS SOFTWARE

- Advantages of completing Form R or Form A electronically
  - Reduce risk of error by reporting sites
  - Reduce data entry error by EPA
  - Reduced data entry redundancy
  - Photocopying sections of the Form R would not be required
  - Menu-driven screens with special "hot" keys displayed
  - "Pick lists" containing valid reporting codes
  - "Real-time" error checking and validation
- Submission of forms on magnetic media is encouraged but not required

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ATRS SOFTWARE

- **Technical Support**
  - **Phone: 703-816-4434**
  - **Fax: 703-816-4466**
  - **e-mail: tris.user.support@epcra.org**

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EPA

United States Environmental Protection Agency

FORM R

TOXIC CHEMICAL RELEASE INVENTORY REPORTING FORM

Section 313 of the Emergency Planning and Community Right-to-Know Act of 1986, also known as Title III of the Superfund Amendments and Reauthorization Act

WHERE TO SEND COMPLETED FORMS: 1. EPCRA Reporting Center, P.O. Box 3348, Merrifield, VA 22116-3348, ATTN: TOXIC CHEMICAL RELEASE INVENTORY; 2. APPROPRIATE STATE OFFICE (See instructions in Appendix F)

Enter "X" here if this is a revision ☐

For EPA use only

IMPORTANT: See instructions to determine when "Not Applicable (NA)" boxes should be checked.

PART I. FACILITY IDENTIFICATION INFORMATION

SECTION 1. REPORTING YEAR 19 ____

SECTION 2. TRADE SECRET INFORMATION

2.1	Are you claiming the toxic chemical identified on page 2 trade secret? ☐ Yes (Answer question 2.2; Attach substantiation forms) ☐ No (Do not answer 2.2; go to Section 3)	2.2	Is this copy ☐ Sanitized ☐ Unsanitized (Answer only if "YES" in 2.1)

SECTION 3. CERTIFICATION (Important: Read and sign after completing all form sections.)

I hereby certify that I have reviewed the attached documents and that, to the best of my knowledge and belief, the submitted information is true and complete and that the amounts and values in this report are accurate based on reasonable estimates using data available to the preparers of this report.

Name and official title of owner/operator or senior management official:	Signature:	Date signed:

SECTION 4. FACILITY IDENTIFICATION

		TRI Facility ID Number
4.1	Facility or Establishment Name	Facility or Establishment Name or Mailing Address (if different from street address)
	Street	Mailing Address
	City/County/State/Zip Code	City/County/State/Zip Code

4.2	This report contains information for: (Important: check a or b; check c if applicable)	a. ☐ An entire facility	b. ☐ Part of a facility	c. ☐ A Federal facility			
4.3	Technical Contact Name		Telephone Number (include area code)				
4.4	Public Contact Name		Telephone Number (include area code)				
4.5	SIC Code(s) (4 digits)	a.	b.	c.	d.	e.	f.

4.6	Latitude	Degrees	Minutes	Seconds	Longitude	Degrees	Minutes	Seconds

4.7	Dun & Bradstreet Number(s) (9 digits)	4.8	EPA Identification Number(s) (RCRA I.D. No.) (12 characters)	4.9	Facility NPDES Permit Number(s) (9 characters)	4.10	Underground Injection Well Code (UIC) I.D. Number(s) (12 digits)
	a.		a.		a.		a.
	b.		b.		b.		b.

SECTION 5. PARENT COMPANY INFORMATION

5.1	Name of Parent Company	☐ NA	
5.2	Parent Company's Dun & Bradstreet Number	☐ NA	(9 digits)

EPA FORM R
PART II. CHEMICAL - SPECIFIC INFORMATION

TRI FACILITY ID NUMBER

Toxic Chemical, Category, or Generic Name

SECTION 1. TOXIC CHEMICAL IDENTITY

(Important: DO NOT complete this section if you completed Section 2 below.)

1.1 CAS NUMBER (IMPORTANT: Enter only one number exactly as it appears on the Section 313 list. Enter category code if reporting a chemical category.)

1.2 Toxic Chemical or Chemical Category Name (Important: Enter only one name exactly as it appears on the Section 313 list.)

1.3 Generic Chemical Name (Important: Completenly if Part I, Section 2.1 is checked "yes". Generic name must be structurally descriptive.)

SECTION 2. MIXTURE COMPONENT IDENTITY

(Important: DO NOT complete this section if you complete Section 1 above.)

2.1 Generic Chemical Name Provided by Supplier (Important: Maximum of 70 characters, including numbers, letters, spaces, and punctuation.)

SECTION 3. ACTIVITIES AND USES OF THE TOXIC CHEMICAL AT THE FACILITY

(Important: Check all that apply.)

3.1 Manufacture the toxic chemical:	3.2 Process the toxic chemical:	3.3 Otherwise use the toxic chemical:
a. ☐ Produce b. ☐ Import		
If produce or import:		
c. ☐ For on-site use/processing	a. ☐ As a reactant	a. ☐ As a chemical processing aid
d. ☐ For sale/distribution	b. ☐ As a formulation component	b. ☐ As a manufacturing aid
e. ☐ As a byproduct	c. ☐ As an article component	c. ☐ Ancillary or other use
f. ☐ As an impurity	d. ☐ Repackaging	

SECTION 4. MAXIMUM AMOUNT OF THE TOXIC CHEMICAL ON-SITE AT ANY TIME DURING THE CALENDAR YEAR

4.1 ☐ (Enter two-digit code from instruction package.)

SECTION 5. QUANTITY OF THE TOXIC CHEMICAL ENTERING EACH ENVIRONMENTAL MEDIUM

			A. Total Release (pounds/year) (enter range from instructions or estimate)	B. Basis of estimate (enter code)	C. % From Stormwater
5.1	Fugitive or non-point air emissions	NA ☐			
5.2	Stack or point air emissions	NA ☐			
5.3	Discharges to receiving streams or water bodies (enter one name per box)				
	Stream or Water Body Name				
5.3.1					
5.3.2					
5.3.3					
5.4.1	Underground Injection on-site to Class I Wells	NA ☐			
5.4.2	Underground Injection on-site to Class II-V Wells	NA ☐			

If additional pages of Part II, Section 5.3 are attached, indicate the total number of pages in this ☐ and indicate which Part II, Section 5.3 page this is, here ☐ (example: 1,2,3, etc.)

Range Codes: A = 1 - 10 pounds; B = 11 - 499 pounds; C = 500 - 999 pounds.

EPA FORM R
PART II. CHEMICAL-SPECIFIC INFORMATION (CONTINUED)

TRI FACILITY ID NUMBER

Toxic Chemical, Category, or Generic Name

SECTION 5. QUANTITY OF THE TOXIC CHEMICAL ENTERING EACH ENVIRONMENTAL MEDIUM

		NA	A. **Total Release** (pounds/year) (enter range code from instructions or estimate)	B. **Basis of Estimate** (enter code)
5.5	Disposal to land on-site			
5.5.1A	RCRA Subtitle C landfills	☐		
5.5.1B	Other landfills	☐		
5.5.2	Land treatment/application farming	☐		
5.5.3	Surface impoundment	☐		
5.5.4	Other disposal	☐		

SECTION 6. TRANSFERS OF THE TOXIC CHEMICAL IN WASTES TO OFF-SITE LOCATIONS

6.1 DISCHARGES TO PUBLICLY OWNED TREATMENT WORKS (POTWs)

6.1.A. Total Quantity Transferred to POTWs and Basis of Estimate

6.1.A.1. Total Transfers (pounds/year) (enter range code or estimate)	**6.1.A.2 Basis of Estimate** (enter code)

6.1.B. ___ POTW Name							
POTW Address							
City		State		County		Zip	
6.1.B. ___ POTW Name							
POTW Address							
City		State		County		Zip	

If additional pages of Part II, Section 6.1 are attached, indicate the total number of pages in this box ☐ and indicate which Part II, Section 6.1 page this is here ☐ (example: 1,2,3, etc.)

SECTION 6.2 TRANSFERS TO OTHER OFF-SITE LOCATIONS

6.2 ___ OFF-SITE EPA IDENTIFICATION NUMBER (RCRA ID NO.)							
Off-Site Location Name							
Off-Site Address							
City		State		County		Zip	

Is location under control of reporting facility or parent company? ☐ Yes ☐ No

Range Codes: A = 1 - 10 pounds; B = 11 - 499 pounds; C = 500 - 999 pounds.

