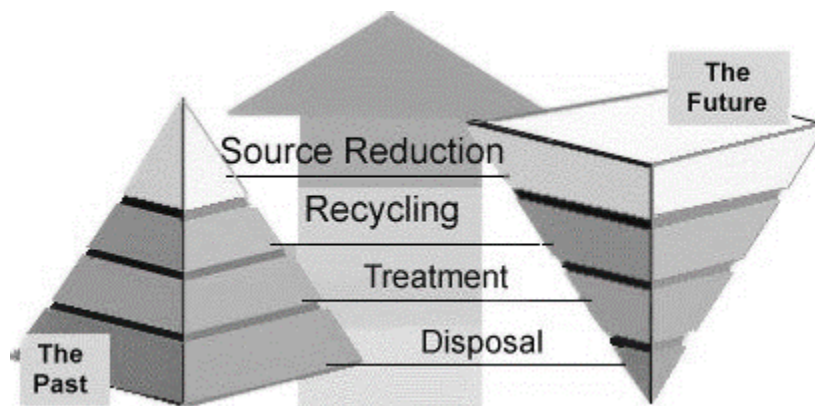


Pollution Prevention Planning

Guidance and Worksheets

July 2017



<http://dec.vermont.gov/environmental-assistance>

800-974-9559

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Introduction

This is Vermont's Guidance for Pollution Prevention (P2) Planning (also referred to as Toxics Use and Hazardous Waste Reduction Planning) **for plans due July 1, 2017**. For most companies, this will be an update of your current P2 Plan. The requirement for companies that generate hazardous waste and/or use toxic substances in their operations to develop a pollution prevention plan is found in 10 V.S.A. Chapter 159 Sections 6623-6632, passed by the Vermont Legislature in 1991. A link to the law can be found on our Environmental Assistance Office website:

<http://dec.vermont.gov/environmental-assistance/pollution-prevention/plans>

This Guidance has been designed to walk you through the preparation of your plan, step by step, providing worksheets for your calculations and reporting. **Once you have completed Worksheets 1 - 10 you will have developed an approvable Plan for your facility.** The Worksheets are also available in Microsoft Word and may be accessed via our web site at:

<http://dec.vermont.gov/environmental-assistance/pollution-prevention/forms>

The Environmental Assistance Office is in the Vermont Department of Environmental Conservation (DEC). EAO is the only non-regulatory office within the Department. In addition to administration of the plan requirement, staff provide planning assistance to companies, including information on toxics use and hazardous waste reduction strategies. Please call us with any questions at (802) 522-0469, or in Vermont, use our toll-free hotline, 1-800-974-9559.

The P2 planning process assigns priority to source reduction strategies - eliminating or minimizing waste generation or chemical use. Once waste has been generated, recycling strategies receive priority over treatment, since there is typically no re-use associated with waste treatment strategies. Successful implementation of P2 initiatives can have many benefits. Economic benefits may include more efficient use of raw materials, minimizing fees associated with the use of hazardous materials, avoiding costs associated with regulatory compliance and occupational exposure to chemicals by falling below regulatory thresholds, and lower costs associated with the management and disposal of hazardous waste.

Planning is intended to be an ongoing process and plans are meant to be dynamic documents. Periodic assessment of opportunities is expected and necessary in response to the ever-changing business landscape. Any Performance Goals established on Worksheet 10 of the plan can be readjusted as necessary during the three-year plan period.

NEED PLANNING ASSISTANCE? GIVE US A CALL AND PUT OUR RESOURCES AND EXPERIENCE TO WORK FOR YOUR BUSINESS.

1-800-974-9559

Who is Required to Plan?

All companies that are either Class A or Class B generators of hazardous waste, or that are Large Users of toxic substances, must prepare a Pollution Prevention Plan.

A **Class A Generator** is a company that generates **2,200** pounds or more of hazardous waste in any one month of the calendar year

A **Class B Generator** is a facility that generates **2,640** pounds or more of hazardous waste per year and between 220 and 2200 pounds of hazardous waste per month.

Hazardous Waste is defined in the [Vermont Hazardous Waste Management Regulations](#).

A **Large User** is a facility with ten or more full-time employees that is in Standard Industrial Classification (SIC) Code 20-39 and that manufactures, processes or otherwise uses:

- (i) more than **10,000** lbs./yr of a toxic substance; or
- (ii) more than **1,000** lbs./yr of a toxic substance if that amount accounts for 10% or more of the total of toxic substances manufactured, processed or otherwise used at the facility during the year

A **Toxic Substance** means any substance in a gaseous, liquid or solid state listed pursuant to Title III, Section 313 of the Superfund Amendments and Reauthorization Act (SARA) of 1986. Appendix A includes the 2016 list of toxic substances which can also be found at the link below:

<http://dec.vermont.gov/environmental-assistance/pollution-prevention/forms>

IMPORTANT DEFINITIONS

Toxics Use Reduction means in-plant changes in production or other processes, operations, products or raw materials that reduce, avoid, or eliminate the use or production of toxic substances or raw materials that result in that generation of hazardous waste. Toxics use reduction projects should not transfer toxic pollutants to another medium, such as the air or water, nor should they create substantial new risks to public health, safety, and the environment.

Hazardous Waste Reduction is any recycling or other activity applied after hazardous waste is generated to reduce the volume, quantity, toxicity or all three. It does not include activities that transfer hazardous waste constituents from one medium to another (e.g, solid waste to air or wastewater). It also does not include incineration or using dilution as a means of reducing toxicity. It may include on-site or off-site treatment where it can be shown that such treatment confers a higher level of protection to public health, safety and the environment than other technically and economically practicable waste reduction alternatives.

Planning Requirements

The Plan. A pollution prevention plan must be developed every three years. The current planning cycle extends from July 1, 2017 through July 1, 2020. Plans are **not** a public record and therefore not available to the public upon request. **Completed plans do not have to be submitted but all plans must be reviewed by EAO staff.** Companies are encouraged to submit the completed plan for review.

Companies may choose to use their own format in lieu of the Worksheets contained in this guidance to prepare a Plan, so long as all the required information is included. Also, in lieu of a Plan, a company may opt to use the **Environmental Management System (EMS) Alternative**. The EMS must address pollution prevention as well as environmental compliance. Refer to **Appendix B** for details about using the EMS alternative.

Plan Summary. Where a company chooses not to submit the complete plan, the Plan Summary must be submitted to EAO. The Plan Summary is comprised of **Worksheets 1, 2 and 10 and the signed Certification of Plan Completion**. The Certification of Plan Completion form must be signed by a company official and is found on the next page of this guidance. EAO staff will call to schedule a time to review the complete Plan at the facility at a later date.

Plan Review. The Environmental Assistance Office will review all P2 plans. If a plan is determined to be deficient, the company will be given between 90 and 180 days to correct the deficiencies. Staff will be available to assist the company in such situations. The goal of the review process is to produce a complete and approved plan.

Annual Progress Reports. Facilities must also prepare and submit an Annual Report on progress made in achieving reduction goals established in the Plan. Progress report forms are due March 31 of each year for the previous year's toxics use and hazardous waste reduction information. Reporting forms were mailed to planners in early February. Information contained in annual reports is a public record and may be assembled to provide information for the Vermont Legislature and others on pollution prevention. There is a fee associated with the annual progress report. See the EAO Pollution Prevention webpage for additional information.

Summary of Options for Fulfillment of P2 Planning Requirement

- **Complete Plan as described in this guidance** – Submit completed Worksheets 1-10 (and any attachments) and signed Certification of Plan Completion
- **Complete plan using own format** - Submit information equivalent to that found in worksheets 1-10 and signed Certification of Plan Completion
- **Plan Summary only** – Prepare plan including all worksheets or equivalent information (if using own format). Submit Worksheets 1, 2, 10 and signed Certification of Plan Completion. EAO staff will schedule time to review plan at your facility.
- **Environmental Management System (EMS) Alternative** – Submit EMS Alternative Application and Certification. See Appendix B for more details on the EMS alternative.

Overview of Planning Worksheets and Guidance

The approach to developing a pollution prevention plan should be similar to that used to develop any other business plan. There must be a clear understanding of why a “program” is being implemented, what will be done, and who will do it. The planning worksheets are organized as follows to guide you through the planning process.

MANAGEMENT COMMITMENT

Worksheets 1-3 are designed to help you set the tone for future implementation. They will also help you to establish the framework for completing a comprehensive and on-going evaluation of how your organization does business.

GATHERING BASELINE DATA

Worksheets 4-6 are used to establish necessary baseline data for planning. As required under the law, the focus is on identifying toxic substances and hazardous wastes and determining which processes or practices use or generate those materials. However, feel free to include non-hazardous materials and other processes in your evaluation if it is appropriate for meeting your environmental agenda. Some facilities have chosen to expand their plans to include issues like water conservation, stormwater runoff, and solid waste generation, especially where opportunities to further reduce chemical use or hazardous waste generation are limited.

OPPORTUNITY IDENTIFICATION & EVALUATION

Worksheets 7-9 will help identify and evaluate pollution prevention opportunities for each of your processes. Many companies have found that they can lessen their environmental impact by making chemical substitutions, upgrading equipment, or by improving business systems. Examples include: inventory control, purchasing, quality control, research and development, customer services, employee awareness and training, and maintenance and inspection.

SETTING GOALS & TRACKING PROGRESS

Worksheet 10 is used to set implementation goals for those opportunities that have been determined to be technically and economically feasible.

POLLUTION PREVENTION CERTIFICATION OF PLAN COMPLETION

(To be submitted with Worksheets 1, 2, and 10, as the Plan Summary, where decision is made not to submit the complete Plan.)

This document certifies that a complete Pollution Prevention Plan has been developed in accordance with this Planning Guidance (July, 2017) and that the information provided herein is true, correct and complete. I understand that this facility's Pollution Prevention Plan must be available for on-site review by staff of the Environmental Assistance Office.

Signature: _____

Print Name: _____

Title: _____

Date: _____

Guidance for Worksheet 1 – Facility Information

Worksheet 1 asks for general information about the facility. **Worksheet 1 is one of three Worksheets comprising the Plan Summary and must be submitted to the Environmental Assistance Office.**

Applicable Definitions

Interrelated Facilities. An interrelated facility means multiple facilities located on separate sites and owned and operated by the same entity. An entity with interrelated facilities where a significant majority of the processes are substantially similar may prepare a single plan. "Substantially similar" processes means processes that are essentially interchangeable, since they use similar equipment and materials, produce similar products or services, and generate similar hazardous waste. A facility desiring to submit a single plan under this provision must obtain approval prior to the plan development. Contact the Environmental Assistance Office at 802-522-0469 for more information.

In the instance where the entity has interrelated facilities without substantially similar processes, a single plan may still be prepared. However, it must contain separate detailed worksheets where appropriate for each facility. Contact the Environmental Assistance Office for more information.

Production Levels. For the previous calendar year, state the production or activity level(s) for your facility. Try to identify some measure of output - such as the number of units manufactured, square footage or weight of product, etc. - as the variable that most accurately affects the quantities of the toxic substances used or hazardous waste generated. If no logical production level exists, perhaps some other activity variable that has primary influence on toxics use or waste generation can be used. For example, an activity level might be based on the number of times a cleaning operation is performed per year. If you manufacture multiple products or provide significantly different services, it may be useful to describe separate units of measure for each product or service that uses toxic substances or generates hazardous waste.

Please contact the Environmental Assistance Office for help in identifying a suitable production or activity level for your facility. You must be able to explain any fluctuations in the quantity of toxic substances used or hazardous waste generated that occur independent of production or activity.

Worksheet 1 - Facility Information

Facility Name: _____

Facility Location: _____

Mailing Address: (if different) _____

Contact Person: _____

Phone: _____ E-mail: _____

Planning Status:

(A facility may be both a Large User
of Toxic Substances and a Class A or
B Generator of Hazardous Waste)

Large User _____
Class A Generator _____
Class B Generator _____

Facility Description

Industry type: _____ Primary SIC or NAICS Code: _____

Number of Full-Time Equivalent Employees _____

Identify any "Interrelated facilities" or other buildings covered by the Plan:

Describe products you make or services you provide:

Production Levels:

Guidance for Worksheet 2 – Management Policies

Worksheet 2 is one of three Worksheets comprising the Plan Summary and must be submitted to the Environmental Assistance Office.

Management Policy Statement regarding toxics use reduction and hazardous waste reduction:

Owners and managers set the tone of the facility's activities. The management policy statement is a way to explain to employees and others how reduction of toxic substances and hazardous waste fits into company policies and practices. Policy statements should include a commitment to implementation of plan goals wherever it is technically and economically feasible to do so and reference other company policies that encourage toxics use reduction and hazardous waste reduction, (e.g, purchasing restrictions) as applicable.

Employee Training and Awareness Programs. Please provide a description of employee awareness and training programs that are related to the implementation of this plan. Many facilities have integrated pollution prevention into their existing training programs dealing with environmental compliance and employee health and safety.

Employee involvement is important, even vital, to the successful implementation of pollution prevention initiatives. Consider forming a pollution prevention team, if you haven't already done so. Personnel in purchasing, production, materials and inventory control, engineering and maintenance are important to involve. Once you have assembled a team, let people know about it.

Indicate on Worksheet 2 how employees are made aware of your company's management policy, for example, posting it in a conspicuous place, sending out facility-wide email, discussion at staff or safety meetings.

Tips for involving employees in P2 Planning and Implementation:

Include Pollution Prevention as a part of new employee orientation

Encourage two-way communication between employees and management

Make P2 a topic for monthly or quarterly health & safety meetings

Post information about P2 goals, projects and achievements on bulletin boards and include in staff newsletters

Ask for employee ideas on toxics use and hazardous waste reduction and other environmental, health & safety issues

Reward employees for good ideas and active participation in planning and implementation of P2 projects

Include P2 in continuous improvement (e.g. Lean) efforts

Worksheet 2 - Policy and Employee Training

Management Policy Statement

Employee Training and Awareness Program(s)

Management Signature: _____

Title: _____ Date: _____

Guidance for Worksheet 3 – Ongoing P2 Activities

Many companies have already implemented pollution prevention initiatives. Worksheet 3 provides for a brief description of any such initiatives that have been or are currently being implemented.

This information is important because:

- It gives valuable information regarding past accomplishments and helps to show the company's longer term commitment to pollution prevention. It can show progress made towards pollution prevention.
- It can be used to help track past efforts, and define what has and has not worked.
- It may serve as a springboard for future work - understanding past successes and failure can lead to new ideas and solutions. You may find that projects that were not technically or financially feasible in the past may now be practicable because of advances in technology or changes to financial variables such as the lower cost of mature technology or the higher cost of waste disposal.
- It provides useful information to Environmental Assistance Office staff during the plan review process.

Worksheet 3 - Ongoing Pollution Prevention Activities

List or describe any source reduction and recycling activities **already in place** at your facility. If possible, show estimated waste or chemical use reductions in pounds, the year of implementation, and any cost savings that have been achieved. Even though the planning law specifically deals with toxic chemicals and hazardous waste, companies commonly implement pollution prevention measures resulting in a decrease in the quantity or toxicity of wastewater discharges, air emissions or other environmental releases. Such measures can also be described on this Worksheet as they also represent significant environmental accomplishment.

Guidance for Worksheet 4 – Toxic Substance Use

Worksheet 4 only needs to be completed if the facility is a Large User of Toxic Substances.

The identification of toxic substances, or products containing toxic substances, is the first step to identifying opportunities for reduction. **Facilities must choose one of two approaches in the identification of toxic substances:**

- **the Product Approach (Worksheet 4A)** - A hazardous product is any product that you are using which contains one or more toxic substances pursuant to section 313 of Title III of the Superfund Amendments and Reauthorization Act (SARA) in excess of 10,000 pounds per year or 1,000 pounds per year if 10% or more of all toxic substances. (See Appendix A for the list of toxic substances.) The term product refers to inputs to the manufacturing process or product(s) found in or used on the final product produced by the facility. For some companies, focusing on products containing the greatest percentage of toxic substances may help in prioritizing reduction efforts.

OR

- **the Chemical Approach (Worksheet 4B)** - The chemical approach requires that facilities sum the amount of a particular toxic substance for all products containing that chemical; for example, if xylene is found in three separate products, you must determine the total amount of xylene used for all three.

You may want to start by using Safety Data Sheets (SDS) to develop an inventory of the products you use that contain toxic substances. This inventory, which should include product name, total pounds of product used, and percentage of hazardous constituents, will make it much easier to complete Worksheet 4A or 4B. You do not need to include chemicals or products in your inventory which are used at the facility for janitorial, grounds maintenance or general office purposes.

In addition to Safety Data Sheets, other good sources of information might include purchasing records, stockroom and inventory records, and vendor information. Regulatory reports like Tier II (Community-Right-to-Know) reports, federal Toxics Release Inventory (TRI) Form R reports, and hazardous waste manifests can also prove useful for identifying and establishing baseline toxic substance use.

Some companies have established electronic databases specifically to log and track purchases of toxic substances or products containing toxic substances. Software may be purchased or developed in-house to do this and can serve as the foundation to which you can add more detailed information as necessary for planning purposes and/or other government reporting requirements.

NOTE: Only toxic substances that are released to the environment are subject to plan requirements.

Examples of on-site releases are fugitive or non-point air emissions, discharges to receiving water bodies, underground injections, surface impoundments, landfill or other on-site disposal. Off-site releases can include transfers to municipal wastewater treatment plants, off-site recycling, energy recovery, or shipment to a hazardous waste treatment, storage and/or disposal facility (TSDF). If, on the other hand, chemicals are used in a closed process and consumed in that process, or controlled such that there is *no* release to the environment as with certain air emission collection and destruction technologies, then such chemicals are not subject to planning. Please call EAO if you have any questions about this issue.

Worksheet 4A - Toxic Substance Use – Product Approach

Current Year: _____ (Calendar year immediately preceding the year in which this Worksheet is completed.)

