

SCOPING DOCUMENT:

Subject:

**General Approach for Preparing the
Toxic Chemical Release Inventory
Forms Required Under Section 313
of SARA Title III**

October 1987



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SCOPING DOCUMENT:

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SUBJECT:

GENERAL APPROACH FOR PREPARING THE
TOXIC CHEMICAL RELEASE INVENTORY FORMS
REQUIRED UNDER SECTION 313 OF SARA TITLE III

October 1987

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1. INTRODUCTION

Under Section 313 of Title III of the Superfund Amendments and Reauthorization Act (SARA Title III), companies in SIC Codes 20-39 may be required to report the annual emissions into the environment of up to 329 chemicals from each facility in operation in 1987. Such reporting is required for those chemicals that were manufactured, processed or otherwise used at these facilities in 1987 in amounts exceeding the threshold quantities reported in Table 1-1.

"Manufacture" means to produce, prepare, import or compound a toxic chemical. Manufacture also refers to substances that are produced coincidentally during the manufacture, processing, use or disposal of another substance or mixture.

"Process" means the preparation of a chemical, after its manufacture, for distribution in commerce: 1) in the same or different physical form it was received in, or 2) as part of an article containing the chemical. "Otherwise use" means any use of a toxic chemical that is not covered by the terms manufacture or process (e.g., solvents, lubricants) and includes use of a toxic chemical contained in a mixture or tradename product.

Appendix A lists the 329 chemicals and chemical categories subject to reporting under SARA Title III as of 9/1/87. From time to time, U.S. EPA may revise this list of chemicals.

Table 1-2 presents a summary of the information that must be reported on the Toxic Chemical Release Inventory (TCRI) Form, a copy of which is included as Appendix B. These reports are due on 7/1/88 and annually thereafter with penalties of up to \$25,000 per day for late reporting.

This memorandum outlines Enviroplan's recommended general approach for preparing the TCRI Forms. The actual

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approach undertaken at each facility is dependent on facility-specific factors. However, this recommended general approach offers an effective starting point for each company to develop its own best approach for each facility.

This approach is based on U.S. EPA's 6/4/87 proposed regulation implementing this statutory requirement. When this regulation is issued in final form in January 1988, there may be changes to some of these requirements. However, estimating the 1987 releases to the environment of each chemical is a statutory requirement that cannot change.

Enviroplan's recommended approach is also based on the principal guidance U.S. EPA has issued for completing the TCRI Forms, our ongoing work for clients to prepare TCRI Forms, and our 15 years experience in estimating and measuring pollutant releases to the environment for more than 250 industrial and utility clients.

Preparation of TCRI Forms under Section 313 represents one of four major reporting requirements under SARA Title III. The other major reporting requirements under this law are specified in Section 302, Section 304 and Sections 311 and 312. Table 1-3 summarizes each of these reporting requirements.

This scoping document is divided into four additional parts. Section 2 presents our recommended general approach for completing the TCRI Forms. Section 3 discusses in some detail how to estimate the releases of each chemical to the air, water, and land. Section 4 discusses alternative ways Enviroplan is working with companies to complete the TCRI forms.

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TABLE 1-1: THRESHOLD QUANTITIES ABOVE WHICH A TCRI FORM FOR A
LISTED CHEMICAL MUST BE PREPARED

- I. For any of the 329 chemicals manufactured or processed at a facility:

1987	75,000 lbs/yr
1988	50,000 lbs/yr
1989 and thereafter	25,000 lbs/yr

- II. For any of the 329 chemicals otherwise used at a facility:

10,000 lbs/yr

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TABLE 1-2: SUMMARY OF INFORMATION REQUIRED FOR EACH CHEMICAL
AT A FACILITY SUBJECT TO REPORTING ON THE TOXIC
CHEMICAL RELEASE INVENTORY FORM

1. Facility identification.
2. Offsite locations to which toxic chemical is transferred and type of treatment/disposal.
3. Chemical identity.
4. Activities and uses of chemical at facility.
5. Maximum amount of chemical on-site at any time during the reporting period.
6. Annual lbs/yr of emissions to the air of this chemical separately for fugitive (non-point) sources and stack (point) sources.
7. Annual lbs/yr of direct discharges to surface water from pipes and other process outfalls, from on-site wastewater treatment systems, and from stormwater runoff (if permits include stormwater sources).
8. Annual lbs/yr of releases to land within facility and the type of disposal, e.g., landfill, underground injection, transfer to waste broker, etc.
9. Annual lbs/yr transferred to each off-site location specified in Item 2.

TABLE 1-2: (Continued)

10. For releases to air, water, land and off-site locations; the basis for the estimate (e.g., monitoring data, mass balance, published emission factors for designated chemical, or engineering calculation), whether it includes accidental releases reported under Section 304, and whether a permit(s) applies to each release.
11. Specification of the phase of the waste stream for this chemical (e.g., gas, wastewater, non-aqueous liquid, solid), treatment method, range of influent concentrations, treatment efficiency estimate, and whether the treatment efficiency is based on actual operating data.
12. Optional information on waste minimization practices.
13. Information supporting any trade secrecy claims.
14. Information demonstrating that an effort was made to obtain the chemical name of all chemicals included in mixtures or tradename products obtained from suppliers.

Legal Basis	Regulation Citation	Facilities Affected	Chemicals Affected	Reporting Threshold	Report Requirement and Schedule	Who Gets Report*
SARA Title III: Section 302	40 CFR 355.30 Emergency Planning	Any facility where an "extremely hazardous substance" is present in excess of threshold planning quantities (TPQ); TPQ based on amount of chemical present at any one time in concentrations >1% by weight.	List of extremely hazardous substances published in 40 CFR 355 Appendices A & B	TPQ varies for each chemical; TPQ can be 1-10,000 lbs	Report the quantity of each chemical present on-site in excess of TPQ by 5/17/87	SERC
Section 304	40 CFR 355.40 Emergency Release Notification	Any facility at which there is release of reportable quantity of extremely hazardous substance or CERCLA hazardous substance (with 4 exceptions)	List of extremely hazardous substances published in 40 CFR 355 Appendices A & B	1 pound or, for CERCLA hazardous substance, the reportable quantity listed in 40 CFR 302 Table 302.4	Notify immediately with specific information on any chemical release at above reportable quantity beginning 8/17/87	LEPC, SERC, and National Response Center
Section 311 and 312	40 CFR 370	Any facility at which material safety data sheets (MSDS) are required under OSHA regulations	Hazardous chemicals that require MSDS under OSHA Hazard Communication Standard; chemicals on list of extremely hazardous substances (40 CFR 355 Appendices A & B)	For MSDS and Tier I reporting in first 2 years of program: > 10,000 lbs or less of 500 lbs or TPQ. For requested MSDS or Tier II reporting: any amount greater than zero	Submit the MSDS forms by 10/17/87. Submit Tier I forms, (general information on location and amount of haz. chem.) by 3/1/88 and annually thereafter. Submit Tier II forms (more detailed information) within 30 days of request or in lieu of Tier I.	SERC, LEPC, local fire dept
Section 313	40 CFR 372**	Any facility in SIC codes 20-39 with at least 10 full time employees that manufactures, imports, processes, or otherwise uses specified toxic chemicals in excess of applicable threshold quantity.	List of toxic chemicals published in 40 CFR 372.45	For manufactured or processed: 1987 >75,000 lbs 1988 >50,000 lbs 1989 >25,000 lbs For otherwise used: site locations >10,000 lbs	Report annual quantities released to air, water, land, and off-site locations on Chemical Release Inventory Forms by 7/1/88 and annually thereafter.	EPA and state agency

* SERC = State Emergency Response Commission
LEPC = Local Emergency Planning Committee

** As proposed in 52 FR 21152, June 4, 1987; final rule due in January 1988.

TABLE 1-3:

SARA TITLE III

SUMMARY OF REPORTING REQUIREMENTS UNDER

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2. RECOMMENDED GENERAL APPROACH FOR COMPLETING THE TOXIC CHEMICAL RELEASE INVENTORY FORMS

Our recommended general approach for completing the Toxic Chemical Release Inventory (TCRI) Forms is divided into 18 steps. Step 11, estimating the releases to the environment of each chemical, is described in detail in Section 3 of this memorandum. Our approach is summarized in Table 2-1. It consists of the following steps:

1. We will visit each facility under study and meet with the environmental coordinator and other plant management to discuss the availability of the required information, the division of responsibility between Enviroplan and the plant for providing this information, and the schedule for completing this work.