EPA FORM R
PART II. CHEMICAL-SPECIFIC INFORMATION (CONTINUED)

TRI FACILITY ID NUMBER

Toxic Chemical, Category, or Generic Name

SECTION 6. 2 TRANSFERS TO OTHER OFF-SITE LOCATIONS (continued)

A. Total Transfers (pounds/year) (enter range code or estimate)	B. Basis of Estimate (enter code)	C. Type of Waste Treatment/Disposal/ Recycling/Energy Recovery (enter code)
1.	1.	1.M
2.	2.	2.M
3.	3.	3.M
4.	4.	4.M

6.2 ___ OFF-SITE EPA IDENTIFICATION NUMBER (RCRA ID NO.)

Off-Site Location Name

Off-Site Address

City | State | County | Zip

Is location under control of reporting facility or parent company? ☐ **Yes** ☐ **No**

A. Total Transfers (pound/year) (enter range code or estimate)	B. Basis of Estimate (enter code)	C. Type of Waste Treatment/Disposal/ Recycling/Energy Recovery (enter code)
1.	1.	1.M
2.	2.	2.M
3.	3.	3.M
4.	4.	4.M

SECTION 7A. ON-SITE WASTE TREATMENT METHODS AND EFFICIENCY

☐ **Not Applicable (NA) - Check here if no on-site waste treatment is applied to any waste stream containing the toxic chemical or chemical category.**

a. General Waste Stream (enter code)	b. Waste Treatment Method(s) Sequence [enter 3-character code(s)]	c. Range of Influent Concentration	d. Waste Treatment Efficiency Estimate	e. Based on Operating Data?
7A.1a	7A.1b: 1 2 3 4 5 6 7 8	7A.1c	7A.1d	7A.1e
			%	Yes ☐ No ☐
7A.2a	7A.2b: 1 2 3 4 5 6 7 8	7A.2c	7A.2d	7A.2e
			%	Yes ☐ No ☐
7A.3a	7A.3b: 1 2 3 4 5 6 7 8	7A.3c	7A.3d	7A.3e
			%	Yes ☐ No ☐
7A.4a	7A.4b: 1 2 3 4 5 6 7 8	7A.4c	7A.4d	7A.4e
			%	Yes ☐ No ☐
7A.5a	7A.5b: 1 2 3 4 5 6 7 8	7A.5c	7A.5d	7A.5e
			%	Yes ☐ No ☐

If additional pages of Part II, Sections 6.2/7A are attached, indicate the total number of pages in this box ☐ and indicate which Part II, Sections 6.2/7A page this is, here. ☐ (example: 1.2.3. etc.)

Range Codes: A= 1-10 pounds; B=11- 499 pounds; C= 500 - 999 pounds.

EPA FORM R
PART II. CHEMICAL-SPECIFIC INFORMATION (CONTINUED)

TRI FACILITY ID NUMBER

Toxic Chemical, Category, or Generic Name

SECTION 7B. ON-SITE ENERGY RECOVERY PROCESSES

☐ Not Applicable (NA) - Check here if no on-site energy recovery is applied to any waste stream containing the toxic chemical or chemical category.

Energy Recovery Methods [enter 3-character code (s)]

1 ☐ 2 ☐ 3 ☐ 4 ☐

SECTION 7C. ON-SITE RECYCLING PROCESSES

☐ Not applicable (NA) - Check here if no on-site recycling is applied to any waste stream containing the toxic chemical or chemical category.

Recycling Methods [enter 3-character code(s)]

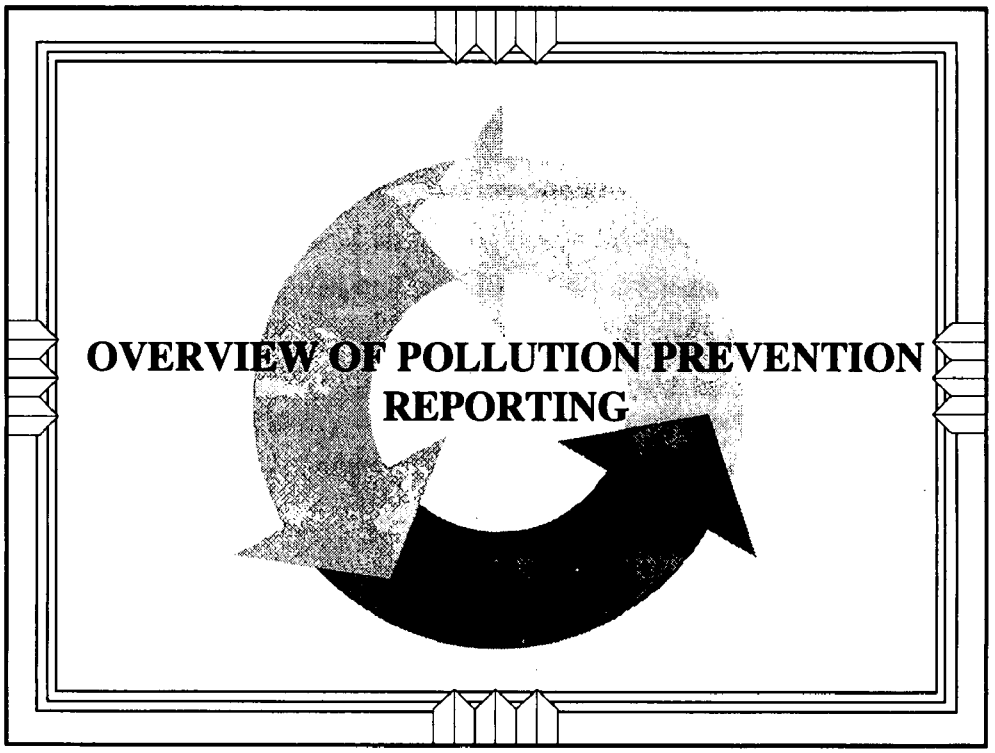
1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐
6 ☐ 7 ☐ 8 ☐ 9 ☐ 10 ☐

SECTION 8. SOURCE REDUCTION AND RECYCLING ACTIVITIES

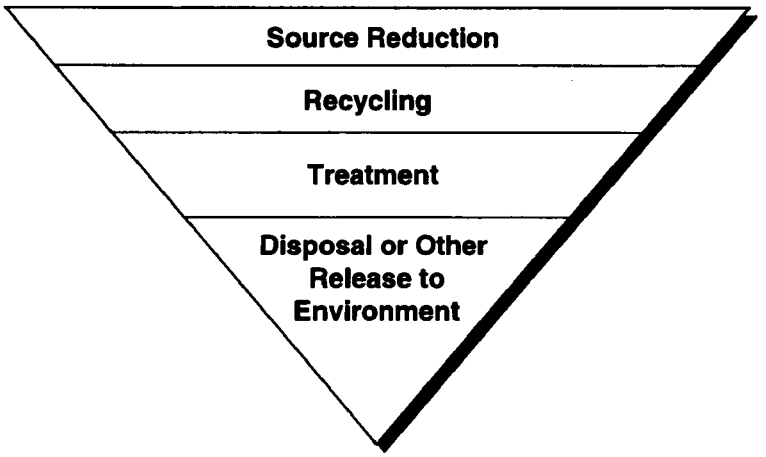
	All quantity estimates can be reported using up to two significant figures.	**Column A Prior Year** (pounds/year)	**Column B Current Reporting Year** (pounds/year)	**Column C Following Year** (pounds/year)	**Column D Second Following Year** (pounds/year)
8.1	**Quantity released**				
8.2	**Quantity used for energy recovery on-site**				
8.3	**Quantity used for energy recovery off-site**				
8.4	**Quantity recycled on-site**				
8.5	**Quantity recycled off-site**				
8.6	**Quantity treated *on*-site**				
8.7	**Quantity treated off-site**				
8.8	**Quantity released to the environment as a result of remedial actions, catastrophic events, or one-time events not associated with production processes** (pounds/year)				
8.9	**Production ratio or activity index**				

8.10	**Did your facility engage in any source reduction activities for this chemical during the reporting year? If not, enter "NA" in Section 8.10.1 and answer Section 8.11.**			
	Source Reduction Activities [enter code(s)]	**Methods to Identify Activity (enter codes)**		
8.10.1		a.	b.	c.
8.10.2		a.	b.	c.
8.10.3		a.	b.	c.
8.10.4		a.	b.	c.
8.11	**Is additional optional information on source reduction, recycling, or pollution control activities included with this report? (Check one box)**			YES ☐ NO ☐

* Report releases pursuant to EPCRA Section 329(8) including "any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing into the environment." Do not include any quantity treated on-site or off-site.