PRODUCT APPROACH

1. List each PRODUCT which contains 50 percent or more toxic substances if more than 2,000 pounds of the product were used. *See example in shaded row below.*

Product	Amount of Product Used (lbs)	Toxic Substance(s) Found in Products	Total Concentration of Toxics (%)
<i>Example - A+ Lacquer Thinner</i>	<i>2300</i>	<i>Toluene (75%), methanol (5%)</i>	<i>80%</i>

2. List each PRODUCT which contains between 25 and 49 percent toxic substances, if more than 4,000 pounds of the product were used.

Product	Amount of Product Used (lbs)	Toxic Substance(s) Found in Products	Total Concentration of Toxics (%)
<i>Example - Hydrofluoric acid</i>	<i>10,000</i>	<i>Hydrofluoric acid</i>	<i>45%</i>

3. List each PRODUCT which contains between 10 and 24 percent toxic substances, if more than 10,000 pounds of product were used.

Product	Amount of Product Used (lbs)	Toxic Substance(s) Found in Products	Total Concentration of Toxics (%)
<i>Example – Bob’s Lactol Spirits</i>	<i>12,000</i>	<i>Toluene</i>	<i>20%</i>

4. List the sources of information that were used to determine the above quantities and concentrations. This could include Safety Data Sheets (SDS), vendor or manufacturer information, annual inventory reports, etc.

Worksheet 4B - Toxic Substance Use – Chemical Approach

Current Year: _____ (Calendar year immediately preceding the year in which this Worksheet is completed.)

CHEMICAL APPROACH

List each Toxic Substance if (a) more than 10,000 pounds are used during the year OR if (b) more than 1,000 pounds of the toxic substance is used and that amount exceeds 10% of all toxic substances used at the facility for the year. *See Examples for (a) and (b) in the shaded rows below.*

Toxic Substance Name	Product(s) Found In	Concentration of Toxic in Product(s) (%)	Amount of Product Used in the "Current Year" (lbs.)	Amount of Toxic Substance Used in the "Current Year" (lbs.) (column 3 x 4)	Total Chemical Used – Sum for Each Toxic (lbs.)
<i>(a) Toluene</i>	<i>Lactol Spirits</i>	<i>22%</i>	<i>50,000</i>	<i>11,000</i>	<i>11,000</i>
<i>(b) Methanol</i>	<i>Paint</i>	<i>12%</i>	<i>20,000</i>	<i>2,400</i>	<i>2,400</i>

List the sources of information that were used to determine the above quantities and concentrations. This could include Safety Data Sheets (SDS), vendor information, annual inventory reports, etc.

Guidance for Worksheet 5 – Hazardous Waste Generation

Worksheet 5 only needs to be completed if the facility is a Class A or a Class B Generator of hazardous waste.

Any *routinely generated* hazardous waste stream which accounts for more than 5% of the total amount of hazardous waste generated by the facility in a calendar year is subject to plan requirements. An important aspect is that Class A or B designation is based on monthly hazardous waste **generation**, not the amount shipped off-site for recycling, treatment and/or disposal as shown on a manifest. Waste amounts taken from a hazardous waste manifest may not necessarily be an accurate indicator of monthly generation.

One-time generation events, or hazardous waste generated from environmental remediation projects, are considered non-routine and therefore are not included in monthly or annual generation totals for planning purposes. Please call the Environmental Assistance Office at 802-522-0469 if you believe you have a non-routine waste stream that should be exempted from planning requirements.

Please indicate all processes associated with a given waste stream on this Worksheet.

Waste streams assigned the hazardous waste code “VT99” which is used only for non-hazardous waste or exempt waste shipped using a hazardous waste manifest, are not subject to planning.

Worksheet 5 - Hazardous Waste Generation

Current Year: _____ (Calendar year immediately preceding the year in which this Worksheet is completed.)

Total of Routinely Generated Hazardous Waste: _____ lbs. = 100% (NOTE: Use this total to calculate percentage below.)

List each hazardous waste stream greater than 5% of total annual generation. *See example in shaded row below*

Waste Code(s) (e.g., D001,VT02)	Hazardous Waste Name	Amount Generated in "Current Year" (lbs)	Percent of Total Hazardous Waste Generated in the "Current Year" (%)	Process(es) Generating the Hazardous Waste
D002	Alkaline etch solution	60,000	75%	Copper etching

Guidance for Worksheet 6 – Process Description

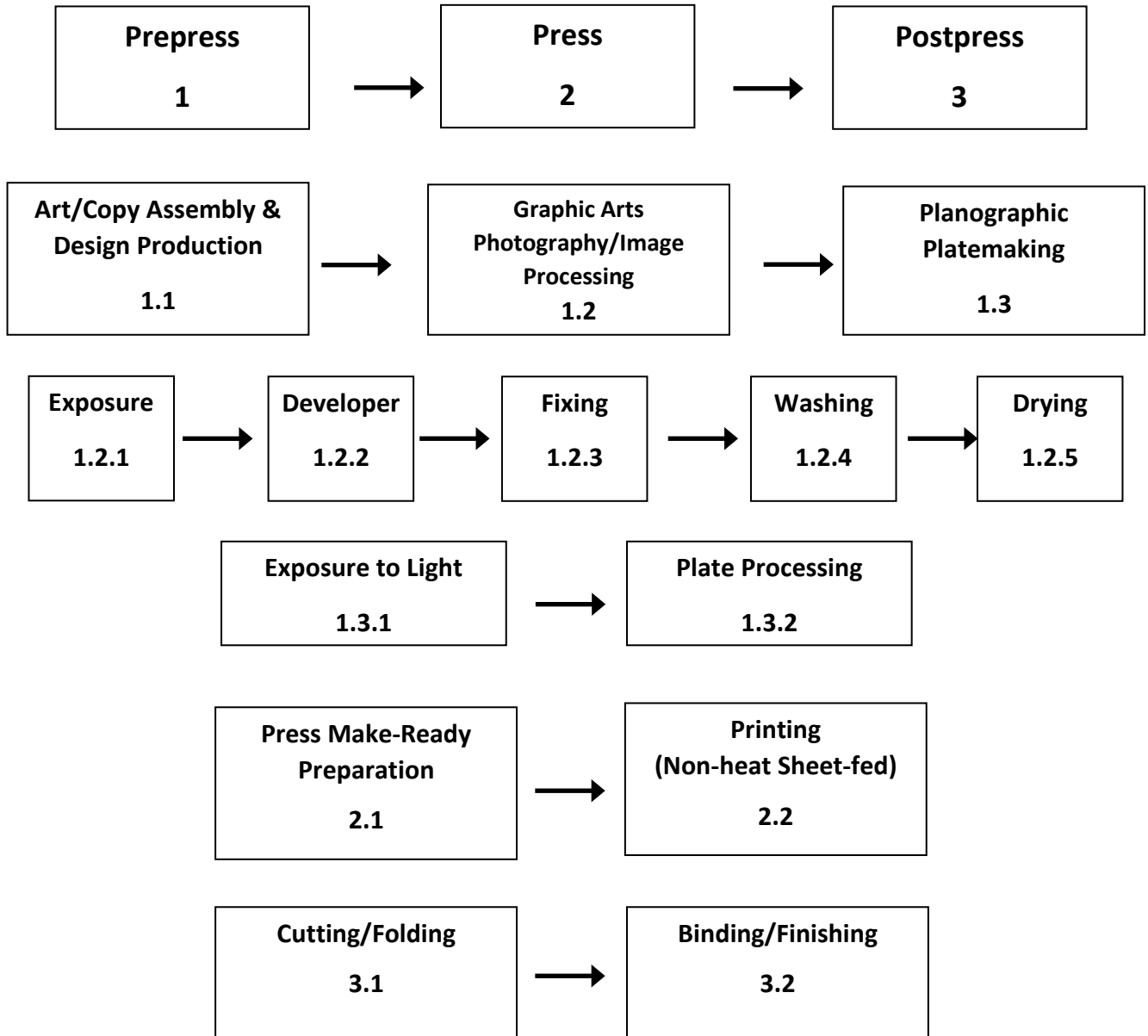
Understanding how your current processes work is crucial to pollution prevention. Use Worksheet 6 to describe each process listed on Worksheets 4 and 5. Be sure to identify all individual processes where toxics are used and/or that generate hazardous waste. Include raw material inputs and process losses. A good description of the process should identify all losses, including air emissions, chemical constituents in a wastewater discharge, and non-hazardous solid wastes as well as those regulated as hazardous wastes. It should include information about process equipment, including date of installation, maintenance requirements insofar as it relates to the generation of hazardous waste, and the presence of existing pollution control technology. It is also often beneficial to identify recycling or disposal methods for each hazardous waste that is generated. Attach another sheet if necessary.

Probably the best way to see the relationships between work steps is through process mapping. A process map is a schematic description of a process. It can show a key process of your facility, such as parts manufacturing, or an ancillary or intermittent process, such as cleaning tanks. In a large facility you may need several sets of process maps to cover all the activities. Creation of the best process maps involve input from more than one person, perhaps someone from engineering, maintenance, environmental and others. Interaction within a group allows you to create a better process map and helps to ensure that your assessments are objective. Mapping provides structure to how you seek data, how you turn it into information, and how you can use it to reach conclusions about pollution prevention. It leads to a better understanding of the *functionality* of each process.

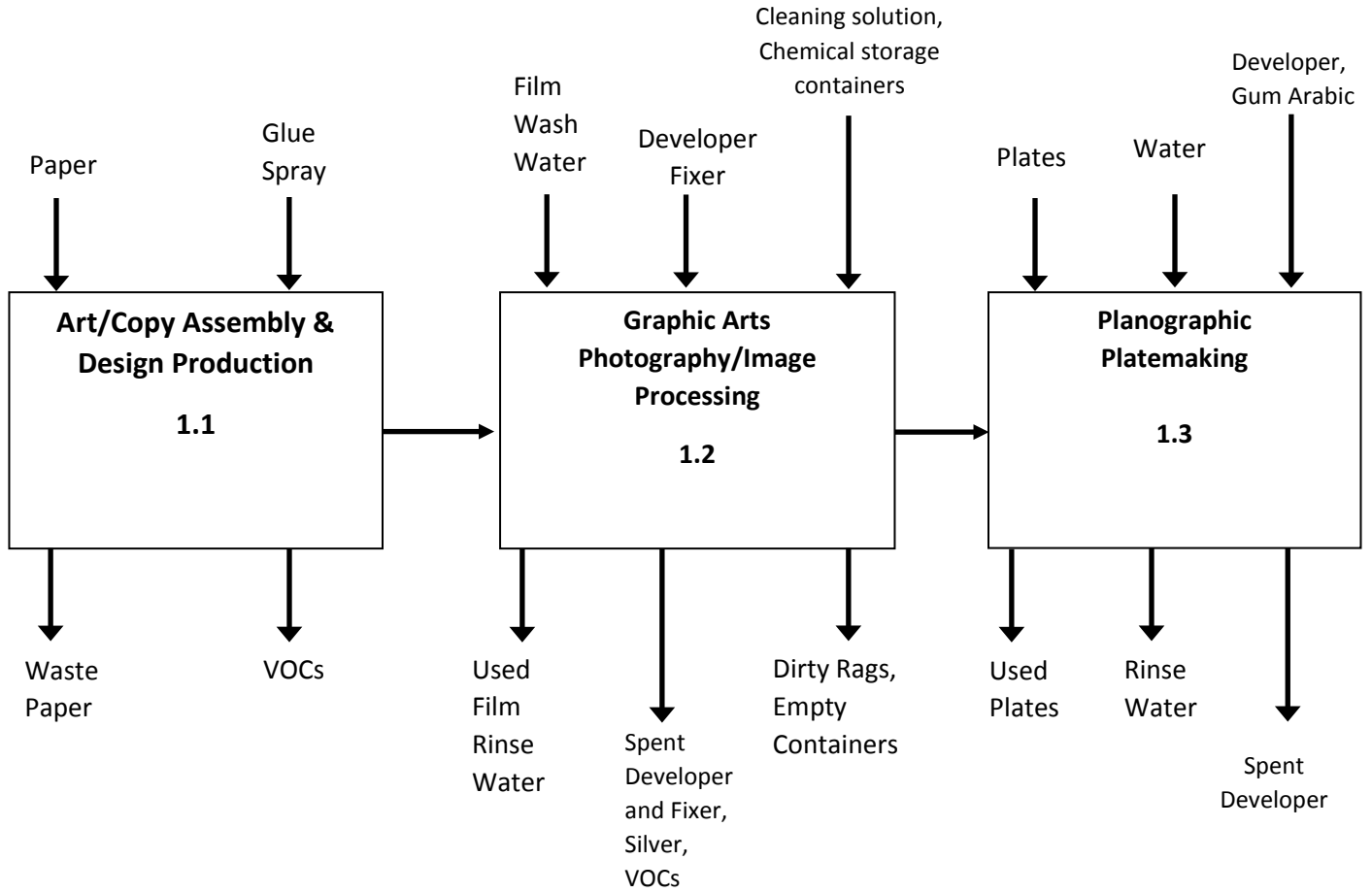
A process map uses lines and boxes to depict the series of steps through which input materials must pass in the course of transformation into product, and then to further identify inputs and losses from those steps. An example for a commercial printing operation is provided following Worksheet 6. Please call us at EAO if you would like more information on how to do process mapping.

Process Mapping Examples

Example 1: Process Map – Offset Lithographic Printing Operation



Process Map 2 – Input/Loss Detail Map for Prepress Process



Guidance for Worksheet 7 – Identifying Opportunities

The search for pollution prevention opportunities is central to the planning process. As with process mapping, the best way to identify opportunities is to involve a group of individuals most familiar with a given process. Such a group is able to respond to the singular characteristics of the process as well as the culture of the company. There are many techniques that are useful for generating ideas - from very specific root cause analysis to free-flowing brainstorming sessions. The goal is to identify one or several opportunities applicable to a priority waste stream or product/chemical that can be evaluated later for technical and economic feasibility.

There are many good sources of information about pollution prevention opportunities that you probably already use, including vendors, trade association articles and various industry magazines, workshops and trade shows.

Use the resources shown in Appendix C. If there is a chemical or process that you want to focus on, the Environmental Assistance Office can help with research.

Use Worksheet 7 to show any opportunities that will be evaluated during the planning cycle. The overriding concept in evaluating pollution prevention opportunities is that source reduction measures should be looked at first for feasibility, followed by recycling measures. Treatment and disposal management strategies are not considered pollution prevention.

Example Source Reduction Strategies:

Material Substitution: switch to water-borne coatings in place of solvent-based ones.

Equipment Upgrade: add hardware to more efficiently apply raw materials in-process.

Improved Operation and Maintenance: adopt written Standard Operating Procedures for cleaning equipment to minimize solvent use.

Product Reformulation: switch to product components that don't require finishing.

Process Change: work with customer (if necessary) to eliminate unnecessary cleaning step or clean using hot water only.

Worksheet 7- Opportunities, by Priority

Identify pollution prevention opportunities to be evaluated and the associated process for each. Are the opportunities that will be evaluated better described as source reduction or recycling?

Source Reduction Initiatives:

Recycling Initiatives:

Guidance for Worksheet 8 - Technical Feasibility Analysis

Opportunities identified on Worksheet 7 must be evaluated to determine if they are technically feasible to implement. This is the next obvious step for your workgroup. Worksheet 8 provides a general checklist of common issues that often arise in assessing technical feasibility. Please use the "Comments" space under each set of questions to elaborate on any of the answers given or attach another sheet.

In most cases, it will take time to conduct a meaningful technical feasibility analysis. Identify those issues on Worksheet 8 and then record any opportunity requiring further investigation on Worksheet 10.

For opportunities that you know make technical and economic sense to implement, it is appropriate to so indicate on the bottom of Worksheet 8 and then show on Worksheet 10 in the section : Selected Opportunities and Performance Goals.

Worksheet 8 - Technical Feasibility Analysis

Opportunity:

Please include comments in the space provided below each set of questions.

	Yes	No	Not Sure	Does Not Apply
Environmental Considerations				
Will this option create less waste, decrease the use of toxic substances or promote recycling?				
Will this option shift pollutants from one environmental media to another?				
Will this option require any new permits?				
Comments:				
Product and Production Considerations				
Are other businesses using this option?				
Will this option adversely affect productivity?				
Will this option adversely affect product/service quality?				
Is your plant layout and design capable of incorporating this option?				
Comments:				
Employee Considerations				
Will this option require additional staff?				
Will this option improve or maintain worker health and safety?				
Will special employee training be required?				
Will worker acceptance be an issue?				
Comments:				
Equipment Considerations				
Will the vendor guarantee this option?				
Are materials and parts readily available?				
Can this option easily be serviced?				
Is there vendor support available for start-up, testing, training & repair?				
Are adequate utilities available to accommodate this option?				
Comments:				
Result of Technical Feasibility Analysis - Check one:				
Opportunity is technically feasible	<input type="checkbox"/>	Go to Worksheet 9		
Opportunity is technically feasible and economically feasible and will be implemented	<input type="checkbox"/>	Go to Worksheet 10		
Opportunity requires further study before selecting or rejecting	<input type="checkbox"/>	Go to Worksheet 10		
Opportunity is not technically feasible.	<input type="checkbox"/>	Describe impediments below:		

Guidance for Worksheet 9 – Financial Analysis

Once a pollution prevention opportunity is determined to be technically feasible, it still must be shown to be economically viable. Vermont's pollution prevention law only requires companies to establish a performance goal for implementation when an opportunity is shown to be **both** technically and economically feasible.

For opportunities that you know make technical and economic sense to implement, there is no need to complete Worksheet 9. Please go to Worksheet 10 - Selected Opportunities and Performance Goals.

The depth of your economic analysis should be geared to the extent it is needed. For instance, if the avoidance of hazardous waste disposal costs (usually relatively easy to obtain) is enough to economically justify investment in a pollution prevention measure, there may not be any reason to do an extended financial analysis.