2. We will assemble from plant records the following required information concerning the facility identification:

- a. Dun & Bradstreet Number
- b. EPA Identification Number assigned to facilities covered by RCRA or Superfund regulations
- c. NPDES permit number and receiving surface water body
- d. Underground Injection Control Identification Number
- e. SIC Code

This information will be used to complete Section II (Facility Identification) of all TCRI Forms.

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3. Of the 329 chemicals subject to reporting, we will identify which may be manufactured, processed, or otherwise used at the facility in 1987 in quantities exceeding the applicable threshold quantity shown in Table 1-1. As a starting point in identifying the chemicals potentially subject to reporting, we will review the Material Safety Data Sheets (MSDS) which must be submitted to state emergency response commissions and local emergency planning commissions by 10/17/87 and information used to prepare the Tier One Emergency and Hazardous Chemical Inventory Forms due 3/1/88.

4. We will review plant records and hold discussions with plant personnel to determine which chemicals from Step 3 exceed the applicable threshold quantities. These are the chemicals for which the TCRI Forms must be prepared.

5. For each chemical subject to reporting, we will discuss with the company which, if any, of these chemicals constitute trade secrets. For each chemical a company wishes to claim as a trade secret, we will ask the company to prepare a memorandum justifying this. Table 2-2 lists the statements that must be affirmatively answered to claim use of a chemical as a trade secret.

6. We will complete Section IV (Chemical Identity) of the TCRI Form. For those chemicals whose use are not trade secrets, we will supply one copy of the form with the CAS number and name of each chemical. For those chemicals whose use is a trade secret, we will supply a second "sanitized" copy of this form specifying its generic classification and code with the trade secret justification memorandum described in Step 5.

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7. We will identify all off-site locations to which wastes from the facility are sent including information on the type of disposal or treatment applied to waste at that location and whether the off-site location is owned or controlled by the facility owner. This will involve a review of solid waste permits and other RCRA permits for all transport, storage, and disposal facilities for hazardous wastes. We will use this information to complete Section III of the TCRI Form (Off-site Locations to Which Any Toxic Chemical is Transferred).

8. From review of plant records and discussions with plant management, we will prepare Section V of the TCRI Form (Activities and Uses of the Toxic Chemicals at the Facility).

9. For each chemical subject to reporting, we will review with plant management its records and estimates concerning the maximum quantity of the chemical on-site at any time during the year 1987. This data will be entered in Section VI of the TCRI Form (Maximum Amount of the Chemical On-Site Anytime During the Reporting Period).

10. For each chemical subject to reporting, we will prepare a block diagram showing each potential source of release to the environment and the flow of this chemical through the facility in relationship to other sources including delivery points, storage locations, process units, waste treatment units, and waste disposal units, among others. Figure 2-1 illustrates the type of block diagram that will be prepared for each chemical subject to reporting at each facility.

11. We will use the procedures described in Section 3 of this memorandum to estimate the total facility-wide releases to air, water, land, and off-site locations of each chemical subject

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to reporting. This information will be estimated by source and then totalled to determine the facility-wide releases. The estimated releases will be entered in Section VII of the TCRI Form (Releases to the Environment). We will also prepare a supporting memorandum for each chemical showing the basis for the determination of the quantity released to the environment in 1987.

12. We will identify each waste stream containing chemicals subject to reporting. We will use the block diagrams prepared in Step 10 to make these determinations.

13. For each waste stream containing the chemicals subject to reporting, we will determine:

- A. The predominant phase of the waste stream (gaseous, wastewater, nonaqueous liquid waste, solid waste)
- B. Treatment method
- C. Range of influent concentrations
- D. Estimated waste treatment efficiency
- E. Whether the estimated waste treatment efficiency is based on operating data

The data on influent concentration and estimated treatment efficiencies will be obtained from a review of measurements carried out by the facilities under other regulatory programs, permits specifying required treatment efficiencies, published data available to Enviroplan on treatment efficiencies for various treatment methods, mass balance calculations, and/or engineering calculations. For air emissions, if detailed information on treatment efficiency for individual organic chemical emissions is not available, overall information on total VOC emission reductions may be used to estimate the treatment

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efficiency for the particular chemical. The basis for each treatment efficiency calculation used in the TCRI Form will be documented in a separate memorandum.

The above information will be used to complete Section VIII of the TCRI Form (Waste Treatment Methods and Efficiency).

14. We will discuss with company management whether it wishes to provide optional information on waste minimization procedures for each chemical subject to reporting. If so, we will complete Section IX of the TCRI Form (Optional Information on Waste Minimization) including the reduction in the quantity of the chemical released to the environment from the preceding year and the reasons for the reduction.

15. Following review of the above work, we will discuss with company management whether there are some sources for which the estimated releases to the environment are subject to such a large degree of uncertainty or are so toxic that the company may wish to consider selected and limited measurements of these releases to provide more accurate information, e.g. chemicals which are known human carcinogens. For those sources and releases, we will prepare cost estimates for conducting such measurement programs. If such measurements are carried out, this information will be incorporated in Section VII of the TCRI Form (Releases to the Environment).

16. The above information for all TCRI Forms at each facility will be entered into a computer compatible database management system such as DBASE, which will automatically print TCRI Forms for each chemical at each facility on an IBM PC compatible computer. This database will be provided to the

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facility so that future editing and revisions to the TCRI Forms can be carried out at the facility level.

17. The final work products for each chemical subject to reporting will consist of: 1) the completed TCRI Form, 2) the TCRI Form data in a computer-compatible format, 3) a memorandum for each chemical documenting the basis for the release estimates (Step 11) and 4) a memorandum for each chemical documenting the waste treatment efficiencies (Step 13).

18. We will meet with the company personnel responsible for satisfying the Section 313 reporting requirements of SARA Title III to review the TCRI Forms and other work products prepared for each chemical at each facility, and the basis of the procedures for developing the release estimates and other information on this form. This will be done, in part, to permit company personnel to complete Section I of the TCRI Form by certifying that they believe the information on the forms to be true, accurate, and complete.

TABLE 2-1: OVERVIEW OF ENVIROPLAN'S RECOMMENDED APPROACH FOR
COMPLETING THE TCRI FORMS UNDER SECTION 313 OF SARA
TITLE III

- A. Assemble information to complete the Facility Identification section of all TCRI Forms: Steps 1 and 2
- B. Determine for which chemicals TCRI Forms must be prepared for each facility: Steps 3 to 6
- C. Assemble information to complete the Off-Site Locations to Which Any Toxic Chemical is Transferred section of the TCRI Form for each chemical: Step 7
- D. Review facility records and hold discussions with facility personnel to prepare the Activities and Uses of the Toxic Chemicals section and Maximum Amount of the Chemical On-Site Anytime During the Reporting Period sections of the TCRI Forms: Steps 8 and 9
- E. Estimate the total facility-wide releases to the air, water, and land of each chemical subject to reporting and complete the Releases to the Environment section of the TCRI Form for each chemical: Steps 10 and 11

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TABLE 2-1: (Continued)

- F. Identify each waste stream including chemicals subject to reporting and assemble the information to complete the Waste Treatment Methods and Efficiency section of the TCRI Form: Steps 12 and 13
- G. Discuss with company personnel whether to complete the Optional Information on Waste Minimization section of the TCRI Form and, if so, complete this section: Step 14
- H. Decide with company personnel whether to conduct selective measurements to improve the accuracy of the estimated releases to the environment for selected chemicals (especially human carcinogens) and, if so, conduct such measurements to increase the accuracy of these estimates: Step 15
- I. Meet with company personnel to finalize the TCRI Forms and work products supporting the information provided in these forms: Steps 16 to 18

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TABLE 2-2: CONDITIONS THAT MUST BE SATISFIED AND REPORTED TO
CLAIM USE OF A CHEMICAL AS A TRADE SECRET

1. That the facility has not disclosed the fact that the chemical is manufactured, processed or otherwise used at the facility to any other person, other than a member of a local emergency planning committee, an officer or employee of the United States or a State or local government, an employee of such person, or a person who is bound by a confidentiality agreement.
2. That the facility has taken reasonable measures to protect the confidentiality of such information and will continue to take such measures.
3. That the information is not required to be disclosed or otherwise made available to the public under any other Federal or State law.
4. That disclosure of the information is likely to cause substantial harm to the competitive position of the facility.
5. That the chemical identity is not readily discoverable through reverse engineering.