POLLUTION PREVENTION HIERARCHY



2

POLLUTION PREVENTION ACT OF 1990

- **PPA mandates EPA to:**
  - **Establish a pollution prevention office**
  - **Establish a pollution prevention strategy**
  - **Provide matching grants to states for programs to promote source reduction**
  - **Establish a source reduction clearinghouse**
  - **Collect source reduction and recycling data through TRI Form R reports**
  - **Submit biennial program reports to Congress**

3

SOURCE REDUCTION

Source reduction **means any practice "which (i) reduces the amount of any hazardous substance, pollutant, or contaminant entering any waste stream or otherwise released into the environment (including fugitive emissions) prior to recycling, treatment, or disposal; and (ii) reduces the hazards to public health and the environment associated with the release of such substances, pollutants, or contaminants."**

Pollution Prevention Act of 1990
6603 (5)(A)

4

SOURCE REDUCTION

Excludes:

> **"(A)ny practice that alters the physical, chemical, or biological characteristics or total volume of a hazardous substance, pollutant, or contaminant through a process or activity which itself is not integral to and necessary for the production of a product or the providing of a service."**
>
> **Pollution Prevention Act of 1990**
> **Section 6603(5)(B)**

5

THINGS TO REMEMBER WHEN COMPLETING SECTION 8

- **Key concepts**
  - **Waste streams**
  - **Process streams**
  - **Reportable recycling**
  - **Source reduction activities**
- **Develop consistent definitions for key terms**
  - **Across facility**
  - **Across agency/company**

6

PPA DATA ELEMENT

- **INSERT SECTION 8 OF FORM R**

7

8

RELEASES AND OTHER WASTE MANAGEMENT

- Part II, Sections 8.1 through 8.7 of Form R
  - Column A - Prior Reporting Year Estimate
  - Column B - Current Reporting Year Estimate
  - Column C - Next Reporting Year Projection
  - Column D - Following Reporting Year Projection

9

RELEASES AND OTHER WASTE MANAGEMENT

- Part II, Sections 8.1 through 8.7 of Form R
  - Quantity of a Section 313 chemical reported in Sections 8.1 through 8.7 does not include releases (including on-site and off-site disposal) and other off-site waste management activities resulting from remedial actions, catastrophic events, or one-time events not associated with production process. These quantities should be reported in Section 8.8 only.

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RELEASES

- **Section 8.1: Quantity released**
  - **Quantity of a Section 313 chemical "released"**
    - » **Definition of release: "...any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing...into the environment..." (EPCRA §329(8))**
    - » **Includes fugitive and stack air emissions, releases to land, releases to water, underground injections, and on-site and off-site disposal**
    - » **Includes metals in wastes sent to a POTW as treated on-site or off-site (metals cannot be destroyed)**

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RELEASES

- **Section 8.1: Quantity Released (continued)**
  - **§ 8.1 = §5 + §6.2 (disposal only) + §6.1(for metals and metal compounds only) - §8.8 (release or off-site disposal only)**
  - **Possible data sources**
    - » **Data and calculations from Sections 5 and 6 of Form R**

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ENERGY RECOVERY

- Sections 8.2 and 8.3: On-site and off-site energy recovery
  - Things to remember about energy recovery
    - » Combustion unit (e.g., industrial furnace, industrial kiln, or boiler) must be integrated into an energy recovery system
    - » Section 313 chemical must have significant heating value (e.g., 5,000 BTU/lb.)
    - » Section 313 chemicals that are, or are contained in, commercially available fuels should not be reported as combusted for energy recovery

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ENERGY RECOVERY

- Section 8.2: On-site energy recovery
  - Quantity of Section 313 chemical used for energy recovery <u>on-site</u>
    - » Quantity *actually* combusted in the energy recovery unit - *not* the quantity entering the unit
  - A code reported in Section 7B indicates that Section 8.2 should be calculated
  - Possible data sources
    - » Engineering process specifications
    - » Mass balance calculations
    - » Best engineering judgement

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ENERGY RECOVERY

- Section 8.3: Off-site energy recovery
  - Quantity of Section 313 chemical that is *transferred* off-site for energy recovery
    - » Includes total quantity of Section 313 chemical *transferred* off-site for energy recovery purposes - *not* quantity actually combusted off-site
  - Possible data sources
    - » Section 6.2 (codes M56 and M91) of Form R
    - » Receipts from off-site facilities
    - » RCRA hazardous waste manifests

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RECYCLING

- Section 8.4: On-site recycling
  - Quantity of Section 313 chemical recycled on-site
    - » Includes total quantity of Section 313 chemical *recovered* from the recycling process and made available for further use
  - Possible data sources
    - » Engineering process specifications
    - » Mass balance calculations
  - A code reported in Section 7C indicates that Section 8.4 should be calculated

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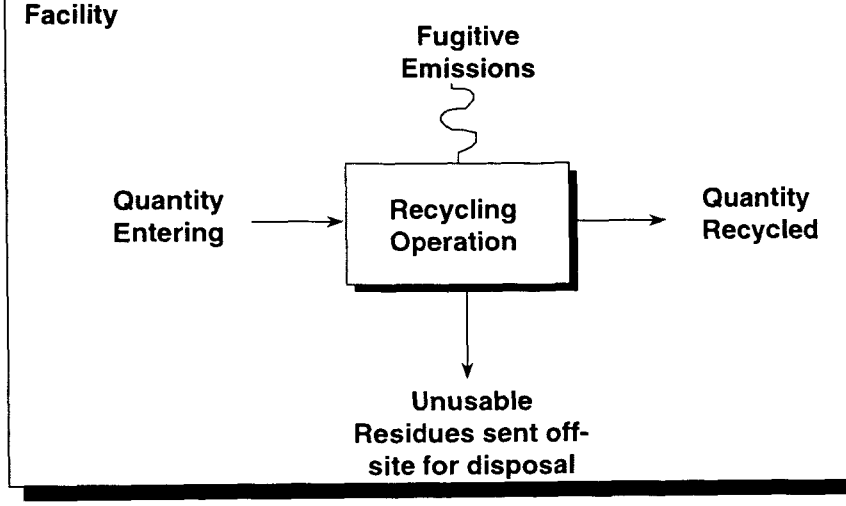
CALCULATING QUANTITY RECYCLED IN SECTION 8.4



17

RECYCLING

- Section 8.5: Off-site recycling
  - Quantity of Section 313 chemical *transferred* off-site for recycling
    - » Includes total quantity of Section 313 chemical *transferred* to off-site locations for recycling
  - Possible data sources
    - » Section 6.2 of Form R (only for recycling destinations)
    - » Receipts from off-site recycling facilities
    - » RCRA hazardous waste manifests
    - » RCRA Hazardous Waste Report (BRS)

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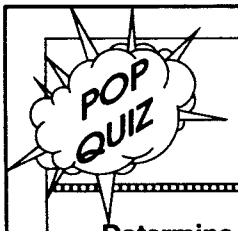
WASTE TREATMENT