Depending on the project, financial assessment can have three phases:

- Collecting relevant cost information;
- Calculating differential cash flows for each year of the project; and
- Applying a measure of profitability (like payback or net present value) to cost information

Worksheet 9 takes you through an abbreviated financial analysis. It emphasizes cost identification from which cash flow(s) can be determined and used to calculate a simple payback period. It does not explain how to calculate key concepts such as depreciation expense and after-tax cash flows, nor how to do a net present value (NPV) analysis. Please call the Environmental Assistance Office for more information on the financial analysis of pollution prevention projects.

Financial analysis is only as realistic as the cost information it employs. Worksheet 9 shows potentially relevant operating and capital costs. Operating costs continue over the life-time of the project whereas capital costs are the initial costs (e.g. purchase, installation, start-up). If there are no significant capital costs involved, then the financial analysis only examines operating costs. A goal of the Worksheet is to minimize the chance for rejection of a pollution prevention opportunity because all relevant costs are not considered. Conventional cost accounting practices usually "bury" environmental operating costs, like the costs of waste management or regulatory compliance, in overhead accounts that not only don't show line item costs for these expenditures but also typically bear no relation to the waste generating process.

Cost information is calculated as the *annualized difference* between the costs of the current process and the projected costs of the proposed process or project. Begin with an assessment of current annual operating costs. Then estimate the change in operating costs associated with the proposed project. The difference, including either savings or expenditures, is summed with other operating costs that would result from the project in year "x" to yield net annual operating cash flow.

Any capital costs associated with the project should be shown on the Worksheet. Capital costs are one-time expenditures incurred at the beginning of the project, often for the purchase and implementation of pollution prevention equipment. Capital costs represent a significant cash outflow that must be offset by cash inflows resulting from the project over its economic lifetime. Economic lifetime is the number of years over which cash flows are expected to occur as a result of the investment and does not always correspond to physical lifetime, as could happen when technology changes render a piece of equipment obsolete. *Depreciation* is shown as an operating expense where capital costs have been incurred. As a non-cash expense, depreciation is a source of cash flow because annual depreciation charges decrease taxable income, and thus the tax that isn't paid represents a cash savings.

After relevant costs and savings have been identified and translated into annual cash flow(s), the potential value that a pollution prevention project might add to a business can be assessed by using a measure of profitability like payback period or net present value. The payback calculation on the Worksheet assumes that net operating cash inflow (savings) will remain the same in future years (assuming such inflows are expected to result from the project).

Payback period analysis reveals the amount of time needed for an investment to return the initial capital expenditures. It is a simple calculation that divides the investment by expected annual savings. For many businesses, payback periods of two to three years are seen as good investments. The biggest drawback of payback analysis is that it ignores the time value of money, that is, payback assumes that savings are the same each year even though, for example, avoided environmental compliance costs might be much greater in year 5 of the project than in year 1. Payback does provide a useful assessment of a project's attractiveness however, and if the payback period is short, it may be all you need.

Net present value (NPV) relies heavily on the concept of the time value of money. This method recognizes that \$100 today is not equivalent to receiving \$100 at some point in the future. Therefore, NPV reveals the present value of all the cash flows resulting over the economic lifetime of the project. It relates the present value of future cash inflows to the initial investment (ie. in today's dollars). Cash flows in the far future are discounted a lot and those in the near future are discounted proportionately less. Discounted cash flows are summed up to give the net present value of a project; if the sum is greater than zero, it is considered an acceptable investment.

Lastly, the financial analysis of a pollution prevention project may be augmented by the evaluation of "qualitative" factors, difficult to quantify, but important nonetheless. Examples of less tangible costs that may be appropriately considered are: improved public image, market share (consumer acceptance), avoided financial or criminal liability, and improved worker health and safety.

FINANCIAL ANALYSIS – EXAMPLE

The Vermont Autobody Repair Company is considering a project to reduce the cost of purchasing and disposing of waste thinner. Thinner is used to clean painting equipment used in their two full-sized spray booths. The company has already implemented source reduction techniques including the use of HVLP guns, an automatic gun-cleaning station and improved housekeeping practices. The shop manager is considering the installation of a recovery still to recycle used thinner on site. He estimates that the still, which costs \$3000, will reduce the purchase of virgin thinner by 90%.

Distillation of Used Thinner	Current Cost	New Process Cost	Differential (Cost) or Savings
OPERATING COSTS			
Raw Materials Thinner: 10 drums/yr to 1 drum/yr @ \$275/drum	\$2,750	\$275	\$2475
Waste Disposal 6 drums/yr @ \$108/drum vs. 1 drum still bottoms @ \$375	\$650	\$375	\$275
Regulatory Compliance manifesting reduced from 4 to 1 times/yr @ 1.5 hours x \$30/hr	\$180	\$45	\$135
Utilities operate still 8 hrs/wk x 4 kw/wk = 32 kw/wk or 1664 kw/yr x \$0.08/kwh = \$133	N/A	\$133	(\$133)
Depreciation 5 year straight line	N/A	\$600	\$600
Other fees – change in planning status from Class B to Exempt	\$300	\$0	\$300
Net Operating Cash Flow in Year 1 sum of all operating cost differentials			\$3652
CAPITAL COSTS (one time expenditures)			
Equipment Purchase		\$3000	(\$3000)
Installation & Start-up		\$340	(\$340)
Total Capital Costs			(\$3400)

Payback Period : Total Capital Costs / Net Operating Cash Flow

$$\$3400 / \$3652 = .93 \text{ years} = 11 \text{ months}$$

Worksheet 9 - Financial Analysis

- 1) Identify any operating costs likely to be affected with implementation of the pollution prevention project.
- 2) Calculate cost differential. The sum of cost differentials represents annual cash flow.
- 3) If capital costs are incurred, determine simple payback period.

Opportunity:			
	Current Cost	New Process Cost	Differential (Cost) or Savings
OPERATING COSTS			
Direct Labor			
Raw Materials (include chemicals & catalysts)			
Waste Management (include disposal, taxes, treatment, storage, on-site handling)			
Regulatory Compliance (include manifesting, reporting, monitoring, Plan fees, training, permitting, personal protective equipment)			
Utilities (electricity, steam, water, sewerage, etc)			
Depreciation (on capital equipment purchase)			
Other :(lab fees, supplies, insurance etc.)			
Net Operating Cash Flow in Year 1 (sum of all operating cost differentials)	N/A	N/A	
CAPITAL COSTS (one-time expenditures)			
Equipment purchase	N/A		
Installation & start-up	N/A		
Materials	N/A		
Other :(utility connections, site preparation, engineering, permitting, operator training and contingency)	N/A		
Total Capital Costs	N/A		
Payback Period: Total Capital Costs ÷ Net Operating Cash Flow =		_____ Years	
Check One:			
<input type="checkbox"/>	Opportunity is economically feasible and will be implemented	Go to Worksheet 10	
<input type="checkbox"/>	Opportunity requires further evaluation before selecting or rejecting	Go to Worksheet 10	
<input type="checkbox"/>	Opportunity not economically feasible		

Guidance for Worksheet 10 - Performance Goals

Worksheet 10 is one of three Worksheets comprising the Plan Summary and must be submitted to the Environmental Assistance Office.

Vermont's planning law requires that companies set *Performance Goals* for opportunities that are determined to be technically and economically feasible. Since plans are meant to be working documents, goals can always be revised to address changing conditions.

Show any *Selected Opportunities* and *Opportunities Requiring Further Investigation* on Worksheet 10.

Worksheet 10 - Performance Goals

Selected Opportunities

Opportunity Name	Process Affected	Name of Hazardous Waste Stream(s) or Toxic Substance(s)	Anticipated Reduction (lbs.)		Goal Date
			Source Reduction	Recycling	

Opportunities Requiring Further Investigation

Opportunity Name	Process Affected	Anticipated Date of Decision

Appendices

Appendix A – Toxic Substances List from EPCRA Section 313 Chemical List for Reporting Year 2016. Includes 2 lists – arranged alphabetically by chemical name, arranged by CAS number

Appendix B - Environmental Management System (EMS) Alternative to Pollution Prevention Plan

Appendix C - Pollution Prevention Planning Resources

Appendix A – Toxic Substances List from EPCRA Section 313 Chemical List for Reporting Year 2016. Includes 2 lists – arranged alphabetically by chemical name, arranged by CAS number

Also, at the link listed below there is copy of this list as an Excel file copied from the US EPA Toxics Release Inventory website. The advantage of the Excel file is that you can search it for chemical names and synonyms.

<http://dec.vermont.gov/environmental-assistance/pollution-prevention/forms>

Table II. EPCRA Section 313 Chemical List For Reporting Year 2016 (including Toxic Chemical Categories)

Individually listed EPCRA Section 313 chemicals with CAS numbers are arranged alphabetically starting on page II-3. Following the alphabetical list, the EPCRA Section 313 chemicals are arranged in CAS number order. Covered chemical categories follow.

Note: Chemicals may be added to or deleted from the list. The Emergency Planning and Community Right-to-Know Call Center or the TRI-Listed Chemicals website will provide up-to-date information on the status of these changes. See section B.3.c of the instructions for more information on the *de minimis* % limits listed below. There are no *de minimis* levels for PBT chemicals since the *de minimis* exemption is not available for these chemicals (an asterisk appears where a *de minimis* limit would otherwise appear in Table II). However, for purposes of the supplier notification requirement only, such limits are provided in Appendix C.

Chemical Qualifiers

Certain EPCRA Section 313 chemicals listed in Table II have parenthetical “qualifiers.” These qualifiers indicate that these EPCRA Section 313 chemicals are subject to the section 313 reporting requirements if manufactured, processed, or otherwise used in a specific form or when a certain activity is performed. An EPCRA Section 313 chemical that is listed without a qualifier is subject to reporting in all forms in which it is manufactured, processed, and otherwise used. The following chemicals are reportable only if they are manufactured, processed, or otherwise used in the specific form(s) listed below:

Chemical/ Chemical Category	CAS Number	Qualifier
Aluminum (fume or dust)	7429-90-5	Only if it is a fume or dust form.
Aluminum oxide (fibrous forms)	1344-28-1	Only if it is a fibrous form.
Ammonia (includes anhydrous ammonia and aqueous ammonia from water dissociable ammonium salts and other sources; 10 percent of total aqueous ammonia is reportable under this listing)	7664-41-7	Only 10% of aqueous forms. 100% of anhydrous forms.
Asbestos (friable)	1332-21-4	Only if it is a friable form.
Hydrochloric acid (acid aerosols including mists, vapors, gas, fog, and other airborne forms of any particle size)	7647-01-0	Only if it is an aerosol form as defined.
Nitrate compounds (water dissociable; reportable only when in aqueous solution)	NA	Only if in aqueous solution
Phosphorus (yellow or white)	7723-14-0	Only if it is a yellow or white form.
Sulfuric acid (acid aerosols including mists, vapors, gas, fog, and other airborne forms of any particle size)	7664-93-9	Only if it is an aerosol form as defined.
Vanadium (except when contained in an alloy)	7440-62-2	Except if it is contained in an alloy.
Zinc (fume or dust)	7440-66-6	Only if it is in a fume or dust form.

The qualifier for the following three chemicals is based on the chemical activity rather than the form of the chemical. These chemicals are subject to EPCRA section 313 reporting requirements only when the indicated activity is performed.

Chemical/ Chemical Category	CAS Number	Qualifier
Dioxin and dioxin-like compounds (manufacturing; and the processing or otherwise use of dioxin and dioxin-like compounds if the dioxin and dioxin-like compounds are present as contaminants in a chemical and if they were created during the manufacture of that chemical.)	NA	Only if they are manufactured at the facility; or are processed or otherwise used when present as contaminants in a chemical but only if they were created during the manufacture of that chemical.
Isopropyl alcohol (only persons who manufacture by the strong acid process are subject, no supplier notification)	67-63-0	Only if it is being manufactured by the strong acid process. Facilities that process or otherwise use isopropyl alcohol are <u>not</u> covered and should <u>not</u> file a report.
Saccharin (only persons who manufacture are subject, no supplier notification)	81-07-2	Only if it is being manufactured.

Supplier Notification Implications

There are no supplier notification requirements for isopropyl alcohol and saccharin since the processors and users of these chemicals are not required to report. Manufacturers of these chemicals do not need to notify their customers that these are reportable EPCRA section 313 chemicals.

Qualifier Definitions

Fume or dust. Two of the metals on the list (aluminum and zinc) contain the qualifier “fume or dust.” Fume or dust refers to dry forms of these metals but does not refer to “wet” forms such as solutions or slurries. As explained in Section B.3.a of these instructions, the term manufacture includes the generation of an EPCRA Section 313 chemical as a byproduct or impurity. In such cases, a facility should determine if, for example, it generated more than 25,000 pounds of aluminum fume or dust in the reporting year as a result of its activities. If so, the facility must report that it manufactures “aluminum (fume or dust).” Similarly, there may be certain technologies in which one of these metals is processed in the form of a fume or dust to make other EPCRA Section 313 chemicals or other products for distribution in commerce. In reporting releases, the facility would only report releases of the fume or dust.

EPA considers dusts to consist of solid particles generated by any mechanical processing of materials including crushing, grinding, rapid impact, handling, detonation, and decrepitation of organic and inorganic materials such as rock, ore, and metal. Dusts do not tend to flocculate, except under electrostatic forces.

EPA considers a fume to be an airborne dispersion consisting of small solid particles created by condensation from a gaseous state, in distinction to a gas or vapor. Fumes arise from the heating of solids such as lead. The condensation is often accompanied by a chemical reaction, such as oxidation. Fumes flocculate and sometimes coalesce.

Manufacturing qualifiers. Two of the entries in the EPCRA Section 313 chemical list contain a qualifier relating to manufacture. For isopropyl alcohol, the qualifier is “only persons who manufacture by the strong acid process are subject, no supplier notification.” For saccharin, the qualifier is “only persons who manufacture are subject, no supplier notification.” For isopropyl alcohol, the qualifier means that only facilities manufacturing isopropyl alcohol by the strong acid process are required to report. In the case of saccharin, only manufacturers of the EPCRA Section 313 chemical are subject to the reporting requirements. A facility that only processes or otherwise uses either of these EPCRA Section 313 chemicals is not required to report for these EPCRA Section 313 chemicals. In both cases, supplier notification does not apply because only manufacturers, not users, of these two EPCRA Section 313 chemicals must report.

Ammonia (includes anhydrous ammonia and aqueous ammonia from water dissociable ammonium salts and other sources; 10 percent of total aqueous ammonia is reportable under this listing). The qualifier for ammonia means that anhydrous forms of ammonia are 100% reportable and aqueous forms are limited to 10% of total aqueous ammonia. Therefore when determining threshold and releases and other waste management quantities all anhydrous ammonia is included but only 10% of total aqueous ammonia is included. Any evaporation of ammonia from aqueous ammonia solutions is considered anhydrous ammonia and should be included in threshold determinations and release and other waste management calculations.

Sulfuric acid and Hydrochloric acid (acid aerosols including mists, vapors, gas, fog, and other airborne forms of any particle size). The qualifier for sulfuric acid and hydrochloric acid means that the only forms of these chemicals that are reportable are airborne forms. Aqueous solutions are not covered by this listing but any aerosols generated from aqueous solutions are covered.

Nitrate compounds (water dissociable; reportable only when in aqueous solution). The qualifier for the nitrate compounds category limits the reporting to nitrate compounds that dissociate in water, generating nitrate ion. For the purposes of threshold determinations the entire weight of the nitrate compound must be included in all calculations. For the purposes of reporting releases and other waste management quantities only the weight of the nitrate ion should be included in the calculations of these quantities.

Phosphorus (yellow or white). The listing for phosphorus is qualified by the term “yellow or white.” This means that only manufacturing, processing, or otherwise use of phosphorus in the yellow or white chemical form triggers reporting. Conversely, manufacturing, processing, or otherwise use of “black” or “red” phosphorus does not trigger reporting. Supplier notification also applies only to distribution of yellow or white phosphorus.

Asbestos (friable). The listing for asbestos is qualified by the term “friable,” referring to the physical characteristic of being able to be crumbled, pulverized, or reducible to a powder with hand pressure. Only manufacturing, processing, or otherwise use of asbestos in the friable form triggers reporting. Supplier notification applies only to distribution of mixtures or other trade name products containing friable asbestos.

Aluminum Oxide (fibrous forms). The listing for aluminum oxide is qualified by the term “fibrous forms.” Fibrous refers to a man-made form of aluminum oxide that is processed to produce strands or filaments which can be cut to various lengths depending on the application. Only manufacturing, processing, or otherwise use of aluminum oxide in the fibrous form triggers reporting. Supplier notification applies only to distribution of mixtures or other trade name products containing fibrous forms of aluminum oxide.

Table II. EPCRA Section 313 Chemical List for Reporting Year 2016

Notes for Sections A and B of following list of TRI chemicals:

“Color Index” indicated by “C.I.”