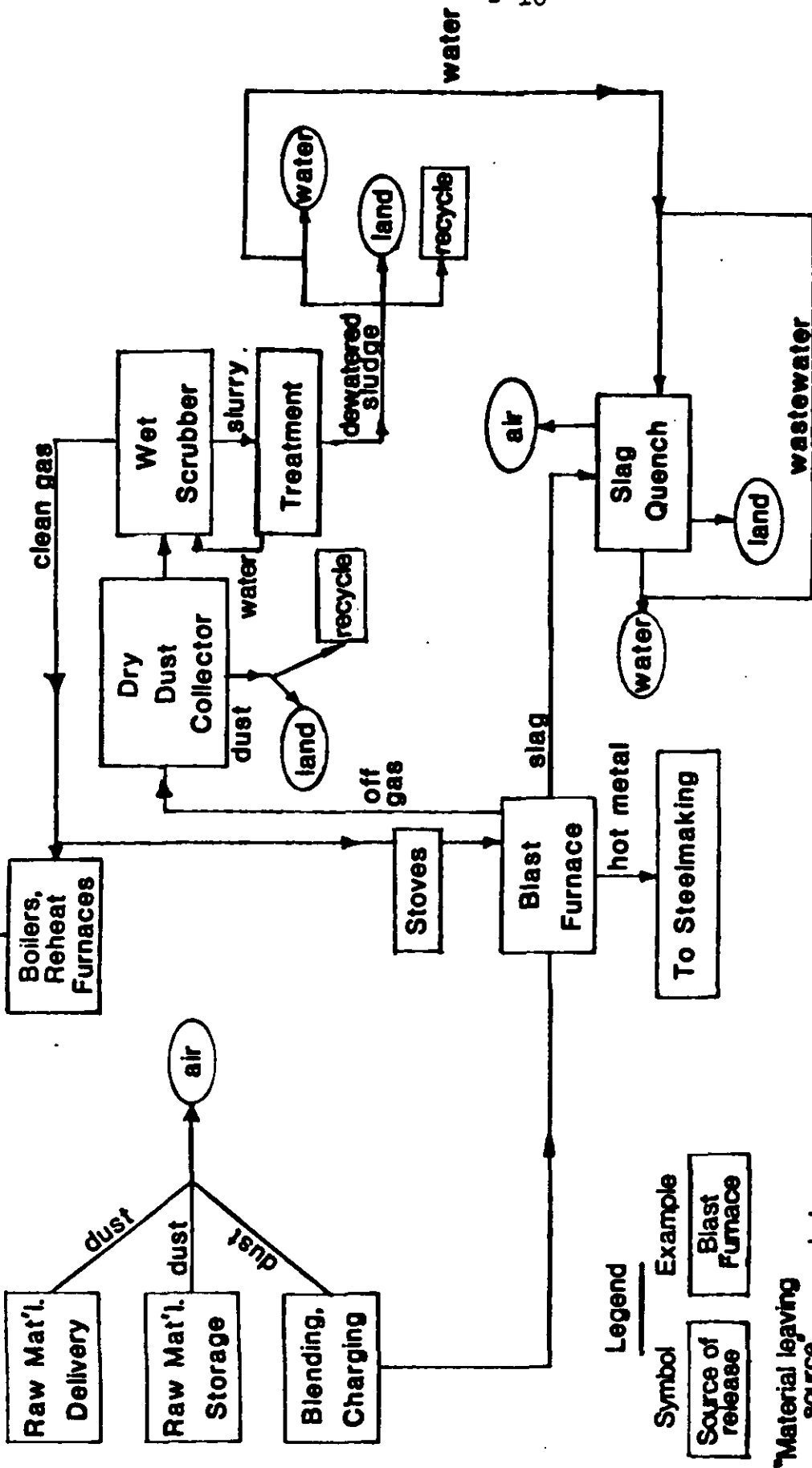


FIGURE 2-1: BLOCK DIAGRAM
ILLUSTRATING HYPOTHETICAL
SOURCES AND RELEASES TO
ENVIRONMENT OF ZINC FROM
BLAST FURNACE OPERATIONS

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3. ESTIMATING RELEASES TO THE ENVIRONMENT

This section discusses our approach to estimating the total 1987 releases to the environment of each chemical for which a TCRI Form must be prepared.

To prepare the Releases to the Environment section of this form, four questions must be answered for releases to each environmental medium: (1) How much of the chemical was released in 1987 (in pounds per year)? (2) Was any portion of that release (except releases to off-site locations) reported under the emergency notification provisions of Section 304 of SARA Title III? (3) What is the basis of the estimate (e.g., what was the primary estimation method used to determine the quantity released)? (4) Is the release specifically covered by a relevant environmental permit held by the facility?

For each release estimate, the principal method by which the release estimate was derived must be reported, i.e., the method used to estimate the largest portion of the total release quantity estimated.

The alternative methods of estimation are:

- 1) based on monitoring data or measurement for the chemical in the waste stream as released;
- 2) based on a mass balance such as the amount of the chemical in streams entering and leaving process equipment;

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- 3) based on published emission factors such as those relating release to throughput or equipment type; and
- 4) based on other approaches such as engineering calculations (for example, estimating volatilization using published mathematical formulas) or best engineering judgment.

The first three methods may only be used if they are specific for the chemical release being estimated. Otherwise, engineering calculations and judgment should be used. Use of monitoring data or emission measurements are the preferred method if such data are available from other regulatory requirements or process measurements. However, the law requiring preparation of the TCRI Forms specifically states that such monitoring or measurement is not required to complete the Releases to the Environment section of this form.

The remainder of this section is divided into four parts:

1. Emissions to the Air
2. Discharges to Water
3. Releases to Land
4. Transfers to Off-site Locations

3.1 EMISSIONS TO THE AIR

We will review the block diagram prepared in Step 10 of Section 2. All sources of chemical releases to the air will be divided into two categories: 1) stack or point air emissions, and 2) fugitive or non-point air emissions. The following two subsections describe the procedures we will use in developing the estimates of emissions to the air for each of these source categories.

Table 3-1 shows typical source categories for releases to the air from manufacturing facilities.

3.1.1 Stack or Point Source Emissions

The procedure we will follow to estimate the emissions to the air from stack or other point sources at each facility is as follows:

1. We will prepare a table listing each point source of emissions for each chemical subject to reporting.

2. For each source, we will review any measured flow rates, concentrations, and total emission rate measurements made from the source for each chemical. Such measurements typically will have been taken to satisfy process requirements or other regulatory needs. If air emissions are in the form of particulate matter, we will discuss with company personnel whether to collect selected particulate samples and subject them to laboratory analysis to determine the metal and other chemical fractions of these particulate emissions.

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3. We will review all air pollution permits, consent orders and other government directives concerning emission limits for each of these sources.

4. We will review 1987 facility production records applicable to each source to determine the total annual production in 1987 by product group.

5. Based on the above information, we will determine if measured concentrations and emission rates can be used to estimate 1987 annual emissions to the air from each of these sources. If so, we will proceed to Step 8.

6. If existing measurements cannot be used, we will discuss with plant engineering personnel the feasibility of completing mass balance calculations to estimate the emissions from each source. Such calculations will be most feasible if the chemical mass in the inlet and outlet streams from the source can be accurately quantified. Because small errors in chemical input or output estimates can produce large errors in emissions to the air, particular care must be taken to assure that accurate values of the input and output streams are available before proceeding with mass balance calculation.

7. We will review the available published literature on air pollution emission factors from each source to determine to what extent appropriate published emission factors for the chemical in question are available. For chemicals emitted in particulate form, published emission factors for total particulates will be considered together with the chemical composition of the particulate matter based on selective measurements as discussed in Step 2.

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8. Based on the above review, we will determine whether mass balance methods or published emission factors for the chemical in question can be used to estimate the air emissions. If so, these procedures will be used.

9. If not, engineering calculations and judgment will be used. Flow rates will be estimated from equipment design characteristics and annual production records. The physical properties of the chemical in question will be used to estimate gaseous concentrations. The chemical composition of particulate matter will be estimated based on engineering judgement supplemented by available published data. The concentrations will be applied to the estimated flow rates to determine total emission rates.

3.1.2 Fugitive Emissions

Fugitive emissions occur from many sources. They include emissions from equipment leaks and maintenance; loading, unloading and other movements of materials in solid, liquid and gaseous form for manufacturing or processing; vehicular activity and wind erosion from storage piles causing reentrainment of dust into ambient air; certain vent emissions not controlled; and secondary emissions from evaporation of liquids stored without total containment in open trenches, ponds, open vats, etc. Table 3-1 details many of the common sources of fugitive emissions. Such emissions are complex and usually extremely difficult to measure.

Usually engineering judgment, and published emission factors sometimes supplemented by selective measurements may be used to estimate these emissions. For chemicals characterized as known or suspected human carcinogens, greater emphasis should be

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placed on measurements for estimating these emissions since published emission factors can frequently exceed actual emission rates by several orders of magnitude.