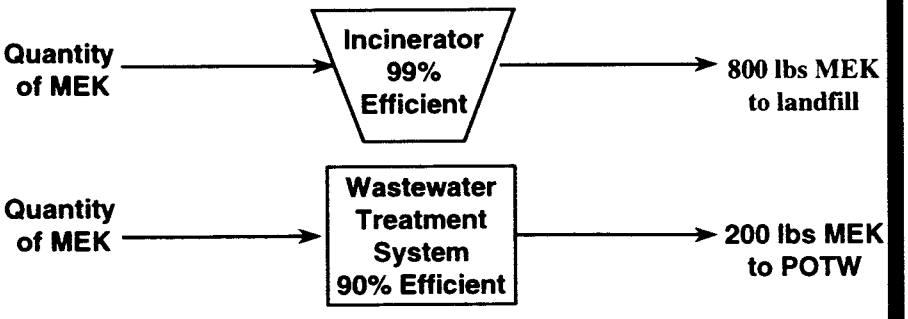
- **Section 8.6: Quantity treated on-site**
  - **Quantity of Section 313 chemical *treated* on-site**
    - » **Includes all quantities of Section 313 chemical destroyed**
  - **Possible data sources**
    - » **Calculations used to complete Section 7A of Form R**

19



WASTE TREATMENT

Determine the total quantity of Section 313 chemical treated on-site given the information below



20

WASTE TREATMENT

- Solution
  - Total quantity of MEK entering waste treatment

$$\frac{800}{1\text{-}0.99} + \frac{200}{1\text{-}0.90} = 82{,}000 \text{ lbs}$$

  - Total quantity of MEK treated

82,000 lbs - 1,000 lbs = 81,000 lbs

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WASTE TREATMENT

- Section 8.7: Off-site waste treatment
  - The amount of Section 313 chemical that is *transferred* off-site for waste treatment
    - » Includes all quantities of Section 313 chemical *transferred* to off-site facilities for waste treatment
  - Possible data sources
    - » Sections 6.1.A.1 and 6.2.A (i.e., off-site transfers for waste treatment)
      - Important: Assume all Section 6.1.A.1 quantities are treated, except metals and metal compounds

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REMEDIAL, CATASTROPHIC, OR ONE-TIME RELEASES

- **Section 8.8: Remedial, catastrophic, or one-time releases**
  - **Quantity of Section 313 chemical released into the environment or transferred off-site as a result of:**
    - » **Remediation**
    - » **Catastrophic events (e.g., earthquake, hurricane, fire, floods)**
    - » **One-time events not associated with production processes (e.g., pipe rupture due to unexpected weather)**
  - **Does not include Section 313 chemicals treated on-site, recovered, or recycled**
  - **Excludes quantities in Sections 8.1 through 8.7**

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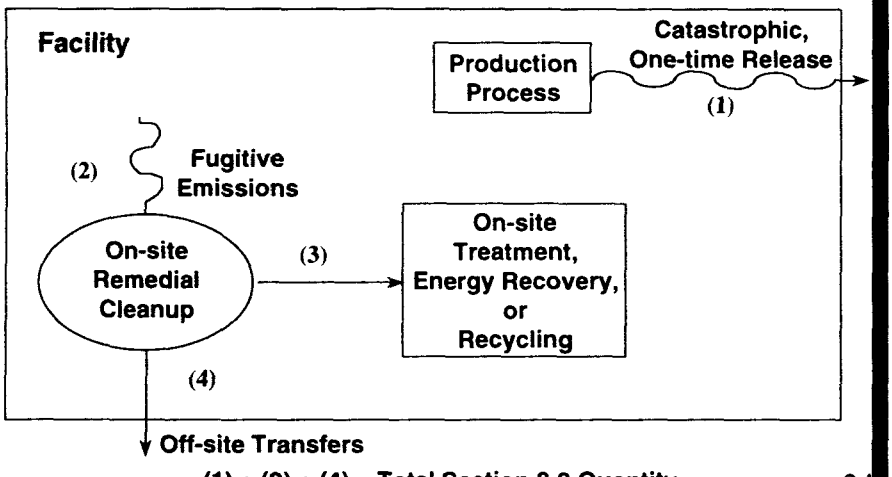
CALCULATING QUANTITY REPORTED IN SECTION 8.8



(1) + (2) + (4) = Total Section 8.8 Quantity

24

REMEDIAL, CATASTROPHIC, OR ONE-TIME RELEASES

- Section 8.8 (continued)
  - Possible data sources
    - » Quantities reported in Part II, Sections 5 and 6
    - » Accident investigation reports
    - » Inventory reconciliation
    - » Mass balance calculations
    - » Monitoring reports (e.g., pH, discharge monitoring reports, continuous emissions monitoring)
    - » CERCLA reports filed with the National Response Center
    - » Release notification reports required under EPCRA section 304

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SOURCE REDUCTION AND OTHER WASTE MANAGEMENT ACTIVITIES

- Important points regarding Sections 8.1 through 8.8
  - Sum of the quantities in Sections 8.1 through 8.7 equals the total quantity of the Section 313 chemical "entering any waste stream (or otherwise released into the environment) prior to recycling, treatment, or disposal." (PPA section 6607(b)(1))
  - Quantities reported in Sections 8.1 through 8.7 are exclusive of each other
  - Sum of Sections 8.1 through 8.7 is mutually exclusive of the quantity in Section 8.8

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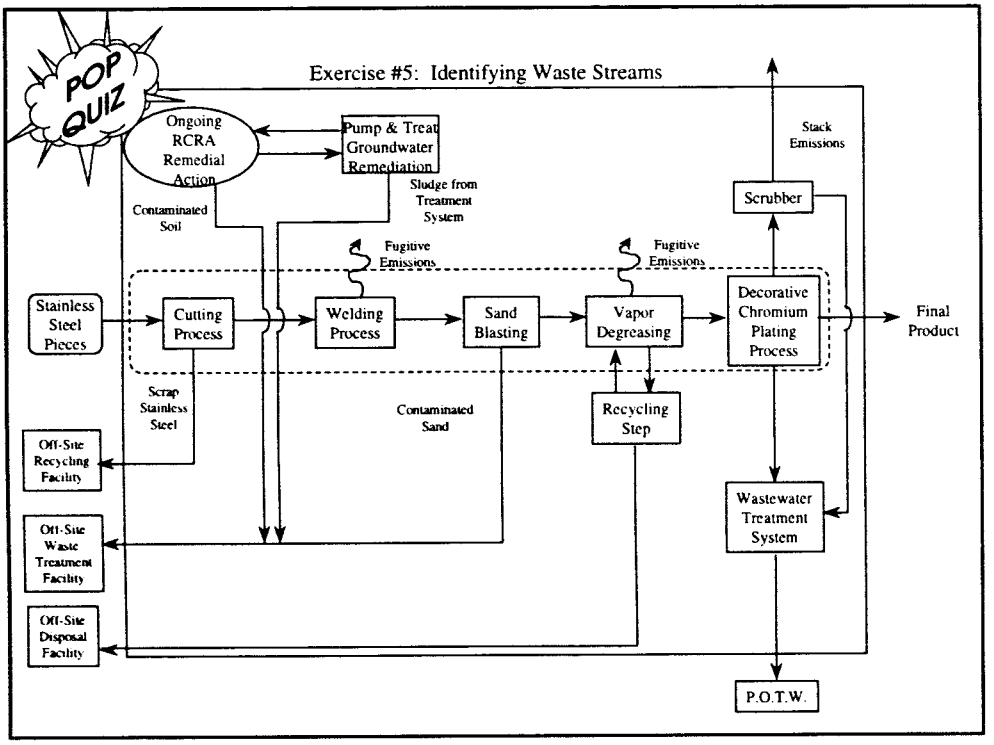

PRODUCTION RATIO OR ACTIVITY INDEX

- **Section 8.9: Production ratio or activity index**
  - **A ratio of production or activity involving the Section 313 chemical in the reporting year to production or activity in the previous year**
  - **Allows quantities of the Section 313 chemical reported in Sections 8.1 through 8.7 in the current year to be compared to quantities reported in the prior year**
  - **Production ratio or activity index is determined by dividing the level of production (or activity) in the current year by the level of production (or activity) in the prior year**
  - **Select methodology least likely to be affected by potential source reduction activities**

PRODUCTION RATIO

- Use production ratio if Section 313 chemical usage is directly proportional to a production level
  - Equation

$$\frac{\text{Quantity of Product: Reporting Year}}{\text{Quantity of Product: Prior Year}}$$

Example:

Oven manufacturing

$$\frac{\text{40,000 ovens assembled (Current RY)}}{\text{35,000 ovens assembled (Prior RY)}} = 1.14$$