* There are no *de minimis* levels for PBT chemicals, except for supplier notification purposes (see Appendix C).

a. Individually-Listed Toxic Chemicals Arranged Alphabetically

CAS Number	Chemical Name	<i>De minimis</i> % Limit
71751-41-2	Abamectin [Avermectin B1]	1.0
30560-19-1	Acephate (Acetylphosphoramidothioic acid O,S-dimethyl ester)	1.0
75-07-0	Acetaldehyde	0.1
60-35-5	Acetamide	0.1
75-05-8	Acetonitrile	1.0
98-86-2	Acetophenone	1.0
53-96-3	2-Acetylaminofluorene	0.1
62476-59-9	Acifluorfen, sodium salt [5-(2-Chloro-4-(trifluoromethyl)phenoxy)-2-nitrobenzoic acid, sodium salt]	1.0
107-02-8	Acrolein	1.0
79-06-1	Acrylamide	0.1
79-10-7	Acrylic acid	1.0
107-13-1	Acrylonitrile	0.1
15972-60-8	Alachlor	1.0
116-06-3	Aldicarb	1.0
309-00-2	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.)-]	*
28057-48-9	d-trans-Allethrin [d-trans-Chrysanthemic acid of d-allethrine]	1.0
107-18-6	Allyl alcohol	1.0
107-11-9	Allylamine	1.0
107-05-1	Allyl chloride	1.0
7429-90-5	Aluminum (fume or dust)	1.0
20859-73-8	Aluminum phosphide	1.0
1344-28-1	Aluminum oxide (fibrous forms)	1.0
834-12-8	Ametryn (N-Ethyl-N=-(1-methylethyl)-6-(methylthio)-1,3,5,-triazine-2,4-diamine)	1.0
117-79-3	2-Aminoanthraquinone	0.1
60-09-3	4-Aminoazobenzene	0.1
92-67-1	4-Aminobiphenyl	0.1
82-28-0	1-Amino-2-methylantraquinone	0.1

CAS Number	Chemical Name	<i>De minimis</i> % Limit
81-49-2	1-Amino-2,4-dibromoanthraquinone	0.1
33089-61-1	Amitraz	1.0
61-82-5	Amitrole	0.1
7664-41-7	Ammonia (includes anhydrous ammonia and aqueous ammonia from water dissociable ammonium salts and other sources; 10 percent of total aqueous ammonia is reportable under this listing)	1.0
101-05-3	Anilazine [4,6-Dichloro-N-(2-chlorophenyl)-1,3,5-triazin-2-amine]	1.0
62-53-3	Aniline	1.0
90-04-0	o-Anisidine	0.1
104-94-9	p-Anisidine	1.0
134-29-2	o-Anisidine hydrochloride	0.1
120-12-7	Anthracene	1.0
7440-36-0	Antimony	1.0
7440-38-2	Arsenic	0.1
1332-21-4	Asbestos (friable)	0.1
1912-24-9	Atrazine (6-Chloro-N-ethyl-N=-(1-methylethyl)-1,3,5-triazine-2,4-diamine)	1.0
7440-39-3	Barium	1.0
22781-23-3	Bendiocarb [2,2-Dimethyl-1,3-benzodioxol-4-ol methylcarbamate]	1.0
1861-40-1	Benfluralin (N-Butyl-N-ethyl-2,6-dinitro-4-(trifluoromethyl)benzenamine)	1.0
17804-35-2	Benomyl	1.0
98-87-3	Benzal chloride	1.0
55-21-0	Benzamide	1.0
71-43-2	Benzene	0.1
92-87-5	Benzidine	0.1
98-07-7	Benzoic trichloride (Benzotrichloride)	0.1
191-24-2	Benzo(g,h,i)perylene	*
98-88-4	Benzoyl chloride	1.0
94-36-0	Benzoyl peroxide	1.0
100-44-7	Benzyl chloride	1.0
7440-41-7	Beryllium	0.1
82657-04-3	Bifenthrin	1.0
92-52-4	Biphenyl	1.0
3296-90-0	2,2-bis(Bromomethyl)-1,3-propanediol	0.1
111-91-1	Bis(2-chloroethoxy) methane	1.0
111-44-4	Bis(2-chloroethyl) ether	1.0
542-88-1	Bis(chloromethyl) ether	0.1
108-60-1	Bis(2-chloro-1-methylethyl)ether	1.0
56-35-9	Bis(tributyltin) oxide	1.0
10294-34-5	Boron trichloride	1.0

Table II. EPCRA Section 313 Chemical List for Reporting Year 2016

CAS Number	Chemical Name	De minimis % Limit
7637-07-2	Boron trifluoride	1.0
314-40-9	Bromacil	1.0
53404-19-6	(5-Bromo-6-methyl-3-(1-methylpropyl)-2,4(1H,3H)-pyrimidinedione) Bromacil, lithium salt	1.0
7726-95-6	Bromine	1.0
35691-65-7	1-Bromo-1-(bromomethyl)-propanedicarbonitrile	1.0
353-59-3	Bromochlorodifluoromethane (Halon 1211)	1.0
75-25-2	Bromoform (Tribromomethane)	1.0
74-83-9	Bromomethane (Methyl bromide)	1.0
75-63-8	Bromotrifluoromethane (Halon 1301)	1.0
1689-84-5	Bromoxynil (3,5-Dibromo-4-hydroxybenzotrile)	1.0
1689-99-2	Bromoxynil octanoate (Octanoic acid, 2,6-dibromo-4-cyanophenylester)	1.0
106-94-5	1-Bromopropane	0.1
357-57-3	Brucine	1.0
106-99-0	1,3-Butadiene	0.1
141-32-2	Butyl acrylate	1.0
71-36-3	n-Butyl alcohol	1.0
78-92-2	sec-Butyl alcohol	1.0
75-65-0	tert-Butyl alcohol	1.0
106-88-7	1,2-Butylene oxide	0.1
123-72-8	Butyraldehyde	1.0
7440-43-9	Cadmium	0.1
156-62-7	Calcium cyanamide	1.0
133-06-2	Captan [1H-Isoindole-1,3(2H)-dione, 3a,4,7,7a-tetrahydro-2-[(trichloromethyl)thio]-]	1.0
63-25-2	Carbaryl [1-Naphthalenol, methylcarbamate]	1.0
1563-66-2	Carbofuran	1.0
75-15-0	Carbon disulfide	1.0
56-23-5	Carbon tetrachloride	0.1
463-58-1	Carbonyl sulfide	1.0
5234-68-4	Carboxin (5,6-Dihydro-2-methyl-N-phenyl-1,4-oxathiin-3-carboxamide)	1.0
120-80-9	Catechol	0.1
2439-01-2	Chinomethionat [6-Methyl-1,3-dithiolo[4,5-b]quinoxalin-2-one]	1.0

CAS Number	Chemical Name	De minimis % Limit
133-90-4	Chloramben [Benzoic acid, 3-amino-2,5-dichloro-]	1.0
57-74-9	Chlordane [4,7-Methanoindan, 1,2,4,5,6,7,8,8-octachloro-2,3,3a,4,7,7a-hexahydro-]	*
115-28-6	Chlorendic acid	0.1
90982-32-4	Chlorimuron ethyl [Ethyl-2-[[[(4-chloro-6-methoxyprimidin-2-yl)amino]carbonyl]amino]sulfonyl] benzoate]	1.0
7782-50-5	Chlorine	1.0
10049-04-4	Chlorine dioxide	1.0
79-11-8	Chloroacetic acid	1.0
532-27-4	2-Chloroacetophenone	1.0
4080-31-3	1-(3-Chloroallyl)-3,5,7-triaza-1-azoniaadamantane chloride	1.0
106-47-8	p-Chloroaniline	0.1
108-90-7	Chlorobenzene	1.0
510-15-6	Chlorobenzilate [Benzeneacetic acid, 4-chloro-.alpha.- (4-chlorophenyl)-.alpha.-hydroxy-, ethyl ester]	1.0
75-68-3	1-Chloro-1,1-difluoroethane (HCFC-142b)	1.0
75-45-6	Chlorodifluoromethane (HCFC-22)	1.0
75-00-3	Chloroethane (Ethyl chloride)	1.0
67-66-3	Chloroform	0.1
74-87-3	Chloromethane (Methyl chloride)	1.0
107-30-2	Chloromethyl methyl ether	0.1
563-47-3	3-Chloro-2-methyl-1-propene	0.1
104-12-1	p-Chlorophenyl isocyanate	1.0
76-06-2	Chloropicrin	1.0
126-99-8	Chloroprene	0.1
542-76-7	3-Chloropropionitrile	1.0
63938-10-3	Chlorotetrafluoroethane	1.0
354-25-6	1-Chloro-1,1,2,2-tetrafluoroethane (HCFC-124a)	1.0
2837-89-0	2-Chloro-1,1,1,2-tetrafluoroethane (HCFC-124)	1.0
1897-45-6	Chloroethalonil [1,3-Benzenedicarbonitrile, 2,4,5,6-tetrachloro-]	0.1
95-69-2	p-Chloro-o-toluidine	0.1
75-88-7	2-Chloro-1,1,1-trifluoroethane (HCFC-133a)	1.0
75-72-9	Chlorotrifluoromethane (CFC-13)	1.0
460-35-5	3-Chloro-1,1,1-trifluoropropane (HCFC-253fb)	1.0
5598-13-0	Chlorpyrifos methyl [O,O-Dimethyl-O-(3,5,6-trichloro-2-pyridyl)phosphorothioate]	1.0

Table II. EPCRA Section 313 Chemical List for Reporting Year 2016

CAS Number	Chemical Name	De minimis % Limit
64902-72-3	Chlorsulfuron [2-Chloro-N-[[[4-methoxy-6-methyl-1,3,5-triazin-2-yl)amino]carbonyl] benzenesulfonamide]	1.0
7440-47-3	Chromium	1.0
4680-78-8	C.I. Acid Green 3	1.0
6459-94-5	C.I. Acid Red 114	0.1
569-64-2	C.I. Basic Green 4	1.0
989-38-8	C.I. Basic Red 1	1.0
1937-37-7	C.I. Direct Black 38	0.1
2602-46-2	C.I. Direct Blue 6	0.1
28407-37-6	C.I. Direct Blue 218	1.0
16071-86-6	C.I. Direct Brown 95	0.1
2832-40-8	C.I. Disperse Yellow 3	1.0
3761-53-3	C.I. Food Red 5	0.1
81-88-9	C.I. Food Red 15	1.0
3118-97-6	C.I. Solvent Orange 7	1.0
97-56-3	C.I. Solvent Yellow 3	0.1
842-07-9	C.I. Solvent Yellow 14	1.0
492-80-8	C.I. Solvent Yellow 34 (Auramine)	0.1
128-66-5	C.I. Vat Yellow 4	1.0
7440-48-4	Cobalt	0.1
7440-50-8	Copper	1.0
8001-58-9	Creosote	0.1
120-71-8	p-Cresidine	0.1
108-39-4	m-Cresol	1.0
95-48-7	o-Cresol	1.0
106-44-5	p-Cresol	1.0
1319-77-3	Cresol (mixed isomers)	1.0
4170-30-3	Crotonaldehyde	1.0
98-82-8	Cumene	1.0
80-15-9	Cumene hydroperoxide	1.0
135-20-6	[Benzeneamine, N-hydroxy- N-nitroso, ammonium salt]	0.1
21725-46-2	Cyanazine	1.0
1134-23-2	Cycloate	1.0
110-82-7	Cyclohexane	1.0
108-93-0	Cyclohexanol	1.0
68359-37-5	Cyfluthrin [3-(2,2-Dichloroethenyl)-2,2-dimethylcyclopropanecarboxylic acid, cyano(4-fluoro-3-phenoxyphenyl) methyl ester]	1.0
68085-85-8	Cyhalothrin [3-(2-Chloro-3,3,3-trifluoro-1-propenyl)-2,2-dimethylcyclopropane-carboxylic acid cyano(3-phenoxyphenyl)methyl ester]	1.0
94-75-7	2,4-D [Acetic acid, (2,4-dichlorophenoxy)-]	0.1

CAS Number	Chemical Name	De minimis % Limit
533-74-4	Dazomet (Tetrahydro-3,5-dimethyl-2H-1,3,5-thiadiazine-2-thione)	1.0
53404-60-7	Dazomet, sodium salt [Tetrahydro-3,5-dimethyl-2H-1,3,5-thiadiazine-2-thione, ion(1-), sodium]	1.0
94-82-6	2,4-DB	1.0
1929-73-3	2,4-D butoxyethyl ester	0.1
94-80-4	2,4-D butyl ester	0.1
2971-38-2	2,4-D chlorocrotyl ester	0.1
1163-19-5	Decabromodiphenyl oxide	1.0
13684-56-5	Desmedipham	1.0
1928-43-4	2,4-D 2-ethylhexyl ester	0.1
53404-37-8	2,4-D 2-ethyl-4- methylpentyl ester	0.1
2303-16-4	Diallate [Carbamothioic acid, bis(1-methylethyl)-S-(2,3-dichloro-2-propenyl) ester]	1.0
615-05-4	2,4-Diaminoanisole	0.1
39156-41-7	2,4-Diaminoanisole sulfate	0.1
101-80-4	4,4'-Diaminodiphenyl ether	0.1
95-80-7	2,4-Diaminotoluene	0.1
25376-45-8	Diaminotoluene (mixed isomers)	0.1
333-41-5	Diazinon	1.0
334-88-3	Diazomethane	1.0
132-64-9	Dibenzofuran	1.0
96-12-8	1,2-Dibromo-3- chloropropane (DBCP)	0.1
106-93-4	1,2-Dibromoethane (Ethylene dibromide)	0.1
124-73-2	Dibromotetrafluoroethane (Halon 2402)	1.0
84-74-2	Dibutyl phthalate	1.0
1918-00-9	Dicamba (3,6-Dichloro-2-methoxybenzoic acid)	1.0
99-30-9	Dichloran [2,6-Dichloro-4-nitroaniline]	1.0
95-50-1	1,2-Dichlorobenzene	1.0
541-73-1	1,3-Dichlorobenzene	1.0
106-46-7	1,4-Dichlorobenzene	0.1
25321-22-6	Dichlorobenzene (mixed isomers)	0.1
91-94-1	3,3'-Dichlorobenzidine	0.1
612-83-9	3,3'-Dichlorobenzidine dihydrochloride	0.1
64969-34-2	3,3'-Dichlorobenzidine sulfate	0.1
75-27-4	Dichlorobromomethane	0.1
764-41-0	1,4-Dichloro-2-butene	1.0
110-57-6	trans-1,4-Dichloro-2-butene	1.0
1649-08-7	1,2-Dichloro-1,1- difluoroethane (HCFC-132b)	1.0
75-71-8	Dichlorodifluoromethane (CFC-12)	1.0

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CAS Number	Chemical Name	De minimis % Limit
107-06-2	1,2-Dichloroethane (Ethylene dichloride)	0.1
540-59-0	1,2-Dichloroethylene	1.0
1717-00-6	1,1-Dichloro-1-fluoroethane (HCFC-141b)	1.0
75-43-4	Dichlorofluoromethane (HCFC-21)	1.0
75-09-2	Dichloromethane (Methylene chloride)	0.1
127564-92-5	Dichloropentafluoropropane	1.0
13474-88-9	1,1-Dichloro-1,2,2,3,3-pentafluoropropane (HCFC-225cc)	1.0
111512-56-2	1,1-Dichloro-1,2,3,3,3-pentafluoropropane (HCFC-225eb)	1.0
422-44-6	1,2-Dichloro-1,1,2,3,3-pentafluoropropane (HCFC-225bb)	1.0
431-86-7	1,2-Dichloro-1,1,3,3,3-pentafluoropropane (HCFC-225da)	1.0
507-55-1	1,3-Dichloro-1,1,2,2,3-pentafluoropropane (HCFC-225cb)	1.0
136013-79-1	1,3-Dichloro-1,1,2,3,3-pentafluoropropane (HCFC-225ea)	1.0
128903-21-9	2,2-Dichloro-1,1,1,3,3-pentafluoropropane (HCFC-225aa)	1.0
422-48-0	pentafluoropropane (HCFC-225ba)	1.0
422-56-0	3,3-Dichloro-1,1,1,2,2-pentafluoropropane (HCFC-225ca)	1.0
97-23-4	Dichlorophene [2,2'-Methylenebis(4-chlorophenol)]	1.0
120-83-2	2,4-Dichlorophenol	1.0
78-87-5	1,2-Dichloropropane	1.0
10061-02-6	trans-1,3-Dichloropropene	0.1
78-88-6	2,3-Dichloropropene	1.0
542-75-6	1,3-Dichloropropylene	0.1
76-14-2	Dichlorotetrafluoroethane (CFC-114)	1.0
34077-87-7	Dichlorotrifluoroethane	1.0
90454-18-5	Dichloro-1,1,2-trifluoroethane	1.0
812-04-4	1,1-Dichloro-1,2,2-trifluoroethane (HCFC-123b)	1.0
354-23-4	1,2-Dichloro-1,1,2-trifluoroethane (HCFC-123a)	1.0
306-83-2	2,2-Dichloro-1,1,1-trifluoroethane (HCFC-123)	1.0

CAS Number	Chemical Name	De minimis % Limit
62-73-7	Dichlorvos [Phosphoric acid, 2,2-dichloroethenyl dimethyl ester]	0.1
51338-27-3	Diclofop methyl [2-[4-(2,4-Dichlorophenoxy)phenoxy]propanoic acid, methyl ester]	1.0
115-32-2	Dicofol [Benzenemethanol, 4-chloro-.alpha]	1.0
77-73-6	Dicyclopentadiene	1.0
1464-53-5	Diepoxybutane	0.1
111-42-2	Diethanolamine	1.0
38727-55-8	Diethyl ethyl	1.0
117-81-7	Di(2-ethylhexyl) phthalate (DEHP)	0.1
64-67-5	Diethyl sulfate	0.1
35367-38-5	Diflurbenzuron	1.0
101-90-6	Diglycidyl resorcinol ether	0.1
94-58-6	Dihydrosafrole	0.1
55290-64-7	Dimethipin [2,3-Dihydro-5,6-dimethyl-1,4-dithiin 1,1,4,4-tetraoxide]	1.0
60-51-5	Dimethoate	1.0
119-90-4	3,3'-Dimethoxybenzidine	0.1
20325-40-0	3,3'-Dimethoxybenzidine dihydrochloride (o-Dianisidine dihydrochloride)	0.1
111984-09-9	3,3'-Dimethoxybenzidine hydrochloride (o-Dianisidine hydrochloride)	0.1
124-40-3	Dimethylamine	1.0
2300-66-5	Dimethylamine dicamba	1.0
60-11-7	4-Dimethylaminoazobenzene	0.1
121-69-7	N,N-Dimethylaniline	1.0
119-93-7	3,3'-Dimethylbenzidine (o-Tolidine)	0.1
612-82-8	3,3'-Dimethylbenzidine dihydrochloride (o-Tolidine dihydrochloride)	0.1
41766-75-0	3,3'-Dimethylbenzidine dihydrofluoride (o-Tolidine dihydrofluoride)	0.1
79-44-7	Dimethylcarbanyl chloride	0.1
2524-03-0	Dimethyl chlorothiophosphate	1.0
68-12-2	N,N-Dimethylformamide	1.0
57-14-7	1,1-Dimethyl hydrazine	0.1
105-67-9	2,4-Dimethylphenol	1.0
131-11-3	Dimethyl phthalate	1.0
77-78-1	Dimethyl sulfate	0.1
99-65-0	m-Dinitrobenzene	1.0
528-29-0	o-Dinitrobenzene	1.0
100-25-4	p-Dinitrobenzene	1.0
88-85-7	Dinitrobutyl phenol (Dinoseb)	1.0
534-52-1	4,6-Dinitro-o-cresol	1.0