Table 3-2 summarizes alternative approaches to estimating the fugitive emissions to the air from various sources. Such measurements should employ U.S. EPA Reference Method procedures, the protocol developed by the Chemical Manufacturers' Association for fugitive emission measurements and other established industry procedures for such measurements.

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3.2 DISCHARGES TO WATER

Direct discharges of each chemical to surface waters will be estimated in the following steps.

1. We will review all NPDES permits for the facility to identify all discharge points to rivers, lakes, streams, and other surface water bodies from pipes, open trenches, other process outfalls and wastewater treatment units. Storm water sources will only be considered if they are included in applicable NPDES permits.

2. From process information, NPDES permits and any available measurement flow data; we will estimate the total annual flow volume rate into these water bodies from each waste stream. The annual production rate corresponding to this flow volume will be determined. We will develop with plant personnel the functional relationship between annual flow volume and available measures of production or other reported activities determining flow rates. From the above information, the 1987 annual flow volume in each waste stream will be determined.

3. We will review with the plant environmental coordinator to what extent the chemical concentrations in the wastewater have been measured based on process measurements or measurements required by government agencies. This information will be assembled for subsequent use.

4. If concentration measurements for specific chemicals have been made, they will be applied to the 1987 flow volume information to calculate the total releases to surface water bodies in 1987. We will proceed to Step 8.

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5. If the concentration measurements are not available, we will evaluate the feasibility of using mass balance methods to calculate the releases. In evaluating this approach, we will take into account the fact that large errors in estimated releases can result from small uncertainties in process input and output data.

6. We will also review published effluent guidelines for the respective industry. We will evaluate the feasibility of using such published effluent guidelines to estimate chemical releases from each waste stream.

7. Based on the above, we will determine whether the mass balance method or published emission factor method can be used to estimate surface water discharges. If not, engineering calculations will be used based on estimates of chemical concentrations from a variety of sources including detailed plant process engineering calculations.

8. The calculation of 1987 chemical releases from each waste stream will be summarized in a technical memo and submitted for each facility to support the 1987 release estimates entered on the TCRI Form.

3.3 RELEASES TO LAND (ON-SITE)

Releases to the environment which are neither gaseous nor aqueous are classified as solid, slurry, or nonaqueous liquid wastes. Table 3-3 shows typical industrial operations which may be sources of releases in these categories. These waste products may be disposed of on-site or transferred to an off-site location. This section describes the procedures for estimating on-site releases to the land. Section 3.4 describes procedures for quantifying transfers to off-site locations.

Releases to land occur as a result of landfilling, land treatment, underground injection and surface impoundments. Releases to the on-site environment at each facility will be calculated in the following steps.

1. We will identify any landfilling, land treatment, underground injection and surface impoundments.
2. We will review RCRA and solid waste permits and RCRA waste manifests for each activity to identify the expected constituents of the waste and the quantities of material released.
3. We will review production records, records of discharge, and any available information on direct waste measurements to estimate the releases for each reportable chemical.
4. If available data is insufficient, we will review with plant personnel the feasibility of using mass balance or engineering calculations to quantify these releases. The technical approach will be a function of the type of waste and

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method of generation. The accuracy of this approach will be assessed.

5. Waste treatment systems may be used for solid, slurry, and nonaqueous waste either to recover usable materials, to destroy (incinerate) the waste, to dewater, or to solidify the waste. Therefore, the treatment system may be a source of emissions to the atmosphere or surface water, in addition to residual wastes which may be released to the land. Information on treatment system operation including operation records, permits and testing information will be used to quantify emissions and to calculate the treatment efficiency of the system.

6. On-site land disposal frequently also produces emissions to the air. These land disposal sites will be reviewed to determine whether any additional fugitive emissions to the air should be calculated.

3.4 RELEASES TO LAND (OFF-SITE)

Solid, slurry, and nonaqueous liquid wastes may also be transferred to off-site locations. In reporting releases to the environment, it will be necessary to distinguish between these and on-site releases. The methods of quantifying these releases will be essentially the same as discussed in Section 3.3. In addition it will probably be necessary to review shipping invoices and waste manifests to quantify these releases. Under RCRA, companies may already report biennial shipments on EPA Form 8700-13A.

TABLE 3-1: COMMON AIR RELEASE SOURCE CATEGORIESPoint SourceFugitive Sources

	<u>Secondary Sources</u>	<u>Equipment Leaks and Maintenance</u>	<u>Handling Storage, and Loading</u>
Combustion units	Lagoons, open trenches, pond evaporation	Flanges/connectors	Loading/unloading
Reactors	Cooling tower evaporation	Valves	Line venting
Distillation system	Wastewater treatment facilities	Pump seals	Packaging/container loading
Vacuum systems		Compressor seals	Material storage piles
Baghouses or precipitators		Sample connections	Vehicle activity in vicinity of storage piles
Combustion stacks		Open-ended lines	
Blow molding		Pressure relief devices (e.g., rupture disks)	
Spray drying		Lap hoods	
Curing/drying		Process sampling	
Scrubbers/absorbers		Equipment inspection	
Centrifuges		Equipment cleaning	
Extrusion operations		Equipment maintenance	
Pressure safety valves		Blowing out pipelines	
Manual ventings		Storage piles	
Storage tank breathing and filling losses			
Other process vents			

Notes:

- (a) Loading and unloading releases could be categorized as either point or fugitive sources, depending on whether the releases are ducted.
- (b) The above common air release source categories are most applicable to the chemical industry but are also applicable to a broad range of manufacturing facilities.

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TABLE 3-2: METHODS TO ESTIMATE FUGITIVE EMISSIONS TO THE AIR

Source Category	Alternate Methods to Estimate Emissions
I. Equipment Leaks and Maintenance	1. Use EPA average emission factors for equipment leaks for the synthetic organic chemical industry (SOCMI factors) applied to component counts (valves, flanges, pumps, seals, compressors, agitators, relief valves, sampling devices) 2. Use EPA Method 21 to measure number of components of each type that are leakers (>10,000 ppm) versus nonleakers ($\leq$ 10,000 ppm); apply EPA average SOCMI emission factors for leakers versus nonleakers 3. Same as 2 but stratify components into three groups: <10,000 ppm, 1,000 - 10,000 ppm, >10,000 ppm. 4. Use EPA Method 21 for all components and Chemical Manufacturer's Association protocol for mass emission rate measurements by component type.

TABLE 3-2: (Continued)

II. Solid Materials
Storage, Handling
and Vehicular
Activity

1. Use EPA published emission factors for total fugitive particulate emissions by source category with engineering judgment to estimate the fraction of total particulate emissions of each Section 313 chemical.
2. Same as 1 except selective measurements are used to determine the fraction of total particulate emissions that are of each Section 313 chemical.

III. Secondary Emissions

Engineering calculations based on chemical properties of liquid or solid subject to vaporization.

TABLE 3-3: SOLID, SLURRY, AND NONAQUEOUS WASTE STREAM SOURCES

Spent solvents
Spent solvents
Heavy ends - distillation residues
Heavy ends - miscellaneous
Light ends - condensable
Steam stripping wastes
Acid leaching solutions
Spent plating, stripping, or cleaning baths
Off-spec, discarded products or feedstock
Distillation side cuts
Residue in containers, liners, drums, cans, cleaning rags, gloves
Spills, leaks, vessel overflows
Precipitates or filtration residues
Spent activated carbon or other adsorber
Spent ion-exchange resins
Spent catalyst
Scrap metal
Solid scrap from finishing or trimming operations
Untreated solid waste
Equipment cleaning sludge (tank bottoms, heat exchangers)
Oven residue
Wastewater treatment sludges - biological
Wastewater treatment sludges - other
Treated organics
Treated solids
Oily waste from treated wastewater

ENVIROPLAN**4. ALTERNATIVE WAYS ENVIROPLAN CAN WORK WITH COMPANIES**

There are many ways Enviroplan can work with companies to satisfy the Section 313 reporting requirements. Table 4-1 lists several of these ways.

Which way is best depends on:

- 1) the availability of resources and special expertise to complete all reporting requirements;
- 2) the desirability of having an independent third party prepare these forms and, in particular, the Releases to the Environment section; and
- 3) the value of using the expertise and resources of a consulting organization that has specialized in estimating and measuring pollutant releases to the environment from complex sources over the past 15 years.