29

ACTIVITY INDEX

- Use activity index if Section 313 chemical usage is related to an activity at the facility and not to a production level
  - Equation

$$\frac{\text{Level of Activity : Reporting Year}}{\text{Level of Activity: Prior Year}}$$

Example:

Tank Washouts

$$\frac{\text{60 Washouts (Current RY)}}{\text{50 Washouts (Prior RY)}} = 1.2$$

30

PRODUCTION RATIO OR ACTIVITY INDEX

- **Possible data sources**
  - **Production reports**
  - **Maintenance records for otherwise used chemicals**
  - **Waste minimization section of the RCRA Hazardous Waste Report**
  - **State/corporate pollution prevention reports**

31

SOURCE REDUCTION ACTIVITIES

- **Section 8.10**
  - **Source reduction practices used with respect to the Section 313 chemical at the facility and the methods used to identify those activities**
  - **This section includes only those source reduction activities implemented during the reporting year**
    - » **Only include activities that reduce or eliminate quantities reported in Sections 8.1 through 8.7**

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SOURCE REDUCTION ACTIVITIES

- Section 8.10 (continued)
  - Possible data sources
    - » Standard operating procedures
    - » Process changes or equipment changes (e.g., replacements, adjustments)
    - » Raw material changes
    - » Work orders for process changes
    - » Product redesign specifications
    - » Audit reports and follow-up actions
    - » Waste minimization section of the RCRA Hazardous Waste Report
    - » State/corporate pollution prevention reports

33

OPTIONAL INFORMATION

- Section 8.11
  - Facility should indicate whether additional optional information on source reduction, recycling, or pollution control activities is included with the report
  - A one-page summary is encouraged
  - Facility can provide information on previous years' activities
  - EPA and others use this information for granting awards and recognition to companies and employees

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FORM R /FORM A SUBMISSION: GETTING IT RIGHT!

ALTERNATE THRESHOLD RULE

- EPA published Final Rule (40 CFR 372.27; 59 FR 61501, 11/30/94)
  - Reduced reporting option for low annual reportable amounts
    - » No Form R report
    - » No release, other waste management, or source reduction reporting
    - » Submit certification form (Form A) each year

2

ALTERNATE THRESHOLD RULE

- **Criteria for using alternate threshold**
  - **Do not exceed 1,000,000 pounds manufactured, processed, or otherwise used, and**
  - **Do not exceed 500 pounds of a Section 313 chemical equivalent to the sum of the quantities released, transferred off-site in wastes, combusted for energy recovery on- or off-site, recycled, or treated on-site.**

3

ALTERNATE THRESHOLD RULE

- **Recordkeeping**
  - **All documentation to support the determination, including:**
    - » **Inventory, purchasing, and sales records**
    - » **Release calculations**
    - » **Waste manifests or receipts**
    - » **Other waste management data**

4

EPA United States Environmental Protection Agency

TOXIC CHEMICAL RELEASE INVENTORY FORM A

WHERE TO SEND THIS STATEMENT:
1. EPCRA Reporting Center
P.O. Box 3348
Merrifield, VA 22116-3348
ATTN: TOXIC CHEMICAL RELEASE INVENTORY

2. APPROPRIATE STATE OFFICE
(See instructions in Appendix F)

Enter "X" here if this is a revision ☐

PART I. FACILITY IDENTIFICATION INFORMATION

SECTION 1. REPORTING YEAR

19 ____

SECTION 2. TRADE SECRET INFORMATION

2.1 Are you claiming the toxic chemical identified on page 2 trade secret?
☐ Yes: Answer question 2.2 and attach substantiation forms. ☐ No: Do not answer 2.2; continue with Section 3.

2.2 If you answered yes in 2.1, is this copy: ☐ Sanitized ☐ Unsanitized

SECTION 3. CERTIFICATION (Important: Please read and sign after completing the statement.)

I hereby certify that to the best of my knowledge and belief, for the toxic chemical listed in this statement, the annual reportable amount, as defined in 40 CFR 372.27(a), did not exceed 500 pounds for this reporting year and that the chemical was manufactured, processed, or otherwise used in an amount not exceeding 1 million pounds during this reporting year.

Name and official title of owner/operator or senior management official

Signature | Date Signed

SECTION 4. FACILITY IDENTIFICATION

4.1
Facility or Establishment Name | TRI Facility ID Number
Mailing Address (if different from street address)
City | State | Zip Code
Street Address
City | County | State | Zip Code

4.2 **This report contains information for:**
(Important: check c if applicable; a and b have been intentionally left blank)
c. ☐ A Federal facility

4.3 **Technical Contact**
Name | Telephone Number (include area code)

EPA United States Environmental Protection Agency

TOXIC CHEMICAL RELEASE INVENTORY FORM A

SECTION 4. FACILITY IDENTIFICATION (Continued)

4.4	Intentionally left blank						
4.5	SIC Code (4-digit)	a.	b.	c.	d.	e.	f.
4.6	Latitude and Longitude	Latitude			Longitude		
		Degrees	Minutes	Seconds	Degrees	Minutes	Seconds

4.7	Dun & Bradstreet Number(s) (9 digits)	a. b.
4.8	EPA Identification Number(s) (RCRA I.D. No.) (12 characters)	a. b.
4.9	Facility NPDES Permit Number(s) (9 characters)	a. b.
4.10	Underground Injection Well Code (UIC) I.D. Number(s) (12 digits)	a. b.

SECTION 5. PARENT COMPANY INFORMATION

5.1	Name of Parent Company ☐ NA	
5.2	Parent Company's Dun & Bradstreet Number ☐ NA	(9 digits)

PART II. CHEMICAL IDENTIFICATION

SECTION 1. TOXIC CHEMICAL IDENTITY

1.1	CAS Number (Important: Enter only one number exactly as it appears on the Section 313 list. Enter category code if reporting a chemical category.)
1.2	Toxic Chemical or Chemical Category Name (Important: Enter only one name exactly as it appears on the Section 313 list.)
1.3	Generic Chemical Name (Important: Complete **only** if Part I, Section 2.1 is checked "yes." Generic Name must be structurally descriptive.)

SECTION 2. MIXTURE COMPONENT IDENTITY (Important: DO NOT complete this section if you complete Section 1 above.)

2.1	Generic Chemical Name Provided by Supplier (Important: Maximum of 70 characters, including numbers,letters, spaces, and punctuation.)

OVERVIEW: FORM R VS. FORM A

- **Form R**
  - Standard Reporting Method
  - Use for all levels of releases and other waste management
  - Report releases, other waste management, and source reduction activities
  - Recordkeeping Requirements
- **Form A**
  - Alternate Reporting Method
  - Use for low annual reportable amounts (<500 lbs.)
  - Submit Certification Form
  - Recordkeeping Requirements

9

WHY IT'S IMPORTANT TO GET IT RIGHT

- **Using TRI Data**
  - EPA is required to make non-trade secret data available to the public through an on-line database (operated by National Library of Medicine)
  - Data are widely available on Internet
  - Data are available in other forms (reports, CD-ROM)
  - All states receive data; some will make it available electronically

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EPCRA SECTION 313 ENFORCEMENT

- Current enforcement trends
  - Shift from simply identifying non-reporting facilitites to facilities submitting poor quality data
  - Focus on multi-media inspections (i.e., across Agency programs)
  - Assign pollution prevention-related supplemental environmental projects (SEPs)
    - » In FY 1997, Region 5 negotiated SEPs in 17 EPCRA cases, which resulted in a 400,000 pound drop in total releases in Region

11

EPCRA SECTION 313 ENFORCEMENT

- Examples
  - Shell Oil Company ($430,000)
    - » Non-reporting under EPCRA sections 304 & 313
  - Koch Refining ($585,000)
    - » Data quality violations
  - Conagra, Inc. ($70,000 + SEP)
    - » Result of multimedia inspection
  - Sara Lee Corp. ($118,000 + SEP)
    - » Non-reporting under EPCRA sections 304 & 313
    - » Must conduct EPCRA and CERCLA section 103 audits at all 140 U. S. facilities

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EPCRA SECTION 326: CIVIL ACTIONS