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CAS Number	Chemical Name	De minimis % Limit
51-28-5	2,4-Dinitrophenol	1.0
121-14-2	2,4-Dinitrotoluene	0.1
606-20-2	2,6-Dinitrotoluene	0.1
25321-14-6	Dinitrotoluene (mixed isomers)	1.0
39300-45-3	Dinocap	1.0
123-91-1	1,4-Dioxane	0.1
957-51-7	Diphenamid	1.0
122-39-4	Diphenylamine	1.0
122-66-7	1,2-Diphenylhydrazine (Hydrazobenzene)	0.1
2164-07-0	Dipotassium endoathall [7-Oxabicyclo(2.2.1)heptane-2,3-dicarboxylic acid, dipotassium salt]	1.0
136-45-8	Dipropyl isocinchomeronate	1.0
138-93-2	Disodium cyanodithioimidocarbonate	1.0
94-11-1	2,4-D isopropyl ester	0.1
541-53-7	2,4-Dithiobiuret	1.0
330-54-1	Diuron	1.0
2439-10-3	Dodine [Dodecylguanidine monoacetate]	1.0
120-36-5	2,4-DP	0.1
1320-18-9	2,4-D propylene glycol butyl ether ester	0.1
2702-72-9	2,4-D sodium salt	0.1
106-89-8	Epichlorohydrin	0.1
13194-48-4	Ethoprop [Phosphorodithioic acid O-ethyl S,S-dipropyl ester]	1.0
110-80-5	2-Ethoxyethanol	1.0
140-88-5	Ethyl acrylate	0.1
100-41-4	Ethylbenzene	0.1
541-41-3	Ethyl chloroformate	1.0
759-94-4	Ethyl dipropylthiocarbamate (EPTC)	1.0
74-85-1	Ethylene	1.0
107-21-1	Ethylene glycol	1.0
151-56-4	Ethyleneimine (Aziridine)	0.1
75-21-8	Ethylene oxide	0.1
96-45-7	Ethylene thiourea	0.1
75-34-3	Ethylidene dichloride	1.0
52-85-7	Famphur	1.0
60168-88-9	Fenarimol [.alpha.-(2-Chlorophenyl)-.alpha.-(4-chlorophenyl)-5-pyrimidinemethanol]	1.0
13356-08-6	Fenbutatin oxide (Hexakis(2-methyl-2-phenylpropyl) distannoxane)	1.0
66441-23-4	Fenoxaprop ethyl [2-(4-((6-Chloro-2-benzoxazolyl)oxy)phenoxy)propanoic acid, ethyl ester]	1.0

CAS Number	Chemical Name	De minimis % Limit
72490-01-8	Fenoxycarb [[2-(4-Phenoxyphenoxy)ethyl]carbamic acid ethyl ester]	1.0
39515-41-8	Fenpropathrin [2,2,3,3-Tetramethylcyclopropane carboxylic acid cyano(3-phenoxyphenyl)methyl ester]	1.0
55-38-9	Fenthion [O,O-Dimethyl O-[3-methyl-4-(methylthio)phenyl] ester, phosphorothioic acid]	1.0
51630-58-1	Fenvalerate [4-Chloro-alpha-(1-methylethyl)benzeneacetic acid cyano (3-phenoxyphenyl) methyl ester]	1.0
14484-64-1	Ferbam [Tris(dimethylcarbamidithioato-S,S')iron]	1.0
69806-50-4	Fluazifop butyl [2-[4-[[5-(Trifluoromethyl)-2-pyridinyl]oxy]phenoxy]propanoic acid, butyl ester]	1.0
2164-17-2	Fluometuron [Urea, N,N-dimethyl-N=-[3-(trifluoromethyl)phenyl]-]	1.0
7782-41-4	Fluorine	1.0
51-21-8	Fluorouracil (5-Fluorouracil)	1.0
69409-94-5	Fluvalinate [N-[2-Chloro-4-(trifluoromethyl)phenyl]-DL-valine(+)-cyano(3-phenoxyphenyl)methyl ester]	1.0
133-07-3	Folpet	1.0
72178-02-0	Fomesafen [5-(2-Chloro-4-(trifluoromethyl)phenoxy)-N-methylsulfonyl-2-nitrobenzamide]	1.0
50-00-0	Formaldehyde	0.1
64-18-6	Formic acid	1.0
76-13-1	Freon 113 [Ethane, 1,1,2-trichloro-1,2,2-trifluoro-]	1.0
110-00-9	Furan	0.1
556-52-5	Glycidol	0.1
76-44-8	Heptachlor [1,4,5,6,7,8,8-Heptachloro-3a,4,7,7a-tetrahydro-4,7-methano-1H-indene]	*
118-74-1	Hexachlorobenzene	*
87-68-3	Hexachloro-1,3-butadiene	1.0
319-84-6	alpha-Hexachlorocyclohexane	0.1
77-47-4	Hexachlorocyclopentadiene	1.0
67-72-1	Hexachloroethan	0.1
1335-87-1	Hexachloronaphthalene	1.0

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CAS Number	Chemical Name	De minimis % Limit
70-30-4	Hexachlorophene	1.0
680-31-9	Hexamethylphosphoramide	0.1
110-54-3	n-Hexane	1.0
51235-04-2	Hexazinone	1.0
67485-29-4	Hydramethylnon [Tetrahydro-5,5-dimethyl-2(1H)-pyrimidinone[3-[4-(trifluoromethyl)phenyl]-1-[2-[4-(trifluoromethyl)phenyl]ethenyl]-2-propenylidene]hydrazone]	1.0
302-01-2	Hydrazine	0.1
10034-93-2	Hydrazine sulfate	0.1
7647-01-0	Hydrochloric acid (acid aerosols including mists, vapors, gas, fog, and other airborne forms of any particle size)	1.0
74-90-8	Hydrogen cyanide	1.0
7664-39-3	Hydrogen fluoride	1.0
7783-06-4	Hydrogen sulfide	1.0
123-31-9	Hydroquinone	1.0
35554-44-0	Imazalil [1-[2-(2,4-Dichlorophenyl)-2-(2-propenyloxy)ethyl]-1H-imidazole]	1.0
55406-53-6	3-Iodo-2-propynyl butylcarbamate	1.0
13463-40-6	Iron pentacarbonyl	1.0
78-84-2	Isobutyraldehyde	1.0
465-73-6	Isodrin	*
25311-71-1	Isofenphos[2-[[Ethoxyl[(1-methylethyl)amino]phosphinothioyl]oxy] benzoic acid 1-methylethyl ester]	1.0
78-79-5	Isoprene	0.1
67-63-0	Isopropyl alcohol (only persons who manufacture by the strong acid process are subject, no supplier notification)	1.0
80-05-7	4,4'-Isopropylidenediphenol	1.0
120-58-1	Isosafrole	1.0
77501-63-4	[Benzoic acid, 5-[2-Chloro-4-(trifluoromethyl)phenoxy]-2-nitro-, 2-ethoxy-1-methyl-2-oxoethyl ester]	1.0
7439-92-1	Lead (when lead is contained in stainless steel, brass or bronze alloys the <i>de minimis</i> level is 0.1)	*
58-89-9	Lindane [Cyclohexane, 1,2,3,4,5,6-hexachloro-, (1.alpha.,2.alpha.,3.beta.,4.alpha.,5.alpha., 6.beta.)-]	0.1
330-55-2	Linuron	1.0
554-13-2	Lithium carbonate	1.0
121-75-5	Malathion	1.0

CAS Number	Chemical Name	De minimis % Limit
108-31-6	Maleic anhydride	1.0
109-77-3	Malononitrile	1.0
12427-38-2	Maneb [Carbamodithioic acid, 1,2-ethanediybis-, manganese complex]	1.0
7439-96-5	Manganese	1.0
93-65-2	Mecoprop	0.1
149-30-4	2-Mercaptobenzothiazole (MBT)	1.0
7439-97-6	Mercury	*
150-50-5	Merphos	1.0
126-98-7	Methacrylonitrile	1.0
137-42-8	Metham sodium (Sodium methylthiocarbamate)	1.0
67-56-1	Methanol	1.0
20354-26-1	Methazole [2-(3,4-Dichlorophenyl)-4-methyl-1,2,4-oxadiazolidine-3,5-dione]	1.0
2032-65-7	Methiocarb	1.0
94-74-6	Methoxone (4-Chloro-2-methylphenoxy) acetic acid) (MCPA)	0.1
3653-48-3	Methoxone sodium salt (4-Chloro-2-methylphenoxy) acetate sodium salt)	0.1
72-43-5	Methoxychlor [Benzene, 1,1'-(2,2,2-trichloroethylidene)bis[4-methoxy-]]	*
109-86-4	2-Methoxyethanol	1.0
96-33-3	Methyl acrylate	1.0
1634-04-4	Methyl tert-butyl ether	1.0
79-22-1	Methyl chlorocarbonate	1.0
101-14-4	4,4'-Methylenebis(2-chloroaniline) (MBOCA)	0.1
101-61-1	4,4'-Methylenebis(N,N-dimethyl) benzenamine	0.1
74-95-3	Methylene bromide	1.0
101-77-9	4,4'-Methylenedianiline	0.1
93-15-2	Methyleugenol	0.1
60-34-4	Methyl hydrazine	1.0
74-88-4	Methyl iodide	1.0
108-10-1	Methyl isobutyl ketone	1.0
624-83-9	Methyl isocyanate	1.0
556-61-6	Methyl isothiocyanate [Isothiocyanatomethane]	1.0
75-86-5	2-Methylactonitrile	1.0
80-62-6	Methyl methacrylate	1.0
924-42-5	N-Methylolacrylamide	1.0
298-00-0	Methyl parathion	1.0
109-06-8	2-Methylpyridine	1.0
872-50-4	N-Methyl-2-pyrrolidone	1.0
9006-42-2	Metiram	1.0
21087-64-9	Metribuzin	1.0
7786-34-7	Mevinphos	1.0

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CAS Number	Chemical Name	De minimis % Limit
90-94-8	Michler's ketone	0.1
2212-67-1	Molinate (1H-Azepine-1-carbothioic acid, hexahydro-, S-ethyl ester)	1.0
1313-27-5	Molybdenum trioxide	1.0
76-15-3	(CFC-115)	1.0
150-68-5	Monuron	1.0
505-60-2	[Ethane, 1,1'-thiobis[2-chloro-]]	0.1
88671-89-0	Myclobutanil [.alpha.-Butyl-.alpha.-(4-chlorophenyl)-1H-1,2,4-triazole-1-propanenitrile]	1.0
142-59-6	Nabam	1.0
300-76-5	Naled	1.0
91-20-3	Naphthalene	0.1
134-32-7	alpha-Naphthylamine	0.1
91-59-8	beta-Naphthylamine	0.1
7440-02-0	Nickel	0.1
1929-82-4	Nitrapyrin (2-Chloro-6-(trichloromethyl)pyridine)	1.0
7697-37-2	Nitric acid	1.0
139-13-9	Nitrilotriacetic acid	0.1
100-01-6	p-Nitroaniline	1.0
91-23-6	o-Nitroanisole	0.1
99-59-2	5-Nitro-o-anisidine	1.0
98-95-3	Nitrobenzene	0.1
92-93-3	4-Nitrobiphenyl	0.1
1836-75-5	Nitrofen [Benzene, 2,4-dichloro-1-(4-nitrophenoxy)-]	0.1
51-75-2	Nitrogen mustard [2-Chloro-N-(2-chloroethyl)-N-methylethanamine]	0.1
55-63-0	Nitroglycerin	1.0
75-52-5	Nitromethane	0.1
88-75-5	2-Nitrophenol	1.0
100-02-7	4-Nitrophenol	1.0
79-46-9	2-Nitropropane	0.1
924-16-3	N-Nitrosodi-n-butylamine	0.1
55-18-5	N-Nitrosodiethylamine	0.1
62-75-9	N-Nitrosodimethylamine	0.1
86-30-6	N-Nitrosodiphenylamine	1.0
156-10-5	p-Nitrosodiphenylamine	1.0
621-64-7	N-Nitrosodi-n-propylamine	0.1
759-73-9	N-Nitroso-N-ethylurea	0.1
684-93-5	N-Nitroso-N-methylurea	0.1
4549-40-0	N-Nitrosomethylvinylamine	0.1
59-89-2	N-Nitrosomorpholine	0.1
16543-55-8	N-Nitrosornicotine	0.1
100-75-4	N-Nitrosopiperidine	0.1
88-72-2	o-Nitrotoluene	0.1
99-55-8	5-Nitro-o-toluidine	1.0

CAS Number	Chemical Name	De minimis % Limit
27314-13-2	Norflurazon [4-Chloro-5-(methylamino)-2-[3-(trifluoromethyl)phenyl]-3(2H)-pyridazinone]	1.0
2234-13-1	Octachloronaphthalene	1.0
29082-74-4	Octachlorostyrene	*
19044-88-3	Oryzalin [4-(Dipropylamino)-3,5-dinitrobenzene sulfonamide]	1.0
20816-12-0	Osmium tetroxide	1.0
301-12-2	Oxydemeton methyl [S-(2-(Ethylsulfinyl)ethyl) O,O-dimethyl ester phosphorothioic acid]	1.0
19666-30-9	Oxydiazon [3-[2,4-Dichloro-5-(1-methylethoxy)phenyl]- 5-(1,1-dimethylethyl)-1,3,4-oxadiazol-2(3H)-one]	1.0
42874-03-3	Oxyfluorfen	1.0
10028-15-6	Ozone	1.0
123-63-7	Paraldehyde	1.0
1910-42-5	Paraquat dichloride	1.0
56-38-2	Parathion [Phosphorothioic acid, O,O-diethyl-O-(4-nitrophenyl)ester]	1.0
1114-71-2	Pebulate [Butylethylcarbamothioic acid S-propyl ester]	1.0
40487-42-1	Pendimethalin [N-(1-Ethylpropyl)-3,4-dimethyl-2,6-dinitrobenzenamine]	*
608-93-5	Pentachlorobenzene	*
76-01-7	Pentachloroethane	1.0
87-86-5	Pentachlorophenol (PCP)	0.1
57-33-0	Pentobarbital sodium	1.0
79-21-0	Peracetic acid	1.0
594-42-3	Perchloromethyl mercaptan	1.0
52645-53-1	Permethrin [3-(2,2-Dichloroethenyl)-2,2-dimethylcyclopropanecarboxylic acid, (3-phenoxyphenyl) methyl ester]	1.0
85-01-8	Phenanthrene	1.0
108-95-2	Phenol	1.0
77-09-8	Phenolphthalein	0.1
26002-80-2	Phenothrin [2,2-Dimethyl-3-(2-methyl-1-propenyl)cyclopropanecarboxylic acid (3-phenoxyphenyl)methyl ester]	1.0
95-54-5	1,2-Phenylenediamine	1.0
108-45-2	1,3-Phenylenediamine	1.0
106-50-3	p-Phenylenediamine	1.0

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CAS Number	Chemical Name	De minimis % Limit
615-28-1	1,2-Phenylenediamine dihydrochloride	1.0
624-18-0	1,4-Phenylenediamine dihydrochloride	1.0
90-43-7	2-Phenylphenol	1.0
57-41-0	Phenytoin	0.1
75-44-5	Phosgene	1.0
7803-51-2	Phosphine	1.0
7723-14-0	Phosphorus (yellow or white)	1.0
85-44-9	Phthalic anhydride	1.0
1918-02-1	Picloram	1.0
88-89-1	Picric acid	1.0
51-03-6	Piperonyl butoxide	1.0
29232-93-7	Pirimiphos methyl [O-(2-(Diethylamino)-6-methyl-4-pyrimidinyl)-O,O-dimethylphosphorothioate]	1.0
1336-36-3	Polychlorinated biphenyls (PCBs)	*
7758-01-2	Potassium bromate	0.1
128-03-0	Potassium dimethyldithiocarbamate	1.0
137-41-7	Potassium N-methyldithiocarbamate	1.0
41198-08-7	Profenofos [O-(4-Bromo-2-chlorophenyl)-O-ethyl-S-propyl phosphorothioate]	1.0
7287-19-6	Prometryn [N,N'-Bis(1-methylethyl)-6-methylthio-1,3,5-triazine-2,4-diamine]	1.0
23950-58-5	Pronamide	1.0
1918-16-7	Propachlor [2-Chloro-N-(1-methylethyl)-N-phenylacetamide]	1.0
1120-71-4	Propane sultone	0.1
709-98-8	[N-(3,4-Dichlorophenyl)propanamide]	1.0
2312-35-8	Propargite	1.0
107-19-7	Propargyl alcohol	1.0
31218-83-4	Propetamphos [3-[(Ethylamino)methoxyphosphinohioyl]oxy]-2-butenoic acid, 1-methylethyl ester]	1.0
60207-90-1	Propiconazole [1-[2-(2,4-Dichlorophenyl)-4-propyl-1,3-dioxolan-2-yl]-methyl-1H-1,2,4,-triazole]	1.0
57-57-8	beta-Propiolactone	0.1
123-38-6	Propionaldehyde	1.0
114-26-1	Propoxur [Phenol, 2-(1-methylethoxy)-, methylcarbamate]	1.0
115-07-1	Propylene (Propene)	1.0