 ENVIROPLAN

TABLE 4-1: ALTERNATIVE WAYS ENVIROPLAN CAN WORK WITH COMPANIES
TO PREPARE THE TOXIC CHEMICAL RELEASE INVENTORY
FORMS

1. Enviroplan assumes total responsibility for preparing the TCRI Forms.
2. Enviroplan is responsible for preparing the Releases to the Environment section of the TCRI Forms and Company prepares all other parts of Form.
3. Enviroplan is responsible for preparing only the Releases to the Air (point and fugitive or just fugitive) section of the TCRI Forms and Company prepares all other parts of the forms.
4. Enviroplan is responsible for conducting certain chemical analyses of gaseous, liquid, and solid releases to the environment in support of Company preparation of the entire TCRI Form.
5. Enviroplan is responsible for identifying the chemicals subject to reporting on TCRI Forms and Company prepares the Forms.
6. Enviroplan is responsible for developing written Company-specific guidance to be given to facility personnel for use in their preparation of the TCRI Forms.

ENVIROPLAN

APPENDIX A: **THE CHEMICALS AND CHEMICAL CATEGORIES SUBJECT TO**
REPORTING UNDER SECTION 313 OF SARA TITLE III

Federal Register / Vol 52, No. 107 / Thursday, June 4, 1987 / Proposed Rules

21169-

Chemical name	CAS No.	Generic classification code	Effective date
Acetaldehyde.....	75-07-0	C07	01/01/87
Acetamide.....	60-35-6	C08	01/01/87
Acetone.....	67-64-1	C07	01/01/87
Acetonitrile.....	75-05-8	C11	01/01/87
2-Acetylaminofluorene.....	53-98-3	C10	01/01/87

Chemical name	CAS No.	Generic classification code	Effective date
Acrolein	107-02-8	C07	01/01/87
Acrylamide	78-08-1	C09	01/01/87
Acrylic acid	78-10-7	C08	01/01/87
Acrylonitrile	107-13-1	C11	01/01/87
Aldrin [1,4,5,8-Dimethanonaphthalene,1,2,3,4,10,10-hexachloro-1,4,4a, 5,8,8a-hexahydro-(1.alpha.,4.alpha.,4a.beta.,5.alpha.,8.alpha.,8a.beta.)-]	309-00-2	C03	01/01/87
Allyl chloride	107-05-1	C03	01/01/87
Aluminum (fume or dust)	7429-90-5	C15	01/01/87
Aluminum oxide	1344-28-1	C15	01/01/87
2-Aminanthraquinone	117-79-3	C10	01/01/87
4-Aminoazobenzene	60-09-3	C10	01/01/87
4-Aminobiphenyl	92-67-1	C10	01/01/87
1-Amino-2-methylantraquinone	62-28-0	C10	01/01/87
Ammonia	7664-41-7	C16	01/01/87
Ammonium nitrate (solution)	6484-52-2	C16	01/01/87
Ammonium sulfate (solution)	7783-20-2	C16	01/01/87
Aniline	62-53-3	C10	01/01/87
o-Anisidine	90-04-0	C10	01/01/87
p-Anisidine	104-94-9	C10	01/01/87
o-Anisidine hydrochloride	134-29-2	C10	01/01/87
Anthracene	120-12-7	C01	01/01/87
Antimony	7440-38-0	C15	01/01/87
Arsenic	7440-38-2	C15	01/01/87
Asbestos (friable)	1332-21-4	C16	01/01/87
Auramine [Benzeneamine, 4,4'-carbonimidoylbis[N,N-dimethyl-]]	482-60-6	C10	01/01/87
Barium	7440-39-3	C15	01/01/87
Benzal chloride	98-67-3	C02	01/01/87
Benzamide	55-21-0	C09	01/01/87
Benzene	71-43-2	C01	01/01/87
Benzidine	92-67-5	C10	01/01/87
Benzoic trichlorides (Benzotrichloride)	98-07-7	C02	01/01/87
Benzoyl chloride	98-68-4	C09	01/01/87
Benzoyl peroxide	94-36-0	C09	01/01/87
Benzyl chloride	100-44-7	C02	01/01/87
Beryllium	7440-41-7	C15	01/01/87
Biphenyl	92-52-4	C01	01/01/87
Bis(2-chloroethyl) ether	111-44-4	C06	01/01/87
Bis(chloromethyl) ether	542-88-1	C06	01/01/87
Bis(2-chloro-1-methylethyl) ether	108-60-1	C06	01/01/87
Bis(2-ethylhexyl) adipate	103-23-1	C08	01/01/87
Bromoform (Tribromomethane)	75-25-2	C02	01/01/87
Bromomethane (Methyl bromide)	74-83-9	C02	01/01/87
1,3-Butadiene	106-99-0	C01	01/01/87
Butyl acrylate	141-32-2	C08	01/01/87
n-Butyl alcohol	71-36-3	C05	01/01/87
sec-Butyl alcohol	78-92-2	C05	01/01/87
tert-Butyl alcohol	75-65-0	C05	01/01/87
Butyl benzyl phthalate	85-68-7	C08	01/01/87
1,2-Butylene oxide	106-68-7	C06	01/01/87
Butyraldehyde	123-72-8	C07	01/01/87
C.I. Acid Blue 9, diammonium salt	2650-18-2	C13	01/01/87
C.I. Acid Blue 9, disodium salt	3844-45-9	C13	01/01/87
C.I. Acid Green 3	4680-78-8	C13	01/01/87
C.I. Basic Green 4	569-64-2	C10	01/01/87
C.I. Basic Red 1	989-38-8	C10	01/01/87
C.I. Disperse Yellow 3	2832-40-8	C14	01/01/87
C.I. Food Red 5	3761-53-3	C14	01/01/87
C.I. Food Red 15	81-88-9	C10	01/01/87
C.I. Solvent Orange 7	3118-97-6	C14	01/01/87
C.I. Solvent Yellow 3	97-56-3	C14	01/01/87
C.I. Solvent Yellow 14	842-07-9	C14	01/01/87
C.I. Vat Yellow 4	128-66-5	C07	01/01/87
Cadmium	7440-43-8	C15	01/01/87
Calcium cyanamide	156-62-7	C11	01/01/87
Caplan [1H-isoindole-1,3(2H)-dione,3a,4,7,7a-tetrahydro-2- [(trichloromethyl)thio]-]	133-06-2	C13	01/01/87
Carbaryl [1-Naphthalenol,methylcarbamate]	63-25-2	C09	01/01/87
Carbon disulfide	75-15-0	C13	01/01/87
Carbon tetrachloride	56-23-5	C02	01/01/87
Carbonyl sulfide	463-58-1	C13	01/01/87
Catechol	120-80-8	C05	01/01/87
Chloramben [Benzoic acid, 5-amino-2,5-dichloro-]	133-90-4	C11	01/01/87