- Any person may bring civil action on their own behalf against a private-sector facility owner or operator for:
  - Failure to submit emergency follow-up notices under Section 304
  - Failure to submit an MSDS or a list of MSDS chemicals
  - Failure to complete or submit Tier I/II inventories
  - Failure to complete or submit Form Rs or Form As

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EPCRA SECTION 326: CIVIL ACTIONS

- State and local governments may bring a civil action against a private-sector facility owner or operator for:
  - Failure to notify the SERC regarding coverage under the emergency planning and notification requirements
  - Failure to make releveant emergency planning information available as requested by the LEPC
  - Failure to submit MSDS or list of hazardous chemicals
  - Failure to prepare or submit Tier I/II inventories
- Any SERC or LEPC may bring a civil action against a facility for failure to submit Teir II information upon request

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COMMONLY MADE ERRORS

- Threshold determination errors
- Completion errors
- Release estimation errors
- Off-site transfers reporting errors
- Other waste management and source reduction errors
- Federal facility name and/or parent company name errors

15

THRESHOLD DETERMINATIONS

- Helpful hints for conducting accurate threshold determinations
  - Apply chemicals to correct threshold activity
  - Avoid missing a Section 313 chemical by considering: all avenues a chemical may enter a facility; chemical qualifiers; chemical synonyms; or on-site manufacturing
  - Consider quantities of Section 313 chemicals in mixtures or other trade name products
  - Recognize the limitations of eligibility for exemptions
- Results of incorrect theshold determinations
  - No form is submitted when one is required
  - Federal facility does not meet requirements of EO 12856

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FORM COMPLETION CHECKLIST

- Helpful hints for completing the Form R/Form A
  - Complete all required sections of a current, valid form
  - Verify trade secret information (if applicable)
  - Correctly identify the Section 313 chemical using the correct CAS number and correct listed TRI name
  - Use the NA indicator for data elements that are not relevent
  - Indicate the correct reporting year
  - Verify latitude/longitude coordinates
  - Clearly identify revisions or duplicate submissions
  - Sign hardcopy of forms or certification letters for electronic submissions

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FORM COMPLETION CHECKLIST (CONT'D)

- Result of completion errors
  - Delay in processing of form
  - Form prevented from being entered into the database
- To avoid completion errors, use EPA's ATRS software
  - ATRS will prompt the user to complete required sections
  - ATRS will require the use of NA as a terminating indicator or to denote data elements that are not relevent

18

RELEASE ESTIMATES

- Helpful hints for accurate release estimates
  - Differentiate fugitive from stack emissions
  - Zero air emissions for VOCs are unlikely
  - Always use your best available information
  - Estimate the quantity of Section 313 chemical, not the entire waste stream
  - Check your math
  - Document your work!
- Result of release estimation errors
  - Suspect release estimates

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OFF-SITE TRANSFER REPORTING

- Helpful hints for accurate off-site transfer reporting
  - Do not report intra-facility transfers as off-site transfers
  - Report the quantity of Section 313 chemical transferred, not the entire transfer quantity
  - Identify waste treatment, disposal, recycling, and energy recovery activities correctly
- Results of off-site transfer errors
  - Incorrect estimates (e.g., over-estimates)
  - Misclassification of facility's handling of Section 313 chemicals in wastes

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WASTE MANAGEMENT AND SOURCE REDUCTION--SECTION 8.1

- Helpful hints for reporting quantity released, Section 8.1
  - Include off-site disposal quantities (reported in Section 6.2), on-site releases (reported in Sections 5.1 through 5.5), and releases to POTWs for metals and metal compounds only (reported in Section 6.1)
  - Do not include non-production-related, one-time events (e.g., catastrophic or remedial releases/transfers)
    - » These should be reported in Section 8.8

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WASTE MANAGEMENT AND SOURCE REDUCTION--SECTIONS 8.2-8.7

- For on-site energy recovery (Section 8.2), on-site recycling (Section 8.4), and on-site treatment (Section 8.6):
  - Report the quantity of Section 313 chemical actually recovered, recycled, or treated, not the total amount entering the recovery, recycling, or treatment unit
- For off-site energy recovery (Section 8.3), off-site recycling (Section 8.5), and off-site treatment (Section 8.7):
  - Conversely, report the total quantity sent off-site for recovery, recycling, or treatment
    - » You are not required to know the efficiency of the off-site unit

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WASTE MANAGEMENT AND SOURCE REDUCTION

- Helpful hints for Sections 8.2-8.7
  - Energy recovery, Sections 8.2 and 8.3
    - » Report only for substances with significant heat value (do not report halons, metals, or metal compounds)
    - » Do not include incineration activities
  - Metals and metal compounds cannot be destroyed; therefore, do not report quantities in Sections 8.6, or 8.7

WASTE MANAGEMENT AND SOURCE REDUCTION--SECTION 8.8

- Helpful hints for reporting catastrophic and remedial releases and transfers, Section 8.8
  - Section 8.8 is exclusive of Sections 8.1 through 8.7 (do not include Section 8.8 quantities in Sections 8.1 through 8.7)
  - Section 8.8 quantities should be included in Sections 5-7 (as appropriate)

FEDERAL FACILITY IDENTIFICATION

- Helpful hints for federal facilities
  - Correctly identify department or agency
  - Check box c. in Part I, Section 4.2 (or enter "F" on the ATRS software)
  - Correctly identify GOCO
  - Use SIC codes in Part I, Section 4.5 that best describes the facility's activities
- Results of incorrect federal facility identification
  - Double-counting
  - Form entered into TRI database improperly

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SUBMITTING REVISIONS

- Revisions can be made electronically or in hardcopy
  - Hardcopy revisions must be made in blue or black ink on a copy of the form originally submitted
  - Magnetic media revisions must be accompanied by a newly signed cover letter
- For revisions made for reporting year 1991 or later, mark an "X" in the space marked "Enter "X" here if this is a revision" on page 1
- Provide a new original signature and date for each revision
- Send to the EPCRA Reporting Center and to the appropriate state agency

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EPA FORM R

United States Environmental Protection Agency

TOXIC CHEMICAL RELEASE INVENTORY REPORTING FORM

Section 313 of the Emergency Planning and Community Right-to-Know Act of 1986, also known as Title III of the Superfund Amendments and Reauthorization Act

WHERE TO SEND COMPLETED FORMS:

1. EPCRA Reporting Center
P.O. Box 3348
Merrifield, VA 22116-3348
ATTN: TOXIC CHEMICAL RELEASE INVENTORY

2. APPROPRIATE STATE OFFICE (See instructions in Appendix F)

Enter "X" here if this is a revision [ ]

For EPA use only

IMPORTANT: See instructions to determine when "Not Applicable (NA)" boxes should be checked.

PART I. FACILITY IDENTIFICATION INFORMATION

SECTION 1. REPORTING YEAR 19 98

SECTION 2. TRADE SECRET INFORMATION

2.1	Are you claiming the toxic chemical identified on page 2 trade secret? [ ] Yes (Answer question 2.2; Attach substantiation forms) [X] No Do not answer 2.2; go to Section 3	2.2	Is this copy [ ] Sanitized [ ] Unsanitized (Answer only If "YES" in 2.1)

SECTION 3. CERTIFICATION (Important: Read and sign after completing all form sections.)

I hereby certify that I have reviewed the attached documents and that, to the best of my knowledge and belief, the submitted information is true and complete and that the amounts and values in this report are accurate based on reasonable estimates using data available to the preparers of this report.

SAMPLE FORM R WITH ERRORS

Name and official title of owner/operator or senior management official:	Signature:	Date signed:

SECTION 4. FACILITY IDENTIFICATION

TRI Facility ID Number: 20190WRLSC12034

4.1	Facility or Establishment Name: We Release Company	Facility or Establishment Name or Mailing Address (if different from street address):
	Street: PO Box 313	Mailing Address: NA
	City/County/State/Zip Code: Releaseville/ Formar/ VA/ 20190	City/County/State/Zip Code:

4.2 This report contains information for: (Important: check a or b; check c if applicable) a. [X] An entire facility b. [ ] Part of a facility c. [ ] A Federal facility

4.3	Technical Contact Name	NA			Telephone Number (include area code)		
4.4	Public Contact Name	John Q. Tactless			Telephone Number (include area code)	NA	
4.5	SIC Code (s) (4 digits)	a. 25	b. 1021	c. NA	d.	e.	f.