CAS Number	Chemical Name	De minimis % Limit
75-55-8	Propyleneimine	0.1
75-56-9	Propylene oxide	0.1
110-86-1	Pyridine	1.0
91-22-5	Quinoline	1.0
106-51-4	Quinone	1.0
82-68-8	Quintozene (Pentachloronitrobenzene)	1.0
76578-14-8	Quizalofop-ethyl [2-[4-[(6-Chloro-2-quinoxalinyloxy]phenoxy]propanoic acid ethyl ester]	1.0
10453-86-8	Resmethrin [[5-(Phenylmethyl)-3-furanyl]methyl-2,2-dimethyl-3-(2-methyl-1-propenyl)cyclopropanecarboxylate]	1.0
81-07-2	Saccharin (only persons who manufacture are subject, no supplier notification)	1.0
94-59-7	Safrole	0.1
7782-49-2	Selenium	1.0
74051-80-2	Sethoxydim [2-[1-(Ethoxyimino)butyl]-5-[2-(ethylthio)propyl]-3-hydroxyl-2-cyclohexen-1-one]	1.0
7440-22-4	Silver	1.0
122-34-9	Simazine	1.0
26628-22-8	Sodium azide	1.0
1982-69-0	Sodium dicamba [3,6-Dichloro-2-methoxybenzoic acid, sodium salt]	1.0
128-04-1	Sodium dimethyldithiocarbamate	1.0
62-74-8	Sodium fluoroacetate	1.0
7632-00-0	Sodium nitrite	1.0
131-52-2	Sodium pentachlorophenate	1.0
132-27-4	Sodium o-phenylphenoxide	0.1
100-42-5	Styrene	0.1
96-09-3	Styrene oxide	0.1
7664-93-9	Sulfuric acid (acid aerosols including mists, vapors, gas, fog, and other airborne forms of any particle size)	1.0
2699-79-8	Sulfuryl fluoride (Vikane)	1.0
35400-43-2	Sulprofos [O-Ethyl O-[4-(methylthio)phenyl]phosphorodithioic acid S-propylester]	1.0
34014-18-1	Tebuthiuron [N-[5-(1,1-Dimethylethyl)-1,3,4-thiadiazol-2-yl]-N,N'-dimethylurea]	1.0
3383-96-8	Temephos	1.0

Table II. EPCRA Section 313 Chemical List for Reporting Year 2016

CAS Number	Chemical Name	De minimis % Limit
5902-51-2	Terbacil [5-Chloro-3-(1,1-dimethylethyl)-6-methyl-2,4(1H,3H)-pyrimidinedione]	1.0
79-94-7	Tetrabromobisphenol A	*
630-20-6	1,1,1,2-Tetrachloroethane	1.0
79-34-5	1,1,2,2-Tetrachloroethane	1.0
127-18-4	Tetrachloroethylene (Perchloroethylene)	0.1
354-11-0	1,1,1,2-Tetrachloro-2-fluoroethane (HCFC-121a)	1.0
354-14-3	1,1,2,2-Tetrachloro-1-fluoroethane (HCFC-121)	1.0
961-11-5	Tetrachlorvinphos [Phosphoric acid, 2-chloro-1-(2,4,5-trichlorophenyl) ethenyl dimethyl ester]	1.0
64-75-5	Tetracycline hydrochloride	1.0
116-14-3	Tetrafluoroethylene	0.1
509-14-8	Tetranitromethane	0.1
7696-12-0	Tetramethrin [2,2-Dimethyl-3-(2-methyl-1-propenyl) cyclopropanecarboxylic acid (1,3,4,5,6,7-hexahydro-1,3-dioxo-2H-isoindol-2-yl)methyl ester]	1.0
7440-28-0	Thallium	1.0
148-79-8	Thiabendazole [2-(4-Thiazolyl)-1H-benzimidazole]	1.0
62-55-5	Thioacetamide	0.1
28249-77-6	Thiobencarb [Carbamic acid, diethylthio-, S-(p-chlorobenzyl)ester]	1.0
139-65-1	4,4'-Thiodianiline	0.1
59669-26-0	Thiodicarb	1.0
23564-06-9	Thiophanate ethyl [[1,2-Phenylenebis(iminocarbonothioyl) bis carbamic acid diethylester]	1.0
23564-05-8	Thiophanate methyl	1.0
79-19-6	Thiosemicarbazide	1.0
62-56-6	Thiourea	0.1
137-26-8	Thiram	1.0
1314-20-1	Thorium dioxide	1.0
7550-45-0	Titanium tetrachloride	1.0
108-88-3	Toluene	1.0
584-84-9	Toluene-2,4-diisocyanate	0.1
91-08-7	Toluene-2,6-diisocyanate	0.1
26471-62-5	Toluene diisocyanate (mixed isomers)	0.1
95-53-4	o-Toluidine	0.1
636-21-5	o-Toluidine hydrochloride	0.1
8001-35-2	Toxaphene	*

CAS Number	Chemical Name	De minimis % Limit
43121-43-3	Triadimefon [1-(4-Chlorophenoxy)-3,3-dimethyl-1-(1H-1,2,4-triazol-1-yl)-2-butanone]	1.0
2303-17-5	Triallate	1.0
68-76-8	Triaziquone [2,5-Cyclohexadiene-1,4-dione, 2,3,5-tris(1-aziridinyl)-]	1.0
101200-48-0	Tribenuron methyl [2-[[[(4-Methoxy-6-methyl-1,3,5-triazin-2-yl)-methylamino]-carbonyl]amino]sulfonyl] benzoic acid methyl ester)	1.0
1983-10-4	Tributyltin fluoride	1.0
2155-70-6	Tributyltin methacrylate	1.0
78-48-8	S,S,S-Tributyltrithio-phosphate (DEF)	1.0
52-68-6	Trichlorfon [Phosphoric acid,(2,2,2-trichloro-1-hydroxy-ethyl)-, dimethyl ester]	1.0
76-02-8	Trichloroacetyl chloride	1.0
120-82-1	1,2,4-Trichlorobenzene	1.0
71-55-6	1,1,1-Trichloroethane (Methyl chloroform)	1.0
79-00-5	1,1,2-Trichloroethane	1.0
79-01-6	Trichloroethylene	0.1
75-69-4	Trichlorofluoromethane (CFC-11)	1.0
95-95-4	2,4,5-Trichlorophenol	1.0
88-06-2	2,4,6-Trichlorophenol	0.1
96-18-4	1,2,3-Trichloropropane	0.1
57213-69-1	Triclopyr triethylammonium salt	1.0
121-44-8	Triethylamine	1.0
1582-09-8	Trifluralin [Benzeneamine, 2,6-dinitro-N,N-dipropyl-4-(trifluoromethyl)-]	*
26644-46-2	Triforine [N,N'-[1,4-Piperazinediylbis-(2,2,2-trichloroethylidene)]bisformamide]	1.0
95-63-6	1,2,4-Trimethylbenzene	1.0
2655-15-4	2,3,5-Trimethylphenyl methylcarbamate	1.0
639-58-7	Triphenyltin chloride	1.0
76-87-9	Triphenyltin hydroxide	1.0
126-72-7	Tris(2,3-dibromopropyl) phosphate	0.1
72-57-1	Trypan blue	0.1
51-79-6	Urethane (Ethyl carbamate)	0.1
7440-62-2	Vanadium (except when contained in an alloy)	1.0
50471-44-8	Vinclozolin [3-(3,5-Dichlorophenyl)-5-ethenyl-5-methyl-2,4-oxazolidinedione]	1.0

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CAS Number	Chemical Name	De minimis % Limit
108-05-4	Vinyl acetate	0.1
593-60-2	Vinyl bromide	0.1
75-01-4	Vinyl chloride	0.1
75-02-5	Vinyl fluoride	0.1
75-35-4	Vinylidene chloride	1.0
108-38-3	m-Xylene	1.0
95-47-6	o-Xylene	1.0
106-42-3	p-Xylene	1.0
1330-20-7	Xylene (mixed isomers)	1.0
87-62-7	2,6-Xylidine	0.1
7440-66-6	Zinc (fume or dust)	1.0
12122-67-7	Zineb [Carbamodithioic acid, 1,2-ethanediyibis-, zinc complex]	1.0

CAS Number	Chemical Name	De minimis % Limit
<i>Arranged by CAS Number</i>		
58-89-9	[Cyclohexane, 1,2,3,4,5,6-hexachloro-, (1.alpha.,2.alpha.,3.beta.,4.alpha.,5.alpha.,6.beta.)-]	0.1
59-89-2	N-Nitrosomorpholine	0.1
60-09-3	4-Aminoazobenzene	0.1
60-11-7	4-Dimethylaminoazobenzene	0.1
60-34-4	Methyl hydrazine	1.0
60-35-5	Acetamide	0.1
60-51-5	Dimethoate	1.0
61-82-5	Amitrole	0.1
62-53-3	Aniline	1.0
62-55-5	Thioacetamide	0.1
62-56-6	Thiourea	0.1
62-73-7	Dichlorvos [Phosphoric acid, 2,2-dichloroethenyl dimethyl ester]	0.1
62-74-8	Sodium fluoroacetate	1.0
62-75-9	N-Nitrosodimethylamine	0.1
63-25-2	Carbaryl [1-Naphthalenol, methylcarbamate]	1.0
64-18-6	Formic acid	1.0
64-67-5	Diethyl sulfate	0.1
64-75-5	Tetracycline hydrochloride	1.0
67-56-1	Methanol	1.0
67-63-0	Isopropyl alcohol (only persons who manufacture by the strong acid process are subject, no supplier notification)	1.0
67-66-3	Chloroform	0.1
67-72-1	Hexachloroethane	0.1
68-12-2	N,N-Dimethylformamide	1.0
68-76-8	Triaziquone [2,5-Cyclohexadiene-1,4-dione, 2,3,5-tris(1-aziridinyl)-]	1.0
70-30-4	Hexachlorophene	1.0
71-36-3	n-Butyl alcohol	1.0
71-43-2	Benzene	0.1
71-55-6	1,1,1-Trichloroethane (Methyl chloroform)	1.0
72-43-5	Methoxychlor [Benzene, 1,1'-(2,2,2-trichloroethylidene)bis[4-methoxy-]]	*
72-57-1	Trypan blue	0.1
74-83-9	Bromomethane (Methyl bromide)	1.0
74-85-1	Ethylene	1.0
74-87-3	Chloromethane (Methyl chloride)	1.0
74-88-4	Methyl iodide	1.0
74-90-8	Hydrogen cyanide	1.0
74-95-3	Methylene bromide	1.0
75-00-3	Chloroethane (Ethyl chloride)	1.0
75-01-4	Vinyl chloride	0.1

b. Individually Listed Toxic Chemicals Arranged by CAS Number

CAS Number	Chemical Name	De minimis % Limit
<i>Arranged by CAS Number</i>		
50-00-0	Formaldehyde	0.1
51-03-6	Piperonyl butoxide	1.0
51-21-8	Fluorouracil (5-Fluorouracil)	1.0
51-28-5	2,4-Dinitrophenol	1.0
51-75-2	Nitrogen mustard [2-Chloro-N-(2-chloroethyl)-N-methylethanamine]	0.1
51-79-6	Urethane (Ethyl carbamate)	0.1
52-68-6	Trichlorfon [Phosphonic acid, (2,2,2-trichloro-1-hydroxyethyl)-, dimethyl ester]	1.0
52-85-7	Famphur	1.0
53-96-3	2-Acetylaminofluorene	0.1
55-18-5	N-Nitrosodiethylamine	0.1
55-21-0	Benzamide	1.0
55-38-9	Fenthion [O,O-Dimethyl O-[3-methyl-4-(methylthio)phenyl] ester, phosphorothioic acid]	1.0
55-63-0	Nitroglycerin	1.0
56-23-5	Carbon tetrachloride	0.1
56-35-9	Bis(tributyltin) oxide	1.0
56-38-2	Parathion [Phosphorothioic acid, O,O-diethyl-O-(4-nitrophenyl) ester]	1.0
57-14-7	1,1-Dimethylhydrazine	0.1
57-33-0	Pentobarbital sodium	1.0
57-41-0	Phenytol	0.1
57-57-8	beta-Propiolactone	0.1
57-74-9	Chlordane [4,7-Methanoindan, 1,2,4,5,6,7,8,8-octachloro-2,3,3a,4,7,7a-hexahydro-]	*

Table II. EPCRA Section 313 Chemical List for Reporting Year 2016

CAS Number	Chemical Name	<i>De minimis</i> % Limit
<i>Arranged by CAS Number</i>		
75-02-5	Vinyl fluoride	0.1
75-05-8	Acetonitrile	1.0
75-07-0	Acetaldehyde	0.1
75-09-2	Dichloromethane (Methylene chloride)	0.1
75-15-0	Carbon disulfide	1.0
75-21-8	Ethylene oxide	0.1
75-25-2	Bromoform (Tribromomethane)	1.0
75-27-4	Dichlorobromomethane	0.1
75-34-3	Ethylidene dichloride	1.0
75-35-4	Vinylidene chloride	1.0
75-43-4	Dichlorodifluoromethane (HCFC-21)	1.0
75-44-5	Phosgene	1.0
75-45-6	Chlorodifluoromethane (HCFC-22)	1.0
75-52-5	Nitromethane	0.1
75-55-8	Propyleneimine	0.1
75-56-9	Propylene oxide	0.1
75-63-8	Bromotrifluoromethane (Halon 1301)	1.0
75-65-0	tert-Butyl alcohol	1.0
75-68-3	1-Chloro-1,1-difluoroethane (HCFC-142b)	1.0
75-69-4	Trichlorofluoromethane (CFC-11)	1.0
75-71-8	Dichlorodifluoromethane (CFC-12)	1.0
75-72-9	Chlorotrifluoromethane (CFC-13)	1.0
75-86-5	2-Methylacetonitrile	1.0
75-88-7	2-Chloro-1,1,1-trifluoroethane (HCFC-133a)	1.0
76-01-7	Pentachloroethane	1.0
76-02-8	Trichloroacetyl chloride	1.0
76-06-2	Chloropicrin	1.0
76-13-1	Freon 113 [Ethane, 1,1,2-trichloro-1,2,2,-trifluoro-]	1.0
76-14-2	Dichlorotetrafluoroethane (CFC-114)	1.0
76-15-3	Monochloropentafluoroethane (CFC-115)	1.0
76-44-8	Heptachlor [1,4,5,6,7,8,8-Heptachloro-3a,4,7,7a-tetrahydro-4,7-methano-1H-indene]	*
76-87-9	Triphenyltin hydroxide	1.0
77-09-8	Phenolphthalein	0.1
77-47-4	Hexachlorocyclopentadiene	1.0
77-73-6	Dicyclopentadiene	1.0
77-78-1	Dimethyl sulfate	0.1
78-48-8	S,S,S-Tributyltrithiophosphate (DEF)	1.0
78-79-5	Isoprene	0.1
78-84-2	Isobutyraldehyde	1.0

CAS Number	Chemical Name	<i>De minimis</i> % Limit
<i>Arranged by CAS Number</i>		
78-87-5	1,2-Dichloropropane	1.0
78-88-6	2,3-Dichloropropene	1.0
78-92-2	sec-Butyl alcohol	1.0
79-00-5	1,1,2-Trichloroethane	1.0
79-01-6	Trichloroethylene	0.1
79-06-1	Acrylamide	0.1
79-10-7	Acrylic acid	1.0
79-11-8	Chloroacetic acid	1.0
79-19-6	Thiosemicarbazide	1.0
79-21-0	Peracetic acid	1.0
79-22-1	Methyl chlorocarbonate	1.0
79-34-5	1,1,2,2-Tetrachloroethane	1.0
79-44-7	Dimethylcarbonyl chloride	0.1
79-46-9	2-Nitropropane	0.1
79 94 7	Tetrabromobisphenol A	*
80-05-7	4,4'-Isopropylidenediphenol	1.0
80-15-9	Cumene hydroperoxide	1.0
80-62-6	Methyl methacrylate	1.0
81-07-2	Saccharin (only persons who manufacture are subject, no supplier notification)	1.0
81-49-2	1-Amino-2,4-dibromoanthraquinone	0.1
81-88-9	C.I. Food Red 15	1.0
82-28-0	1-Amino-2-methylantraquinone	0.1
82-68-8	Quintozene [Pentachloronitrobenzene]	1.0
84-74-2	Dibutyl phthalate	1.0
85-01-8	Phenanthrene	1.0
85-44-9	Phthalic anhydride	1.0
86-30-6	N-Nitrosodiphenylamine	1.0
87-62-7	2,6-Xylydine	0.1
87-68-3	Hexachloro-1,3-butadiene	1.0
87-86-5	Pentachlorophenol (PCP)	0.1
88-06-2	2,4,6-Trichlorophenol	0.1
88-72-2	o-Nitrotoluene	0.1
88-75-5	2-Nitrophenol	1.0
88-85-7	Dinitrobutyl phenol (Dinoseb)	1.0
88-89-1	Picric acid	1.0
90-04-0	o-Anisidine	0.1
90-43-7	2-Phenylphenol	1.0
90-94-8	Michler's ketone	0.1
91-08-7	Toluene-2,6-diisocyanate	0.1
91-20-3	Naphthalene	0.1
91-22-5	Quinoline	1.0
91-23-6	o-Nitroanisole	0.1
91-59-8	beta-Naphthylamine	0.1
91-94-1	3,3'-Dichlorobenzidine	0.1
92-52-4	Biphenyl	1.0
92-67-1	4-Aminobiphenyl	0.1
92-87-5	Benzidine	0.1
92-93-3	4-Nitrobiphenyl	0.1
93-15-2	Methyleugenol	0.1
93-65-2	Mecoprop	0.1