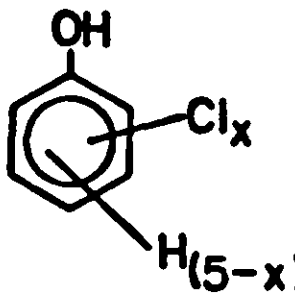
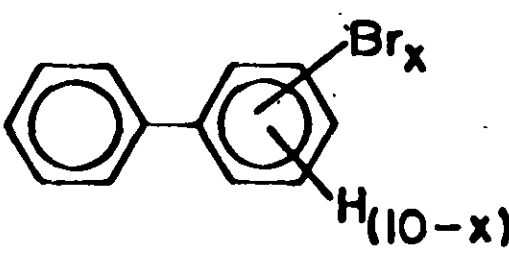
Chemical name	CAS No.	Generic classification code	Effective date
Chlordane [4,7-Methanoindan, 1,2,4,5,6,7,8,8-octachloro-2,3,3a,4,7,7a-hexahydro-]	57-74-9	C03	01/01/87
Chlorinated fluorocarbon (Freon 113)[Ethane, 1,1,2-trichloro-1,2,2-trifluoro-]	78-13-1	C02	01/01/87
Chlorine	7782-50-5	C16	01/01/87
Chlorine dioxide	10049-04-4	C16	01/01/87
Chloroacetic acid	79-11-8	C08	01/01/87
2-Chloroacetophenone	532-27-4	C07	01/01/87
Chlorobenzene	106-90-7	C04	01/01/87
Chlorobenzilate [Benzenecetic acid, 4-chloro- α -(4-chlorophenyl)- α -hydroxy-ethyl ester]	810-15-6	C08	01/01/87
Chloroethane (Ethyl chloride)	75-00-3	C02	01/01/87
Chloroform	67-68-3	C02	01/01/87
Chloromethane (Methyl chloride)	74-87-3	C02	01/01/87
Chloromethyl methyl ether	107-30-2	C08	01/01/87
Chloroprene	126-99-8	C03	01/01/87
Chlorothalonil [1,3-Benzenedicarbonitrile,2,4,5,6-tetrachloro-]	1897-45-6	C09	01/01/87
Chromium	7440-47-3	C15	01/01/87
Cobalt	7440-48-4	C15	01/01/87
Copper	7440-50-8	C15	01/01/87
p-Cresidine	120-71-8	C06	01/01/87
Cresol (mixed isomers)	1319-77-3	C05	01/01/87
m-Cresol	108-39-4	C05	01/01/87
o-Cresol	95-48-7	C05	01/01/87
p-Cresol	106-44-5	C05	01/01/87
Cumene	98-82-8	C01	01/01/87
Cumene hydroperoxide	80-15-9	C05	01/01/87
Cupferon [Benzeneamine, N-hydroxy-N-nitroso, ammonium salt]	135-20-8	C12	01/01/87
Cyanide compounds	57-12-5	C16	01/01/87
Cyclohexane	110-82-7	C01	01/01/87
2,4-D [Acetic acid, (2,4-dichloro-phenoxy)-]	94-75-7	C08	01/01/87
Decabromodiphenyl oxide	1163-19-5	C04	01/01/87
Diallate [Carbamothioic acid, bis(1-methylethyl)-, S-(2,3-dichloro-2-propenyl) ester]	2303-16-4	C13	01/01/87
2,4-Diaminoanisole	615-05-4	C10	01/01/87
2,4-Diaminoanisole sulfate	39156-41-7	C10	01/01/87
4,4'-Diaminodiphenyl ether	101-80-4	C10	01/01/87
Diaminotoluene (mixed isomers)	25376-45-8	C10	01/01/87
2,4-Diaminotoluene	95-80-7	C10	01/01/87
Diazomethane	334-88-3	C11	01/01/87
Dibenzofuran	132-84-9	C08	01/01/87
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	C02	01/01/87
1,2-Dibromoethane (Ethylene dibromide)	106-93-4	C02	01/01/87
Dibutyl phthalate	84-74-2	C08	01/01/87
Dichlorobenzene (mixed isomers)	25321-22-6	C04	01/01/87
1,2-Dichlorobenzene	95-50-1	C04	01/01/87
1,3-Dichlorobenzene	541-73-1	C04	01/01/87
1,4-Dichlorobenzene	106-46-7	C04	01/01/87
3,3'-Dichlorobenzidine	91-94-1	C10	01/01/87
Dichlorobromomethane	75-27-4	C02	01/01/87
1,2-Dichloroethane (Ethylene dichloride)	107-06-2	C02	01/01/87
1,2-Dichloroethylene	540-59-0	C03	01/01/87
Dichloromethane (Methylene chloride)	75-09-2	C02	01/01/87
2,4-Dichlorophenol	120-83-2	C04	01/01/87
1,2-Dichloropropane	78-87-6	C02	01/01/87
1,3-Dichloropropylene	542-75-8	C03	01/01/87
Dichlorvos [Phosphoric acid, 2,2-dichloroethenyl dimethyl ester]	62-73-7	C13	01/01/87
Dicofol [Benzenemethanol, 4-chloro- α -(4-chlorophenyl)- α -(trichloromethyl)-]	115-52-2	C04	01/01/87
Diopoxybutane	1464-53-5	C06	01/01/87
Diethanolamine	111-42-2	C10	01/01/87
Di-(2-ethylhexyl) phthalate (DEHP)	117-81-7	C08	01/01/87
Diethyl phthalate	84-68-2	C08	01/01/87
Diethyl sulfate	84-67-5	C13	01/01/87
3,3'-Dimethoxybenzidine	119-90-4	C10	01/01/87
4-Dimethylaminoazobenzene	60-11-7	C10	01/01/87
3,3'-Dimethylbenzidine(o-Tolidine)	119-93-7	C10	01/01/87
Dimethylcarbamyl chloride	79-44-7	C09	01/01/87
1,1-Dimethyl hydrazine	87-14-7	C11	01/01/87
2,4-Dimethylphenol	105-67-9	C06	01/01/87
Dimethyl phthalate	131-11-3	C08	01/01/87
Dimethyl sulfate	77-78-1	C13	01/01/87
4,6-Dinitro-o-cresol	534-52-1	C12	01/01/87
2,4-Dinitrophenol	51-28-6	C12	01/01/87
2,4-Dinitrotoluene	121-14-2	C12	01/01/87

Chemical name	CAS No.	Generic classification code	Effective date
2,6-Dinitrotoluene	806-20-2	C12	01/01/87
n-Dioctyl phthalate	117-84-0	C06	01/01/87
1,4-Dioxane	123-91-1	C06	01/01/87
1,2-Diphenylhydrazine(hydrazobenzene)	122-66-7	C11	01/01/87
Direct Black 38	1937-37-7	C14	01/01/87
Direct Blue 6	2802-46-2	C14	01/01/87
Direct Brown 95	18071-86-8	C14	01/01/87
Epichlorohydrin	106-89-8	C06	01/01/87
2-Ethoxyethanol	110-80-5	C06	01/01/87
Ethyl acrylate	140-88-5	C06	01/01/87
Ethylbenzene	100-41-4	C01	01/01/87
Ethyl chloroformate	541-41-3	C09	01/01/87
Ethylene	74-85-1	C01	01/01/87
Ethylene glycol	107-21-1	C05	01/01/87
Ethyleneimine (Aziridine)	151-56-4	C11	01/01/87
Ethylene oxide	75-21-8	C06	01/01/87
Ethylene thiourea	96-45-7	C13	01/01/87
Fluometuron [Urea, N,N-dimethyl-N'-[3-(trifluoromethyl)phenyl]-]	2164-17-2	C09	01/01/87
Formaldehyde	50-00-0	C07	01/01/87
Heptachlor [1,4,5,6,7,8,8-Heptachloro-3a,4,7,8-tetrahydro-4,7-methano-1H-indene]	78-44-8	C03	01/01/87
Hexachlorobenzene	118-74-1	C04	01/01/87
Hexachloro 1,3-butadiene	87-68-3	C03	01/01/87
Hexachlorocyclopentadiene	77-47-4	C03	01/01/87
Hexachloroethane	87-72-1	C02	01/01/87
Hexachloronaphthalene	1335-87-1	C04	01/01/87
Hexamethylphosphoramide	680-31-9	C13	01/01/87
Hydrazine	302-01-2	C11	01/01/87
Hydrazine sulfate	10034-83-2	C11	01/01/87
Hydrochloric acid	764-01-07	C16	01/01/87
Hydrogen cyanide	74-90-8	C16	01/01/87
Hydrogen fluoride	7664-39-3	C16	01/01/87
Hydroquinone	123-31-9	C07	01/01/87
Isobutyraldehyde	78-84-2	C07	01/01/87
Isopropyl alcohol (mfg.—strong acid processes)	67-63-0	C05	01/01/87
4,4'-Isopropylidenediphenol	80-05-7	C05	01/01/87
Lead	7439-92-1	C15	01/01/87
Lindane [Cyclohexane, 1,2,3,4,5,6-hexachloro-, (1.alpha.,2.alpha.,3.beta.,4.alpha.,5.alpha.,6.beta.)-]	58-89-9	C02	01/01/87
Maleic anhydride	108-31-6	C08	01/01/87
Maneb [Carbamodithioic acid, 1,2-ethanedithiolbis-, manganese complex]	12427-38-2	C16	01/01/87
Manganese	7439-96-5	C15	01/01/87
Metamine	108-78-1	C10	01/01/87
Mercury	7439-97-6	C15	01/01/87
Methanol	67-56-1	C05	01/01/87
Methoxychlor [Benzene, 1,1'-(2,2,2-trichloroethylidene)bis[4-methoxy-]]	72-43-5	C03	01/01/87
2-Methoxyethanol	109-86-4	C06	01/01/87
Methyl acrylate	96-33-3	C06	01/01/87
Methyl tert-butyl ether	1634-04-4	C06	01/01/87
4,4'-Methylenebis(2-chloro aniline) (MBOCA)	101-14-4	C10	01/01/87
4,4'-Methylenebis(N,N-dimethyl) benzenamine	101-61-1	C10	01/01/87
Methylenebis(phenylisocyanate) (MBI)	101-68-8	C11	01/01/87
Methylene bromide	74-95-3	C02	01/01/87
4,4'-Methylenedianiline	101-77-9	C10	01/01/87
Methyl ethyl ketone	78-93-3	C07	01/01/87
Methyl hydrazine	60-34-4	C11	01/01/87
Methyl iodide	74-88-4	C02	01/01/87
Methyl isobutyl ketone	108-10-1	C07	01/01/87
Methyl isocyanate	624-85-9	C11	01/01/87
Methyl methacrylate	80-62-6	C08	01/01/87
Michler's ketone	90-94-8	C07	01/01/87
Molybdenum trioxide	1313-27-5	C15	01/01/87
Mustard gas [Ethane, 1,1'-thiobis[2-chloro-]]	505-60-2	C13	01/01/87
Naphthalene	91-20-3	C01	01/01/87
alpha-Naphthylamine	134-32-7	C10	01/01/87
beta-Naphthylamine	91-59-8	C10	01/01/87
Nickel	7440-02-0	C15	01/01/87
Nitric acid	7697-37-2	C16	01/01/87
Nitrotetracetic acid	139-13-9	C08	01/01/87
5-Nitro-o-anisidine	99-59-2	C12	01/01/87
Nitrobenzene	98-95-3	C12	01/01/87
4-Nitrobiphenyl	92-93-3	C12	01/01/87