4.6	Latitude	Degrees: NA	Minutes: 31	Seconds: 17	Longitude	Degrees: N15	Minutes: 11	Seconds: 30

4.7	Dun & Bradstreet Number(s) (9 digits)	4.8	EPA Identification Number(s) (RCRA I.D. No.) (12 characters)	4.9	Facility NPDES Permit Number(s) (9 characters)	4.10	Underground Injection Well Code (UIC) I.D. Number(s) (12 digits)
a.	NA	a.	AKD919762270	a.	NA	a.	NA
b.		b.	20190WRLSC12034	b.		b.	

SECTION 5. PARENT COMPANY INFORMATION

5.1	Name of Parent Company	[X] NA	
5.2	Parent Company's Dun & Bradstreet Number	[X] NA	(9 digits)

EPA FORM R
PART II. CHEMICAL - SPECIFIC INFORMATION

TRI FACILITY ID NUMBER: 20190WRLSC12034
Toxic Chemical, Category, or Generic Name: Xylene

SECTION 1. TOXIC CHEMICAL IDENTITY

(Important: DO NOT complete this section if you completed Section 2 below.)

1.1	CAS NUMBER (IMPORTANT: Enter only one number exactly as it appears on the Section 313 list. Enter category code if reporting a chemical category.): 1330-20-7
1.2	Toxic Chemical or Chemical Category Name (Important: Enter only one name exactly as it appears on the Section 313 list.): Xylene
1.3	Generic Chemical Name (Important: Complete only if Part I, Section 2.1 is checked "yes". Generic name must be structurally descriptive.): Thin-to-Win Lacquer Thin

SECTION 2. MIXTURE COMPONENT IDENTITY

(Important: DO NOT complete this section if you complete Section 1 above.)

2.1	Generic Chemical Name Provided by Supplier (Important: Maximum of 70 characters, including numbers, letters, spaces, and punctuation.):

SECTION 3. ACTIVITIES AND USES OF THE TOXIC CHEMICAL AT THE FACILITY

(Important: Check all that apply.)

SAMPLE FORM R WITH ERRORS

3.1 Manufacture the toxic chemical:	3.2 Process the toxic chemical:	3.3 Otherwise use the toxic chemical:
a. [ ] Produce b. [ ] Import		
If produce or import:		
c. [X] For on-site use/processing	a. [ ] As a reactant	a. [ ] As a chemical processing aid
d. [X] For sale/distribution	b. [ ] As a formulation component	b. [ ] As a manufacturing aid
e. [ ] As a byproduct	c. [ ] As an article component	c. [ ] Ancillary or other use
f. [ ] As an impurity	d. [ ] Repackaging	

SECTION 4. MAXIMUM AMOUNT OF THE TOXIC CHEMICAL ON-SITE AT ANY TIME DURING THE CALENDAR YEAR

4.1	02 (Enter two-digit code from instruction package.)	

SECTION 5. QUANTITY OF THE TOXIC CHEMICAL ENTERING EACH ENVIRONMENTAL MEDIUM

			A. Total Release (pounds/year)(enter range from instructions or estimate)	B. Basis of estimate (enter code)	C. % From Stormwater
5.1	Fugitive or non-point air emissions	NA [X]			
5.2	Stack or point air emissions	NA [ ]	500	E	
5.3	Discharges to receiving streams or water bodies (enter one name per box)				
	Stream or Water Body Name				
5.3.1	River Quai		B		
5.3.2	Burning River		4016 lbs.	O	8%
5.3.3	Lake Anne		0.8		100
5.4.1	Underground Injection on-site to Class I Wells	NA [X]			
5.4.2	Underground Injection on-site to Class II-V Wells	NA [X]			

Range Codes: A = 1 - 10 pounds; B = 11 - 499 pounds; C = 500 - 999 pounds.

EPA FORM R
PART II. CHEMICAL-SPECIFIC INFORMATION (CONTINUED)

TRI FACILITY ID NUMBER: 20190WRLSC12034
Toxic Chemical, Category, or Generic Name:

SECTION 5. QUANTITY OF THE TOXIC CHEMICAL ENTERING EACH ENVIRONMENTAL MEDIUM

		NA	A. Total Release (pounds/year) (enter range code from instructions or estimate)	B. Basis of Estimate (enter code)
5.5	Disposal to land on-site			
5.5.1 A	RCRA Subtitle C landfills	X		
5.5.1 B	Other landfills	X		
5.5.2	Land treatment/application farming	X		
5.5.3	Surface impoundment	X		
5.5.4	Other disposal	X		

SECTION 6. TRANSFERS OF THE TOXIC CHEMICAL IN WASTES TO OFF-SITE LOCATIONS

SAMPLE FORM R WITH ERRORS

6.1 DISCHARGES TO PUBLICLY OWNED TREATMENT WORKS (POTWs)

6.1.A. Total Quantity Transferred to POTWs and Basis of Estimate

6.1.A.1. Total Transfers (pounds/year) (enter range code or estimate)	6.1.A.2 Basis of Estimate (enter code)
4016	

6.1.B. ___ POTW Name	Mukbegon Municipal Treatment						
POTW Address							
City	Mukbegon	State	Wasteaway	County	Formar	Zip	20190
6.1.B. ___ POTW Name	NA						
POTW Address							
City		State		County		Zip	

If additional pages of Part II, Section 6.1 are attached, indicate the total number of pages in this box [ ] and indicate which Part II, Section 6.1 page this is here [ ] (example: 1,2,3, etc.)

SECTION 6.2 TRANSFERS TO OTHER OFF-SITE LOCATIONS

6.2 1 OFF-SITE EPA IDENTIFICATION NUMBER (RCRA ID NO.)	VAD919762270						
Off-Site Location Name	Jones Treatment Center						
Off-Site Address	999 Jones Rd.						
City	Mukbegon	State	VA	County	Formar	Zip	20190

Is location under control of reporting facility or parent company? [ ] **Yes** [ ] **No**

Range Codes: A = 1 - 10 pounds; B = 11 - 499 pounds; C = 500 - 999 pounds.

EPA FORM R
PART II. CHEMICAL-SPECIFIC INFORMATION (CONTINUED)

TRI FACILITY ID NUMBER: 20190WRLSC12034
Toxic Chemical, Category, or Generic Name: Xylene

SECTION 6. 2 TRANSFERS TO OTHER OFF-SITE LOCATIONS (continued)

A. Total Transfers (pounds/year) (enter range code or estimate)	B. Basis of Estimate (enter code)	C. Type of Waste Treatment/Disposal/ Recycling/Energy Recovery (enter code)
1. 10,200	1. M	1.M 24
2.	2.	2.M
3.	3.	3.M
4.	4.	4.M

6.2 ___ OFF-SITE EPA IDENTIFICATION NUMBER (RCRA ID NO.)

Off-Site Location Name: NA

Off-Site Address:

City | State | County | Zip

Is location under control of reporting facility or parent company? ☐ Yes ☐ No

A. Total Transfers (pound/year) (enter range code or estimate)	B. Basis of Estimate (enter code)	C. Type of Waste Treatment/Disposal/ Recycling/Energy Recovery (enter code)
1.	1.	1.M
2.	2.	2.M
3.	3.	3.M
4.	4.	4.M

SAMPLE FORM R WITH ERRORS

If additional pages of Part II, Section 6.2 are attached, indicate the total number of pages in this box ☐ and indicate which Part II, Section 6.2 page this is, here. ☐ (example: 1.2.3. etc.)