Table II. EPCRA Section 313 Chemical List for Reporting Year 2016

CAS Number	Chemical Name	De minimis % Limit
<i>Arranged by CAS Number</i>		
94-11-1	2,4-D isopropyl ester	0.1
94-36-0	Benzoyl peroxide	1.0
94-58-6	Dihydrosafrole	0.1
94-59-7	Safrole	0.1
94-74-6	Methoxone	0.1
	((4-Chloro-2-methylphenoxy) acetic acid) (MCPA)	
94-75-7	2,4-D [Acetic acid, (2,4-dichlorophenoxy)-]	0.1
94-80-4	2,4-D butyl ester	0.1
94-82-6	2,4-DB	1.0
95-47-6	o-Xylene	1.0
95-48-7	o-Cresol	1.0
95-50-1	1,2-Dichlorobenzene	1.0
95-53-4	o-Toluidine	0.1
95-54-5	1,2-Phenylenediamine	1.0
95-63-6	1,2,4-Trimethylbenzene	1.0
95-69-2	p-Chloro-o-toluidine	0.1
95-80-7	2,4-Diaminotoluene	0.1
95-95-4	2,4,5-Trichlorophenol	1.0
96-09-3	Styrene oxide	0.1
96-12-8	1,2-Dibromo-3-chloropropane (DBCP)	0.1
96-18-4	1,2,3-Trichloropropane	0.1
96-33-3	Methyl acrylate	1.0
96-45-7	Ethylene thiourea	0.1
97-23-4	Dichlorophene [2,2'-Methylenebis(4-chlorophenol)]	1.0
97-56-3	C.I. Solvent Yellow 3	0.1
98-07-7	Benzoic trichloride (Benzotrichloride)	0.1
98-82-8	Cumene	1.0
98-86-2	Acetophenone	1.0
98-87-3	Benzal chloride	1.0
98-88-4	Benzoyl chloride	1.0
98-95-3	Nitrobenzene	0.1
99-30-9	Dichloran [2,6-Dichloro-4-nitroaniline]	1.0
99-55-8	5-Nitro-o-toluidine	1.0
99-59-2	5-Nitro-o-anisidine	1.0
99-65-0	m-Dinitrobenzene	1.0
100-01-6	p-Nitroaniline	1.0
100-02-7	4-Nitrophenol	1.0
100-25-4	p-Dinitrobenzene	1.0
100-41-4	Ethylbenzene	0.1
100-42-5	Styrene	0.1
100-44-7	Benzyl chloride	1.0
100-75-4	N-Nitrosopiperidine	0.1
101-05-3	Anilazine [4,6-Dichloro-N-(2-chlorophenyl)-1,3,5-triazin-2-amine]	1.0
101-14-4	4,4'-Methylenebis(2-chloroaniline) (MBOCA)	0.1

CAS Number	Chemical Name	De minimis % Limit
<i>Arranged by CAS Number</i>		
101-61-1	4,4'-Methylenebis(N,N-dimethyl)benzenamine	0.1
101-77-9	4,4'-Methylenedianiline	0.1
101-80-4	4,4'-Diaminodiphenyl ether	0.1
101-90-6	Diglycidyl resorcinol ether	0.1
104-12-1	p-Chlorophenyl isocyanate	1.0
104-94-9	p-Anisidine	1.0
105-67-9	2,4-Dimethylphenol	1.0
106-42-3	p-Xylene	1.0
106-44-5	p-Cresol	1.0
106-46-7	1,4-Dichlorobenzene	0.1
106-47-8	p-Chloroaniline	0.1
106-50-3	p-Phenylenediamine	1.0
106-51-4	Quinone	1.0
106-88-7	1,2-Butylene oxide	0.1
106-89-8	Epichlorohydrin	0.1
106-93-4	1,2-Dibromoethane (Ethylene dibromide)	0.1
106-94-5	1-Bromopropane	0.1
106-99-0	1,3-Butadiene	0.1
107-02-8	Acrolein	1.0
107-05-1	Allyl chloride	1.0
107-06-2	1,2-Dichloroethane (Ethylene dichloride)	0.1
107-11-9	Allylamine	1.0
107-13-1	Acrylonitrile	0.1
107-18-6	Allyl alcohol	1.0
107-19-7	Propargyl alcohol	1.0
107-21-1	Ethylene glycol	1.0
107-30-2	Chloromethyl methyl ether	0.1
108-05-4	Vinyl acetate	0.1
108-10-1	Methyl isobutyl ketone	1.0
108-31-6	Maleic anhydride	1.0
108-38-3	m-Xylene	1.0
108-39-4	m-Cresol	1.0
108-45-2	1,3-Phenylenediamine	1.0
108-60-1	Bis(2-chloro-1-methylethyl) ether	1.0
108-88-3	Toluene	1.0
108-90-7	Chlorobenzene	1.0
108-93-0	Cyclohexanol	1.0
108-95-2	Phenol	1.0
109-06-8	2-Methylpyridine	1.0
109-77-3	Malononitrile	1.0
109-86-4	2-Methoxyethanol	1.0
110-00-9	Furan	0.1
110-54-3	n-Hexane	1.0
110-57-6	trans-1,4-Dichloro-2-butene	1.0
110-80-5	2-Ethoxyethanol	1.0
110-82-7	Cyclohexane	1.0
110-86-1	Pyridine	1.0
111-42-2	Diethanolamine	1.0
111-44-4	Bis(2-chloroethyl) ether	1.0
111-91-1	Bis(2-chloroethoxy) methane	1.0

Table II. EPCRA Section 313 Chemical List for Reporting Year 2016

CAS Number	Chemical Name	De minimis % Limit
<i>Arranged by CAS Number</i>		
114-26-1	Propoxur [Phenol, 2-(1-methylethoxy)-, methylcarbamate]	1.0
115-07-1	Propylene (Propene)	1.0
115-28-6	Chlorendic acid	0.1
115-32-2	Dicofol [Benzenemethanol, 4-chloro-.alpha.-4-(chlorophenyl)-.alpha.-(trichloromethyl)-]	1.0
116-06-3	Aldicarb	1.0
116-14-3	Tetrafluoroethylene	0.1
117-79-3	2-Aminoanthraquinone	0.1
117-81-7	Di(2-ethylhexyl) phthalate	0.1
118-74-1	Hexachlorobenzene	*
119-90-4	3,3'-Dimethoxybenzidine	0.1
119-93-7	3,3'-Dimethylbenzidine(o-Tolidine)	0.1
120-12-7	Anthracene	1.0
120-36-5	2,4-DP	0.1
120-58-1	Isosafrole	1.0
120-71-8	p-Cresidine	0.1
120-80-9	Catechol	0.1
120-82-1	1,2,4-Trichlorobenzene	1.0
120-83-2	2,4-Dichlorophenol	1.0
121-14-2	2,4-Dinitrotoluene	0.1
121-44-8	Triethylamine	1.0
121-69-7	N,N-Dimethylaniline	1.0
121-75-5	Malathion	1.0
122-34-9	Simazine	1.0
122-39-4	Diphenylamine	1.0
122-66-7	1,2-Diphenylhydrazine (Hydrazobenzene)	0.1
123-31-9	Hydroquinone	1.0
123-38-6	Propionaldehyde	1.0
123-63-7	Paraldehyde	1.0
123-72-8	Butyraldehyde	1.0
123-91-1	1,4-Dioxane	0.1
124-40-3	Dimethylamine	1.0
124-73-2	Dibromotetrafluoroethane (Halon 2402)	1.0
126-72-7	Tris(2,3-dibromopropyl) phosphate	0.1
126-98-7	Methacrylonitrile	1.0
126-99-8	Chloroprene	0.1
127-18-4	Tetrachloroethylene (Perchloroethylene)	0.1
128-03-0	Potassium dimethyldithiocarbamate	1.0
128-04-1	Sodium dimethyldithiocarbamate	1.0
128-66-5	C.I. Vat Yellow 4	1.0
131-11-3	Dimethyl phthalate	1.0
131-52-2	Sodium pentachlorophenate	1.0
132-27-4	Sodium o-phenylphenoxide	0.1
132-64-9	Dibenzofuran	1.0

CAS Number	Chemical Name	De minimis % Limit
<i>Arranged by CAS Number</i>		
133-06-2	Captan [1H-Isoindole-1,3(2H)-dione, 3a,4,7,7a-tetrahydro-2-[(trichloromethyl)thio]-]	1.0
133-07-3	Folpet	1.0
133-90-4	Chloramben [Benzoic acid, 3-amino-2,5-dichloro-]	1.0
134-29-2	o-Anisidine hydrochloride	0.1
134-32-7	alpha-Naphthylamine	0.1
135-20-6	Cupferron [Benzeneamine, N-hydroxy-N-nitroso, ammonium salt]	0.1
136-45-8	Dipropyl isocinchomeronate	1.0
137-26-8	Thiram	1.0
137-41-7	Potassium N-methyldithiocarbamate	1.0
137-42-8	Metham sodium (Sodium methyldithiocarbamate)	1.0
138-93-2	Sodium cyanodithioimidocarbonate	1.0
139-13-9	Nitrilotriacetic acid	0.1
139-65-1	4,4'-Thiodianiline	0.1
140-88-5	Ethyl acrylate	0.1
141-32-2	Butyl acrylate	1.0
142-59-6	Nabam	1.0
148-79-8	Thiabendazole [2-(4-Thiazoly)-1H-benzimidazole]	1.0
149-30-4	2-Mercaptobenzothiazole (MBT)	1.0
150-50-5	Merphos	1.0
150-68-5	Monuron	1.0
151-56-4	Ethyleneimine (Aziridine)	0.1
156-10-5	p-Nitrosodiphenylamine	1.0
156-62-7	Calcium cyanamide	1.0
191-24-2	Benzo(g,h,i)perylene	*
298-00-0	Methyl parathion	1.0
300-76-5	Naled	1.0
301-12-2	Oxydemeton methyl [S-(2-(Ethylsulfinyl)ethyl) O,O-dimethyl ester phosphorothioic acid]	1.0
302-01-2	Hydrazine	0.1
306-83-2	2,2-Dichloro-1,1,1-trifluoroethane (HCFC-123)	1.0
309-00-2	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.)-]	*

Table II. EPCRA Section 313 Chemical List for Reporting Year 2016

CAS Number	Chemical Name	De minimis % Limit
<i>Arranged by CAS Number</i>		
314-40-9	(5-Bromo-6-methyl-3-(1-methylpropyl)-2,4(1H,3H)-pyrimidinedione)	1.0
319-84-6	alpha-Hexachlorocyclohexane	0.1
330-54-1	Diuron	1.0
330-55-2	Linuron	1.0
333-41-5	Diazinon	1.0
334-88-3	Diazomethane	1.0
353-59-3	Bromochlorodifluoromethane (Halon 1211)	1.0
354-11-0	1,1,1,2-Tetrachloro-2-fluoroethane (HCFC-121a)	1.0
354-14-3	1,1,2,2-Tetrachloro-1-fluoroethane (HCFC-121)	1.0
354-23-4	1,2-Dichloro-1,1,2-trifluoroethane (HCFC-123a)	1.0
354-25-6	1-Chloro-1,1,2,2-tetrafluoroethane (HCFC-124a)	1.0
357-57-3	Brucine	1.0
422-44-6	1,2-Dichloro-1,1,2,3,3-pentafluoropropane (HCFC-225bb)	1.0
422-48-0	2,3-Dichloro-1,1,1,2,3-pentafluoropropane (HCFC-225ba)	1.0
422-56-0	3,3-Dichloro-1,1,1,2,2-pentafluoropropane (HCFC-225ca)	1.0
431-86-7	1,2-Dichloro-1,1,3,3,3-pentafluoropropane (HCFC-225da)	1.0
460-35-5	3-Chloro-1,1,1-trifluoropropane (HCFC-253fb)	1.0
463-58-1	Carbonyl sulfide	1.0
465-73-6	Isodrin	*
492-80-8	C.I. Solvent Yellow 34 (Auramine)	0.1
505-60-2	Mustard gas [Ethane, 1,1'-thiobis[2-chloro-]]	0.1
507-55-1	1,3-Dichloro-1,1,2,2,3-pentafluoropropane (HCFC-225cb)	1.0
509-14-8	Tetranitromethane	0.1
510-15-6	[Benzenoacetic acid, 4-chloro-.alpha.-(4-chlorophenyl)-.alpha.-hydroxy-, ethyl ester]	1.0
528-29-0	o-Dinitrobenzene	1.0
532-27-4	2-Chloroacetophenone	1.0
533-74-4	Dazomet (Tetrahydro-3,5-dimethyl-2H-1,3,5-thiadiazine-2-thione)	1.0
534-52-1	4,6-Dinitro-o-cresol	1.0
540-59-0	1,2-Dichloroethylene	1.0
541-41-3	Ethyl chloroformate	1.0

CAS Number	Chemical Name	De minimis % Limit
<i>Arranged by CAS Number</i>		
541-53-7	2,4-Dithiobiuret	1.0
541-73-1	1,3-Dichlorobenzene	1.0
542-75-6	1,3-Dichloropropylene	0.1
542-76-7	3-Chloropropionitrile	1.0
542-88-1	Bis(chloromethyl) ether	0.1
554-13-2	Lithium carbonate	1.0
556-52-5	Glycidol	0.1
556-61-6	Methyl isothiocyanate [Isothiocyanatomethane]	1.0
563-47-3	3-Chloro-2-methyl-1-propene	0.1
569-64-2	C.I. Basic Green 4	1.0
584-84-9	Toluene-2,4-diisocyanate	0.1
593-60-2	Vinyl bromide	0.1
594-42-3	Perchloromethyl mercaptan	1.0
606-20-2	2,6-Dinitrotoluene	0.1
608 93 5	Pentachlorobenzene	*
612-82-8	3,3'-Dimethylbenzidine dihydrochloride (o-Tolidine dihydrochloride)	0.1
612-83-9	3,3'-Dichlorobenzidine dihydrochloride	0.1
615-05-4	2,4-Diaminoanisole	0.1
615-28-1	1,2-Phenylenediamine dihydrochloride	1.0
621-64-7	N-Nitrosodi-n-propylamine	0.1
624-18-0	1,4-Phenylenediamine dihydrochloride	1.0
624-83-9	Methyl isocyanate	1.0
630-20-6	1,1,1,2-Tetrachloroethane	1.0
636-21-5	o-Toluidine hydrochloride	0.1
639-58-7	Triphenyltin chloride	1.0
680-31-9	Hexamethylphosphoramide	0.1
684-93-5	N-Nitroso-N-methylurea	0.1
709-98-8	Propanil (N-(3,4-Dichlorophenyl) propanamide)	1.0
759-73-9	N-Nitroso-N-ethylurea	0.1
759-94-4	Ethyl dipropylthiocarbamate (EPTC)	1.0
764-41-0	1,4-Dichloro-2-butene	1.0
812-04-4	1,1-Dichloro-1,2,2-trifluoroethane (HCFC-123b)	1.0
834-12-8	Ametryn (N-Ethyl-N'-(1-methylethyl)-6-(methylthio)-1,3,5,-triazine-2,4-diamine)	1.0
842-07-9	C.I. Solvent Yellow 14	1.0
872-50-4	N-Methyl-2-pyrrolidone	1.0
924-16-3	N-Nitrosodi-n-butylamine	0.1
924-42-5	N-Methylolacrylamide	1.0
957-51-7	Diphenamid	1.0

Table II. EPCRA Section 313 Chemical List for Reporting Year 2016

CAS Number	Chemical Name	De minimis % Limit
<i>Arranged by CAS Number</i>		
961-11-5	Tetrachlorvinphos [Phosphoric acid, 2-chloro-1-(2,4,5-trichlorophenyl)ethenyldimethyl ester]	1.0
989-38-8	C.I. Basic Red 1	1.0
1114-71-2	Pebulate [Butylethylcarbamothioic acid S-propyl ester]	1.0
1120-71-4	Propane sultone	0.1
1134-23-2	Cycloate	1.0
1163-19-5	Decabromodiphenyl oxide	1.0
1313-27-5	Molybdenum trioxide	1.0
1314-20-1	Thorium dioxide	1.0
1319-77-3	Cresol (mixed isomers)	1.0
1320-18-9	2,4-D propylene glycol butyl ether ester	0.1
1330-20-7	Xylene (mixed isomers)	1.0
1332-21-4	Asbestos (friable)	0.1
1335-87-1	Hexachloronaphthalene	1.0
1336-36-3	Polychlorinated biphenyls (PCBs)	*
1344-28-1	Aluminum oxide (fibrous forms)	1.0
1464-53-5	Diepoxybutane	0.1
1563-66-2	Carbofuran	1.0
1582-09-8	Trifluralin [Benzeneamine, 2,6-dinitro-N,N-dipropyl-4-(trifluoromethyl)-]	*
1634-04-4	Methyl tert-butyl ether	1.0
1649-08-7	1,2-Dichloro-1,1-difluoroethane (HCFC-132b)	1.0
1689-84-5	Bromoxynil (3,5-Dibromo-4-hydroxybenzoxynil)	1.0
1689-99-2	Bromoxynil octanoate (Octanoic acid, 2,6-dibromo-4-cyanophenyl ester)	1.0
1717-00-6	1,1-Dichloro-1-fluoroethane (HCFC-141b)	1.0
1836-75-5	Nitrofen [Benzene, 2,4-dichloro-1-(4-nitrophenoxy)-]	0.1
1861-40-1	Benfluralin (N-Butyl-N-ethyl-2,6-dinitro-4-(trifluoromethyl)benzenamine)	1.0
1897-45-6	Chlorothalonil [1,3-Benzenedicarbonitrile, 2,4,5,6-tetrachloro-]	0.1
1910-42-5	Paraquat dichloride	1.0
1912-24-9	Atrazine (6-Chloro-N-ethyl-N'-(1-methylethyl)-1,3,5-triazine-2,4-diamine)	1.0