Chemical name	CAS No.	Generic classification code	Effective date
Nitrofen [Benzene, 2,4-dichloro-1-(4-nitrophenoxy)-]	1836-75-5	C15	01/01/87
Nitrogen mustard [2-Chloro-N-(2-chloroethyl)-N-methylethanamine]	51-75-2	C10	01/01/87
Nitroglycerin	65-63-0	C12	01/01/87
2-Nitrophenol	88-75-5	C12	01/01/87
4-Nitrophenol	100-02-7	C12	01/01/87
2-Nitropropane	79-48-9	C12	01/01/87
p-Nitrosodiphenylamine	156-10-5	C12	01/01/87
N,N-Dimethylaniline	121-69-7	C10	01/01/87
N-Nitrosodi-n-butylamine	924-16-3	C12	01/01/87
N-Nitrosodiethylamine	55-18-5	C12	01/01/87
N-Nitrosodimethylamine	62-75-9	C12	01/01/87
N-Nitrosodiphenylamine	86-30-6	C12	01/01/87
N-Nitrosodi-n-propylamine	621-64-7	C12	01/01/87
N-Nitrosomethylvinylamine	4549-40-0	C12	01/01/87
N-Nitrosomorpholine	59-89-2	C12	01/01/87
N-Nitroso-N-ethylurea	759-73-9	C12	01/01/87
N-Nitroso-N-methylurea	684-93-5	C12	01/01/87
N-Nitrosomonicotine	16543-55-8	C12	01/01/87
N-Nitrosopiperidine	100-75-4	C12	01/01/87
Octachloronaphthalene	2234-13-1	C04	01/01/87
Osmium tetroxide	20816-12-0	C15	01/01/87
Parathion [Phosphorothioic acid, O,O-diethyl 1-O-(4-nitrophenyl)ester]	56-38-2	C13	01/01/87
Pentachlorophenol (PCP)	87-86-5	C04	01/01/87
Peracetic acid	79-21-0	C09	01/01/87
Phenol	108-95-2	C05	01/01/87
p-Phenylenediamine	106-50-3	C10	01/01/87
2-Phenylphenol	90-43-7	C05	01/01/87
Phosgene	75-44-5	C09	01/01/87
Phosphoric acid	7664-38-2	C16	01/01/87
Phosphorus (yellow or white)	7723-14-0	C16	01/01/87
Phthalic anhydride	85-44-9	C08	01/01/87
Picric acid	88-89-1	C08	01/01/87
Polychlorinated biphenyls (PCBs)	1336-36-3	C04	01/01/87
Propane sulfone	1120-71-4	C13	01/01/87
beta-Propiolactone	57-57-8	C08	01/01/87
Propionaldehyde	123-38-6	C07	01/01/87
Propoxur [Phenol, 2-(1-methylethoxy)-, methylcarbamate]	114-26-1	C09	01/01/87
Propylene (Propene)	115-07-1	C01	01/01/87
Propyleneimine	75-55-8	C11	01/01/87
Propylene oxide	75-56-9	C06	01/01/87
Pyridine	110-86-1	C11	01/01/87
Quinoline	81-22-5	C11	01/01/87
Quinone	106-51-4	C07	01/01/87
Quintozene [Benzene, pentachloronitro-]	82-68-8	C12	01/01/87
Saccharin (manufacturing) [1,2-Benzisothiazol-3(2H)-one,1,1-dioxide]	81-07-2	C09	01/01/87
Safrole	94-59-7	C06	01/01/87
Selenium	7782-49-2	C16	01/01/87
Silver and compounds	7440-22-4	C15	01/01/87
Sodium hydroxide (solution)	1310-73-2	C16	01/01/87
Sodium sulfate (solution)	7757-82-6	C16	01/01/87
Styrene	100-42-5	C01	01/01/87
Styrene oxide	98-09-3	C06	01/01/87
Sulfuric acid	7664-93-9	C16	01/01/87
Terephthalic acid	100-21-0	C08	01/01/87
1,1,2,2-Tetrachloroethane	79-34-6	C02	01/01/87
Tetrachloroethylene (Perchloroethylene)	127-18-4	C03	01/01/87
Tetrachlorvinphos [Phosphoric acid, 2-chloro-1-(2,4,5-trichlorophenyl)ethenyl dimethyl ester]	981-11-5	C13	01/01/87
Thallium	7440-28-0	C15	01/01/87
Thioacetamide	62-55-5	C13	01/01/87
4,4'-Thiodianiline	139-65-1	C13	01/01/87
Thiourea	62-56-6	C13	01/01/87
Thorium dioxide	1314-20-1	C15	01/01/87
Titanium dioxide	13463-67-7	C15	01/01/87
Titanium tetrachloride	7550-45-0	C15	01/01/87
Toluene	108-88-3	C01	01/01/87
Toluene 2,4-diisocyanate	584-84-9	C11	01/01/87
Toluene 2,6-diisocyanate	91-08-7	C11	01/01/87
o-Toluidine	95-83-4	C10	01/01/87
o-Toluidine hydrochloride	636-21-5	C10	01/01/87
Toxaphene	8001-35-2	C02	01/01/87

Chemical name	CAS No.	Generic classification code	Effective date
Triaziquone [2,5-Cyclohexadiene-1,4-dione,2,3,3-tris(1-aziridinyl)-]	88-78-8	C11	01/01/87
Trichlorfon (Phosphonic acid, (2,2,2-trichloro-1-hydroxyethyl)-, dimethyl ester)	52-68-8	C13	01/01/87
1,2,4-Trichlorobenzene	120-82-1	C04	01/01/87
1,1,1-Trichloroethane (Methyl chloroform)	71-55-6	C02	01/01/87
1,1,2-Trichloroethane	79-00-5	C02	01/01/87
Trichloroethylene	79-01-6	C03	01/01/87
2,4,5-Trichlorophenol	95-95-4	C04	01/01/87
2,4,6-Trichlorophenol	88-06-2	C04	01/01/87
Trifluralin (Benzeneamine, 2,6-dinitro-N,N-dipropyl-4-(trifluoromethyl)-)	1582-09-8	C12	01/01/87
1,2,4-Trimethylbenzene	95-63-8	C01	01/01/87
Tris(2,3-dibromopropyl) phosphate	128-72-7	C13	01/01/87
Urethane (Ethyl carbamate)	61-79-8	C09	01/01/87
Vanadium (fume or dust)	7440-62-2	C15	01/01/87
Vinyl acetate	108-05-4	C08	01/01/87
Vinyl bromide	593-60-2	C03	01/01/87
Vinyl chloride	75-01-4	C03	01/01/87
Vinylidene chloride	75-35-4	C03	11/01/87
Xylene (mixed isomers)	1330-20-7	C01	01/01/87
m-Xylene	106-38-3	C01	01/01/87
o-Xylene	95-47-6	C01	01/01/87
p-Xylene	106-42-3	C01	01/01/87
2,6-Xyldine	87-62-7	C10	01/01/87
Zinc (fume or dust)	7440-66-8	C15	01/01/87
Zineb [Carbamodithioic acid, 1,2-ethanedithylbis-, zinc complex]	12122-67-7	C15	01/01/87

(c) Chemical categories in alphabetical order.