SECTION 7A. ON-SITE WASTE TREATMENT METHODS AND EFFICIENCY

☐ **Not Applicable (NA) - Check here if no on-site waste treatment is applied to any waste stream containing the toxic chemical or chemical category.**

a. General Waste Stream (enter code)	b. Waste Treatment Method(s) Sequence [enter 3-character code(s)]								c. Range of Influent Concentration	d. Waste Treatment Efficiency Estimate	e. Based on Operating Data?
7A.1a	7A.1b	1	P12	2	P11				7A.1c	7A.1d	7A.1e
S		3	P18	4	P17	5	P42		6	75 %	Yes [X] No [ ]
		6	P21	7	P	8					
7A.2a	7A.2b	1	F82	2	NA				7A.2c	7A.2d	7A.2e
L		3	A03	4	A06	5	A07		2	66 %	Yes [ ] No [X]
		6	NA	7		8					
7A.3a	7A.3b	1		2					7A.3c	7A.3d	7A.3e
		3		4		5				%	Yes [ ] No [ ]
		6		7		8					
7A.4a	7A.4b	1		2					7A.4c	7A.4d	7A.4e
		3		4		5				%	Yes [ ] No [ ]
		6		7		8					
7A.5a	7A.5b	1		2					7A.5c	7A.5d	7A.5e
		3		4		5				%	Yes [ ] No [ ]
		6		7		8					

Range Codes: A= 1-10 pounds; B=11- 499 pounds; C= 500 - 999 pounds.

EPA FORM R
PART II. CHEMICAL-SPECIFIC INFORMATION (CONTINUED)

TRI FACILITY ID NUMBER: 20190WRLSC12034
Toxic Chemical, Category, or Generic Name: mercury

If additional copies of page 4 are attached, indicate the total number of pages in this box [ ] and indicate which page 4 this is, here. [ ] (example: 1,2,3, etc.)

SECTION 7B. ON-SITE ENERGY RECOVERY PROCESSES

[ ] Not Applicable (NA) - Check here if no on-site energy recovery is applied to any waste stream containing the toxic chemical or chemical category.

Energy Recovery Methods [enter 3-character code (s)]

1	2	3	4
U02	NA		

SECTION 7C. ON-SITE RECYCLING PROCESSES

[ ] Not applicable (NA) - Check here if no on-site recycling is applied to any waste stream containing the toxic chemical or chemical category.

Recycling Methods [enter 3-character code(s)]

1	2	3	4	5
U11	U12	U13	NA	

6	7	8	9	10

SAMPLE FORM R WITH ERRORS

SECTION 8. SOURCE REDUCTION AND RECYCLING ACTIVITIES

All quantity estimates can be reported using up to two significant figures.		Column A Prior Year (pounds/year)	Column B Current Reporting Year (pounds/year)	Column C Following Year (pounds/year)	Column D Second Following Year (pounds/year)
8.1	Quantity released *	NA	220	15,698	17,582
8.2	Quantity used for energy recovery on-site	2,000	NA		
8.3	Quantity used for energy recovery off-site	NA	NA	NA	NA
8.4	Quantity recycled on-site	500	500	500	500
8.5	Quantity recycled off-site	900	900	900	900
8.6	Quantity treated on-site	9,000	NA	11,400	12,800
8.7	Quantity treated off-site	514	4016	1,000	1,000
8.8	Quantity released to the environment as a result of remedial actions, catastrophic events, or one-time events not associated with production processes (pounds/year)			0	
8.9	Production ratio or activity index			1.12	

8.10 Did your facility engage in any source reduction activities for this chemical during the reporting year? If not, enter "NA" in Section 8.10.1 and answer Section 8.11.

	Source Reduction Activities [enter code(s)]	Methods to Identify Activity (enter codes)		
8.10.1	NA	a.	b.	c.
8.10.2		a.	b.	c.
8.10.3		a.	b.	c.
8.10.4		a.	b.	c.

8.11	Is additional optional information on source reduction, recycling, or pollution control activities included with this report? (Check one box)	YES [ ]	NO [X]

* Report releases pursuant to EPCRA Section 329(8) including "any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing into the environment." Do not include any quantity treated on-site or off-site.

INFORMATION RESOURCES

ADDITIONAL INFORMATION ABOUT TRI

- **EPA Regional and State TRI Contacts**
  - **Check the *Forms and Instructions* booklet**
- **RCRA, Superfund & EPCRA Hotline**

  (800) 424-9346 or (703) 412-9810 (local or international)
  - **Regulatory assistance**
  - **Information on availability of EPA publications**
  - **Information on EPA's electronic resources**

EPA ELECTRONIC MAILING LISTS (LISTSERVER)

- To subscribe to an electronic mailing list (listserver), send e-mail to: listserver@unixmail.rtpnc.epa.gov.
- Leave subject line blank or include only a period < . >
- Text: subscribe <list name> <first name> <last name>

  subscribe epa-waste2 John Smith
- Some mailing lists are:
  - epa-tri2: Toxic Release Inventory Federal Registers
  - hotline_oswer: RCRA, Superfund & EPCRA Monthly Hotline Report and Updates
  - epa-r2-press: EPA press releases
  - epa-meetings2: EPA meeting notification
  - oppt-newbreak: OPPT Library daily news service

DOCUMENT DISTRIBUTION CENTERS

RCRA, Superfund & EPCRA Hotline (800) 424-9346 (703) 412-9810 (DC Metro area) Fax (703) 412-3333 http://www.epa.gov/epaoswer/hotline	National Center for Environmental Publications and Information (NCEPI) 1-800-490-9198 http://www.epa.gov/ncepihom/index.html
U.S. Government Printing Office (GPO) (202) 512-1800 Fax: (202) 512-2250 http://www.gpo.gov	National Technical Information Service (NTIS) (800) 553-6847 (703) 605-6000 (DC Metro area) http://www.ntis.gov

PUBLIC ACCESS TO TRI - ONLINE ACCESS

- Right-to-Know Network (RTK NET)
  - Modem: (202) 234-8570; Information (OMB Watch): (202) 234-8494; Internet: http://www.rtk.net
- ENVIROFACTS Database Internet Site http://www.epa.gov/enviro
- EPA's - TRI Internet Site http://www.epa.gov/opptintr/tri/
- The Chemical Scorecard (EDF) - Internet Site http://www/scorecard.org
- TOXNET - Internet Site http://www.nlm.nih.gov or http://toxnet.nlm.nih.gov
  - Information and Registration for Non-Web access: (301) 496-6531
  - Nominal access charge

PUBLIC ACCESS TO TRI

- TRI Reports (EPCRA Hotline and EPA TRI Web Site)
  - TRI Public Data Release Annual Report
  - TRI Public Data Release State Fact Sheets
- TRI CD-ROM (GPO/NTIS)
- State Data Diskettes (GPO)
- TRI User Support Service: (202) 260-1531

TRI HOMEPAGE

- EPA Toxic Release Inventory: Community Right-to-Know Homepage (http://www.epa.gov/opptintr/tri/)
  - General information on the TRI program, program and phase development, program updates, and TRI contacts
  - Accessing and using TRI data, state fact sheets, and public data releases
  - Links to TRI forms, reporting requirements, and guidance documents
  - Listing of TRI Chemicals

SECTION 313 GENERAL GUIDANCE

- *Toxic Chemical Release Inventory Reporting Forms and Instructions*
- Automated TRI Reporting System (ATRS)
- *EPCRA Section 313 Questions and Answers*
- *Consolidated List of Chemicals Subject to Reporting Under the Act (Title III List of Lists)*
  - Most recent version on Internet: http://www.epa.gov/swercepp/pubs.html
- *Common Synonyms*

SECTION 313 TECHNICAL GUIDANCE

- Industry-Specific Technical Guidance Documents, including:
  - Food Processing
  - Metal and Coal Mining
  - TSD and Solvent Recovery
  - Petroleum and Chemical Distribution
  - Electricity Generating Facilities
- Chemical-Specific Guidance Documents, including:
  - Sulfuric Acid, Glycol Ethers, Nitrate Compounds
- *Estimating Releases and Waste Treatment Efficiencies for the Toxic Chemical Release Inventory Form*

SECTION 313 TECHNICAL GUIDANCE

- Technology Transfer Network (TTN)
  - Internet: http://www.epa.gov/ttn/
    - » *Compilation of Air Pollutant Emission Factors* (AP-42)
    - » Water 8/ChemDat 8 programs
    - » TANKS program
  - Help Desk (919) 541-5384

POLLUTION PREVENTION INFORMATION

- **OPPT Pollution Prevention (P2) Internet Site**
  - **http://www.epa.gov/opptintr**
- **Enviroene Information Network**
  - **User support (703) 908-2007**
  - **http://es.epa.gov**
- **Pollution Prevention Information Clearinghouse (PPIC)**
  - **(202) 260-1023**