Category name	Generic classification code	Effective date
Antimony compounds—includes any unique chemical substance that contains antimony as part of that chemical's infrastructure.....	C15	01/01/87
Arsenic compounds—includes any unique chemical substance that contains arsenic as part of that chemical's infrastructure.....	C15	01/01/87
Barium compounds—includes any unique chemical substance that contains barium as part of that chemical's infrastructure.....	C15	01/01/87
Beryllium compounds—includes any unique chemical substance that contains beryllium as part of that chemical's infrastructure.....	C15	01/01/87
Cadmium compounds—includes any unique chemical substance that contains cadmium as part of that chemical's infrastructure.....	C15	01/01/87
Chlorophenols.....	C04	01/01/87
 Where $x=1$ to 5		
Chromium compounds—includes any unique chemical substance that contains chromium as part of that chemical's infrastructure.....	C15	01/01/87
Cobalt compounds—includes any unique chemical substance that contains cobalt as part of that chemical's infrastructure.....	C15	01/01/87
Copper compounds—includes any unique chemical substance that contains copper as part of that chemical's infrastructure.....	C15	01/01/87
Cyanide compounds— $X^+ CN^-$ where $X=H^+$ or any other group where a formal dissociation can be made. For example KCN, or $Ca(CN)_2$	C16	01/01/87
Glycol ethers—includes mono- and di- ethers of ethylene glycol, diethylene glycol, and triethylene glycol..... $R-(OCH_2CH_2)_n-OH$ Where $n=1, 2, \text{ or } 3$ $R = \text{alkyl or aryl groups}$ $R' = R, H, \text{ or groups which, when removed, yield glycol ethers with the structure:}$ $R-(OCH_2CH_2)_n-OH$	C06	01/01/87
Polymers are excluded from this category		
Lead compounds—includes any unique chemical substance that contains lead as part of that chemical's infrastructure.....	C15	01/01/87
Manganese compounds—includes any unique chemical substance that contains manganese as part of that chemical's infrastructure.....	C15	01/01/87
Mercury compounds—includes any unique chemical substance that contains mercury as part of that chemical's infrastructure.....	C15	01/01/87
Nickel compounds—includes any unique chemical substance that contains nickel as part of that chemical's infrastructure.....	C15	01/01/87
Polybrominated biphenyls (PBBs).....	C04	01/01/87
 Where $x=1$ to 10		
Selenium compounds—includes any unique chemical substance that contains selenium as part of that chemical's infrastructure.....	C15	01/01/87
Silver compounds—includes any unique chemical substance that contains silver as part of that chemical's infrastructure.....	C15	01/01/87
Thallium compounds—includes any unique chemical substance that contains thallium as part of that chemical's infrastructure.....	C15	01/01/87
Zinc compounds—includes any unique chemical substance that contains zinc as part of that chemical's infrastructure.....	C15	01/01/87

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APPENDIX B: TOXIC CHEMICAL RELEASE INVENTORY FORM (6/4/87
PROPOSED)

21180

Federal Register / Vol. 52, No. 107 / Thursday, June 4, 1987 / Proposed Rules

Page 1 of 5 pages

Form Approved OMB No.: _____

Important: Read instructions before completing form

Approval Expires: _____

U.S. Environmental Protection Agency
TOXIC CHEMICAL RELEASE INVENTORY

Section 313, Title III of The Superfund Amendments and Reauthorization Act of 1986

R

EPA Form R

Report Number

Calendar Year

I. 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 this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete.

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

Signature

Date Signed

II. FACILITY IDENTIFICATION**A. Name and Location**

Name _____
Street Address _____
City _____ County _____
State _____ Zip _____

B. Technical Contact

Name _____
Street Address _____
Telephone _____

C. Facility IdentifiersFacility Dun & Bradstreet Number --EPA Identification Number NPDES Permit Number

Name of Receiving Stream or Body of Water _____

LIC Identification Number Facility Primary SIC Code Other Manufacturing SIC Code Other Manufacturing SIC Code

Dun & Bradstreet Number of Parent Company

--

D. Parent Company Name _____

III. OFF-SITE LOCATIONS TO WHICH ANY TOXIC CHEMICAL IS TRANSFERRED**A. Publicly Owned Treatment Works (POTW)**

Name _____

Address _____

2. Other off-site locationType of treatment/disposal (enter code)

Name _____

Address _____

Is location under control of reporting facility or parent company? ☐ yes ☐ no**B. 1. Other off-site location**Type of treatment/disposal (enter code)

Name _____

Address _____

Is location under control of reporting facility or parent company? ☐ yes ☐ no**3. Other off-site location**Type of treatment/disposal (enter code)

Name _____

Address _____

Is location under control of reporting facility or parent company? ☐ yes ☐ no☐ Check if supplemental sheet is attached

Page 2 of 5 pages

Form R (continued)

IV. CHEMICAL IDENTITY

A. CAS # - -

B. Trade Secret ☐
(Provide the generic classification code and name in Section C below. Attach the required explanation to this submission.)

Chemical or Chemical Category Name

C. Generic classification of the chemical or chemical category
(Complete if the chemical or chemical category identity is claimed a trade secret or you are reporting a mixture or tradename product under D, below, and the supplier has provided you with the generic classification.)

Code Generic Classification _____

D. Mixture or tradename product identification
(Complete this section only if you are reporting a mixture or tradename product and you do not know the specific toxic chemical component.)

Name of product _____

Do you know the percentage composition of the toxic chemical in the product? ☐ yes - complete the remainder of this form
☐ no - complete only through section V of this form

V. ACTIVITIES AND USES OF THE TOXIC CHEMICAL AT THE FACILITY

(Check all that apply)

A. MANUFACTURE

- Produce ☐
- Import ☐
- For on-site use/processing ☐
- For sale/distribution ☐
- As a byproduct ☐
- As an impurity ☐

B. PROCESS

- As a reactant ☐
- As a formulation component ☐
- As an article component ☐
- Repackaging only ☐

C. OTHERWISE USED

- As a chemical processing aid ☐
- As a manufacturing aid ☐
- Ancillary or other use ☐

VI. MAXIMUM AMOUNT OF THE CHEMICAL ON-SITE AT ANY TIME DURING THE REPORTING PERIOD

Check the Reporting Range That Applies

Weight Range in Pounds
From... To...

☐	0	99
☐	100	999
☐	1000	9,999
☐	10,000	99,999
☐	100,000	999,999
☐	1,000,000	9,999,999
☐	10,000,000	49,999,999
☐	50,000,000	99,999,999
☐	100,000,000	499,999,999
☐	500,000,000	999,999,999
☐	1 billion	more than 1 billion

Page 3 of 5 pages

Form R (continued)

VII. RELEASES TO THE ENVIRONMENT

	Total Release (lb/yr)	Basis of Estimate (Enter Code)	Title III Sec. 304 Release? Yes No	Permit Applies to Release? Yes No
A. Emission to the Air				
Fugitive or non-point air emissions	_____	☐	☐ ☐	☐ ☐
Stack or point air emissions	_____	☐	☐ ☐	☐ ☐
B. Discharges to Water				
Direct discharges	_____	☐	☐ ☐	☐ ☐
C. Releases to Land				
1. Enter code	_____	☐	☐ ☐	☐ ☐
2. Enter code	_____	☐	☐ ☐	☐ ☐
3. Enter code	_____	☐	☐ ☐	☐ ☐
4. Enter code	_____	☐	☐ ☐	☐ ☐
D. Transfers to Off-Site Locations				
1. Discharge to POTW	_____	☐		☐ ☐
2. Other off-site location - Enter block number from section II.B. ☐	_____	☐		☐ ☐
3. Other off-site location - Enter block number from section II.B. ☐	_____	☐		☐ ☐
4. Other off-site location - Enter block number from section II.B. ☐	_____	☐		☐ ☐

Check if supplemental sheet is attached. ☐

Page 4 of 5 pages

Form R (continued)

VIII. WASTE TREATMENT METHODS AND EFFICIENCY**General Wastestream**

Check the box corresponding to the general wastestream.

G = Gaseous

W = Wastewater

L = Liquid Waste (Non-Aqueous)

S = Solid Waste (Including slurry/sludge)

	G	W	L	S
1.	☐	☐	☐	☐
2.	☐	☐	☐	☐
3.	☐	☐	☐	☐
4.	☐	☐	☐	☐
5.	☐	☐	☐	☐
6.	☐	☐	☐	☐
7.	☐	☐	☐	☐
8.	☐	☐	☐	☐
9.	☐	☐	☐	☐
10.	☐	☐	☐	☐
11.	☐	☐	☐	☐
12.	☐	☐	☐	☐
13.	☐	☐	☐	☐
14.	☐	☐	☐	☐

Treatment Method
(Enter Code)Range of Influent
Concentration
(Enter Code)Treatment Efficiency
EstimateBased on
Operating
Data?

yes no

☐ Check if supplemental sheet is attached**IX. OPTIONAL INFORMATION ON WASTE MINIMIZATION**

Describe actions taken since the last report to reduce the amount of toxic chemicals being released from the facility. See the instructions for coded items and explanation of what information to include, or provide a narrative explanation in the space provided.

Type of
modification
(Enter Code)
☐ ☐
Quantity of chemical in the wastestream
prior to treatment/disposalCurrent
reporting
year (lb/yr)Prior
year
(lb/yr)OR Percent
change

%

Index

☐ ☐
Reason for Action
(Enter Code)
☐ ☐

Narrative Description

☐ Check if supplemental sheet is attached.



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