CAS Number	Chemical Name	De minimis % Limit
<i>Arranged by CAS Number</i>		
1918-00-9	Dicamba (3,6-Dichloro-2-methoxybenzoic acid)	1.0
1918-02-1	Picloram	1.0
1918-16-7	Propachlor [2-Chloro-N-(1-methylethyl)-N-phenylacetamide]	1.0
1928-43-4	2,4-D 2-ethylhexyl ester	0.1
1929-73-3	2,4-D butoxyethyl ester	0.1
1929-82-4	Nitrapyrin (2-Chloro-6-(trichloromethyl)pyridine)	1.0
1937-37-7	C.I. Direct Black 38	0.1
1982-69-0	Sodium dicamba [3,6-Dichloro-2-methoxybenzoic acid, sodium salt]	1.0
1983-10-4	Tributyltin fluoride	1.0
2032-65-7	Methiocarb	1.0
2155-70-6	Tributyltin methacrylate	1.0
2164-07-0	Dipotassium endothall [7-Oxabicyclo(2.2.1)heptane-2,3-dicarboxylic acid, dipotassium salt]	1.0
2164-17-2	Fluometuron [Urea, N,N-dimethyl-N'-[3-(trifluoromethyl)phenyl]-]	1.0
2212-67-1	Molinate (1H-Azepine-1-carbothioic acid, hexahydro-S-ethyl ester)	1.0
2234-13-1	Octachloronaphthalene	1.0
2300-66-5	Dimethylamine dicamba	1.0
2303-16-4	Diallate [Carbamothioic acid, bis(1-methylethyl)-S-(2,3-dichloro-2-propenyl) ester]	1.0
2303-17-5	Triallate	1.0
2312-35-8	Propargite	1.0
2439-01-2	Chinomethionat [6-Methyl-1,3-dithiolo[4,5-b]quinoxalin-2-one]	1.0
2439-10-3	Dodine [Dodecylguanidine monoacetate]	1.0
2524-03-0	Dimethyl chlorothiophosphate	1.0
2602-46-2	C.I. Direct Blue 6	0.1
2655-15-4	2,3,5-Trimethylphenyl methyl carbamate	1.0
2699-79-8	Sulfuryl fluoride (Vikane)	1.0
2702-72-9	2,4-D sodium salt	0.1
2832-40-8	C.I. Disperse Yellow 3	1.0
2837-89-0	2-Chloro-1,1,1,2-tetrafluoroethane (HCFC-124)	1.0
2971-38-2	2,4-D Chlorocrotyl ester	0.1
3118-97-6	C.I. Solvent Orange 7	1.0

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CAS Number	Chemical Name	De minimis % Limit
<i>Arranged by CAS Number</i>		
3296-90-0	2,2-bis(Bromomethyl)-1,3-propanediol	0.1
3383-96-8	Temephos	1.0
3653-48-3	Methoxone sodium salt ((4-Chloro-2-methylphenoxy) acetate sodium salt)	0.1
3761-53-3	C.I. Food Red 5	0.1
4080-31-3	1-(3-Chloroallyl)-3,5,7-triaza-1-azoniaadamantane chloride	1.0
4170-30-3	Crotonaldehyde	1.0
4549-40-0	N-Nitrosomethylvinylamine	0.1
4680-78-8	C.I. Acid Green 3	1.0
5234-68-4	Carboxin (5,6-Dihydro-2-methyl-N-phenyl-1,4-oxathiin-3-carboxamide)	1.0
5598-13-0	Chlorpyrifos methyl [O,O-Dimethyl-O-(3,5,6-trichloro-2-pyridyl)phosphorothioate]	1.0
5902-51-2	[5-Chloro-3-(1,1-dimethylethyl)-6-methyl-2,4(1H,3H)-pyrimidinedione]	1.0
6459-94-5	C.I. Acid Red 114	0.1
7287-19-6	Prometryn [N,N'-Bis(1-methylethyl)-6-methylthio-1,3,5-triazine-2,4-diamine]	1.0
7429-90-5	Aluminum (fume or dust)	1.0
7439-92-1	Lead (when lead is contained in stainless steel, brass or bronze alloys the de minimis level is 0.1)	*
7439-96-5	Manganese	1.0
7439-97-6	Mercury	*
7440-02-0	Nickel	0.1
7440-22-4	Silver	1.0
7440-28-0	Thallium	1.0
7440-36-0	Antimony	1.0
7440-38-2	Arsenic	0.1
7440-39-3	Barium	1.0
7440-41-7	Beryllium	0.1
7440-43-9	Cadmium	0.1
7440-47-3	Chromium	1.0
7440-48-4	Cobalt	0.1
7440-50-8	Copper	1.0
7440-62-2	Vanadium (except when contained in an alloy)	1.0
7440-66-6	Zinc (fume or dust)	1.0
7550-45-0	Titanium tetrachloride	1.0
7632-00-0	Sodium nitrite	1.0
7637-07-2	Boron trifluoride	1.0

CAS Number	Chemical Name	De minimis % Limit
<i>Arranged by CAS Number</i>		
7647-01-0	Hydrochloric acid (acid aerosols including mists, vapors, gas, fog, and other airborne forms of any particle size)	1.0
7664-39-3	Hydrogen fluoride	1.0
7664-41-7	Ammonia (includes anhydrous ammonia and aqueous ammonia from water dissociable ammonium salts and other sources; 10 percent of total aqueous ammonia is reportable under this listing)	1.0
7664-93-9	Sulfuric acid (acid aerosols including mists, vapors, gas, fog, and other airborne forms of any particle size)	1.0
7696-12-0	Tetramethrin [2,2-Dimethyl-3-(2-methyl-1-propenyl)cyclopropanecarboxylic acid (1,3,4,5,6,7-hexahydro-1,3-dioxo-2H-isoindol-2-yl)methyl ester]	1.0
7697-37-2	Nitric acid	1.0
7723-14-0	Phosphorus (yellow or white)	1.0
7726-95-6	Bromine	1.0
7758-01-2	Potassium bromate	0.1
7782-41-4	Fluorine	1.0
7782-49-2	Selenium	1.0
7782-50-5	Chlorine	1.0
7783-06-4	Hydrogen sulfide	1.0
7786-34-7	Mevinphos	1.0
7803-51-2	Phosphine	1.0
8001-35-2	Toxaphene	*
8001-58-9	Creosote	0.1
9006-42-2	Metiram	1.0
10028-15-6	Ozone	1.0
10034-93-2	Hydrazine sulfate	0.1
10049-04-4	Chlorine dioxide	1.0
10061-02-6	trans-1,3-Dichloropropene	0.1
10294-34-5	Boron trichloride	1.0
10453-86-8	Resmethrin [[5-(Phenylmethyl)-3-furanyl]methyl-2,2-dimethyl-3-(2-methyl-1-propenyl)cyclopropanecarboxylate]]	1.0
12122-67-7	Zineb [Carbamodithioic acid, 1,2-ethanediylbis-, zinc complex]	1.0
12427-38-2	Maneb [Carbamodithioic acid, 1,2-ethanediylbis-, manganese complex]	1.0

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CAS Number	Chemical Name	De minimis % Limit
<i>Arranged by CAS Number</i>		
13194-48-4	Ethoprop [Phosphorodithioic acid O-ethyl S,S-dipropyl ester]	1.0
13356-08-6	Fenbutatin oxide (Hexakis(2-methyl-2-phenylpropyl) distannoxane)	1.0
13463-40-6	Iron pentacarbonyl	1.0
13474-88-9	1,1-Dichloro-1,2,2,3,3-pentafluoropropane (HCFC-225cc)	1.0
13684-56-5	Desmedipham	1.0
14484-64-1	Ferbam [Tris(dimethylcarbamodithioato-S,S')iron]	1.0
15972-60-8	Alachlor	1.0
16071-86-6	C.I. Direct Brown 95	0.1
16543-55-8	N-Nitrosornicotine	0.1
17804-35-2	Benomyl	1.0
19044-88-3	Oryzalin [4-(Dipropylamino)-3,5-dinitrobenzenesulfonamide]	1.0
19666-30-9	Oxydiazon [3-[2,4-Dichloro-5-(1-methylethoxy) phenyl]-5-(1,1-dimethylethyl)-1,3,4-oxadiazol-2(3H)-one]	1.0
20325-40-0	3,3'-Dimethoxybenzidine dihydrochloride (o-Dianisidine dihydrochloride)	0.1
20354-26-1	Methazole [2-(3,4-Dichlorophenyl)-4-methyl-1,2,4-oxadiazolidine-3,5-dione]	1.0
20816-12-0	Osmium tetroxide	1.0
20859-73-8	Aluminum phosphide	1.0
21087-64-9	Metribuzin	1.0
21725-46-2	Cyanazine	1.0
22781-23-3	[2,2-Dimethyl-1,3-benzodioxol-4-ol methylcarbamate]	1.0
23564-05-8	Thiophanate methyl	1.0
23564-06-9	Thiophanate ethyl [[1,2-Phenylenebis(iminocarbonothioyl)] biscarbamic acid diethyl ester]	1.0
23950-58-5	Pronamide	1.0
25311-71-1	Isofenphos [2-[[Ethoxyl[(1-methylethyl)-amino]phosphinothioyl]oxy]benzoic acid 1-methylethyl ester]	1.0
25321-14-6	Dinitrotoluene (mixed isomers)	1.0
25321-22-6	Dichlorobenzene (mixed isomers)	0.1
25376-45-8	Diaminotoluene (mixed isomers)	0.1

CAS Number	Chemical Name	De minimis % Limit
<i>Arranged by CAS Number</i>		
26002-80-2	Phenothrin [2,2-Dimethyl-3-(2-methyl-1-propenyl)cyclopropanecarboxylic acid (3-phenoxyphenyl)methyl ester]	1.0
26471-62-5	Toluene diisocyanate (mixed isomers)	0.1
26628-22-8	Sodium azide	1.0
26644-46-2	Triforine [N,N'-[1,4-Piperazinediylbis(2,2,2-trichloroethylidene)]bisformamide]	1.0
27314-13-2	Norflurazon [4-Chloro-5-(methylamino)-2-[3-(trifluoromethyl)phenyl]-3(2H)-pyridazinone]	1.0
28057-48-9	d-trans-Allethrin [d-trans-Chrysanthemic acid of d-allethrine]	1.0
28249-77-6	Thiobencarb [Carbamic acid, diethylthio-, S-(p-chlorobenzyl)ester]	1.0
28407-37-6	C.I. Direct Blue 218	1.0
29082 74 4	Octachlorostyrene	*
29232-93-7	Pirimiphos methyl [O-(2-(Diethylamino)-6-methyl-4-pyrimidinyl)-O,O-dimethylphosphorothioate]	1.0
30560-19-1	Acephate (Acetylphosphoramidothioic acid O,S-dimethyl ester)	1.0
31218-83-4	Propetamphos [3-[(Ethylamino) methoxyphosphinothioyl]oxy]-2-butenic acid, 1-methylethyl ester]	1.0
33089-61-1	Amitraz	1.0
34014-18-1	Tebuthiuron [N-[5-(1,1-Dimethylethyl)-1,3,4-thiadiazol-2-yl]-N,N'-dimethylurea]	1.0
34077-87-7	Dichlorotrifluoroethane	1.0
35367-38-5	Diflubenzuron	1.0
35400-43-2	Sulprofos [O-Ethyl O-[4-(methylthio)phenyl]-phosphorodithioic acid S-propyl ester]	1.0
35554-44-0	Imazalil [1-[2-(2,4-Dichlorophenyl)-2-(2-propenyloxy)ethyl]-1H-imidazole]	1.0
35691-65-7	1-Bromo-1-(bromomethyl)-1,3-propanedicarbonitrile	1.0
38727-55-8	Diethatyl ethyl	1.0

Table II. EPCRA Section 313 Chemical List for Reporting Year 2016

CAS Number	Chemical Name	De minimis % Limit
<i>Arranged by CAS Number</i>		
39156-41-7	2,4-Diaminoanisole sulfate	0.1
39300-45-3	Dinocap	1.0
39515-41-8	Fenpropathrin	1.0
40487-42-1	[2,2,3,3-Tetramethylcyclopropane carboxylic acid cyano(3-phenoxyphenyl)methyl ester] Pendimethalin	*
41198-08-7	[N-(1-Ethylpropyl)-3,4-dimethyl-2,6-dinitrobenzenamine] Profenofos	1.0
41766-75-0	[O-(4-Bromo-2-chlorophenyl)-O-ethyl-S-propyl phosphorothioate] 3,3'-Dimethylbenzidine dihydrofluoride (o-Tolidinedihydrofluoride)	0.1
42874-03-3	Oxyfluorfen	1.0
43121-43-3	Triadimefon	1.0
50471-44-8	[1-(4-Chlorophenoxy)-3,3-dimethyl-1-(1H-1,2,4-triazol-1-yl)-2-butanone] Vinclozolin	1.0
51235-04-2	[3-(3,5-Dichlorophenyl)-5-ethenyl-5-methyl-2,4-oxazolinedione] Hexazinone	1.0
51338-27-3	Diclofop methyl	1.0
51630-58-1	[2-[4-(2,4-Dichlorophenoxy)-phenoxy]propanoic acid, methyl ester] Fenvalerate	1.0
52645-53-1	[4-Chloro-alpha-(1-methylethyl)-benzeneacetic acid cyano(3-phenoxyphenyl)methyl ester] Permethrin	1.0
53404-19-6	[3-(2,2-Dichloroethenyl)-2,2-dimethylcyclopropane carboxylic acid, (3-phenoxyphenyl)methyl ester] Bromacil, lithium salt	1.0
53404-37-8	[2,4(1H,3H)-Pyrimidinedione, 5-bromo-6-methyl-3-(1-methylpropyl), lithium salt] 2,4-D 2-ethyl-4-methylpentyl ester	0.1
53404-60-7	Dazomet, sodium salt	1.0
55290-64-7	[Tetrahydro-3,5-dimethyl-2H-1,3,5-thiadiazine-2-thione, ion(1-), sodium] Dimethipin	1.0
55406-53-6	[2,3-Dihydro-5,6-dimethyl-1,4-dithiin 1,1,4,4-tetraoxide] 3-Iodo-2-propynyl butyl carbamate	1.0
57213-69-1	Triclopyr triethylammonium salt	1.0
59669-26-0	Thiodicarb	1.0

CAS Number	Chemical Name	De minimis % Limit
<i>Arranged by CAS Number</i>		
60168-88-9	[.alpha.-(2-Chlorophenyl)-.alpha.-(4-chlorophenyl)-5-pyrimidinemethanol]	1.0
60207-90-1	Propiconazole	1.0
62476-59-9	[1-[2-(2,4-Dichlorophenyl)-4-propyl-1,3-dioxolan-2-yl]-methyl-1H-1,2,4,-triazole] Acifluorfen, sodium salt	1.0
63938-10-3	[5-(2-Chloro-4-(trifluoromethyl)phenoxy)-2-nitrobenzoic acid, sodium salt] Chlorotetrafluoroethane	1.0
64902-72-3	Chlorsulfuron	1.0
64969-34-2	[2-Chloro-N-[[[(4-methoxy-6-methyl-1,3,5-triazin-2-yl)amino] carbonyl] benzenesulfonamide] 3,3'-Dichlorobenzidine sulfate	0.1
66441-23-4	[2-(4-((6-Chloro-2-benzoxazolyl)oxy)phenoxy)propanoic acid, ethyl ester]	1.0
67485-29-4	Hydramethylnon	1.0
68085-85-8	[Tetrahydro-5,5-dimethyl-2(1H)-pyrimidinone[3-[4-(trifluoromethyl)phenyl]-1-[2-[4-(trifluoromethyl)phenyl]ethenyl]-2-propenylidene]hydrazone] Cyhalothrin	1.0
68359-37-5	[3-(2-Chloro-3,3,3-trifluoro-1-propenyl)-2,2-dimethylcyclopropanecarboxylic acid cyano(3-phenoxyphenyl) methyl ester] Cyfluthrin	1.0
69409-94-5	[3-(2,2-Dichloroethenyl)-2,2-dimethylcyclopropanecarboxylic acid, cyano(4-fluoro-3-phenoxyphenyl) methyl ester] Fluvalinate	1.0
69806-50-4	[N-[2-Chloro-4-(trifluoromethyl)phenyl]DL-valine(+)-cyano(3-phenoxyphenyl)methyl ester] Fluazifop butyl	1.0
71751-41-2	[2-[4-[[5-(Trifluoromethyl)-2-pyridinyl]oxy]phenoxy]propanoic acid, butyl ester] Abamectin [Avermectin B1]	1.0
72178-02-0	Fomesafen	1.0
	[5-(2-Chloro-4-(trifluoromethyl)phenoxy)-N-methylsulfonyl]-2-nitrobenzamide]	

Table II. EPCRA Section 313 Chemical List for Reporting Year 2016

CAS Number	Chemical Name	<i>De minimis</i> % Limit
<i>Arranged by CAS Number</i>		
72490-01-8	Fenoxycarb [[2-(4-Phenoxy phenoxy)ethyl]carbamic acid ethyl ester]	1.0
74051-80-2	Sethoxydim [2-[1-(Ethoxyimino)butyl]-5-[2-(ethylthio)propyl]-3-hydroxyl-2-cyclohexen-1-one]	1.0
76578-14-8	Quizalofop-ethyl [2-[4-[(6-Chloro-2-quinoxalinyloxy]phenoxy]propanoic acid ethyl ester]	1.0
77501-63-4	Lactofen [Benzoic acid, 5-[2-Chloro-4-(trifluoromethyl)phenoxy]-2-nitro-, 2-ethoxy-1-methyl-2-oxoethyl ester]	1.0
82657-04-3	Bifenthrin	1.0
88671-89-0	Myclobutanil [.alpha.-Butyl-.alpha.-(4-chlorophenyl)-1H-1,2,4-triazole-1-propanenitrile]	1.0
90454-18-5	Dichloro-1,1,2-trifluoroethane	1.0
90982-32-4	Chlorimuron ethyl [Ethyl-2-[[[(4-chloro-6-methoxyprimidin-2-yl)amino]carbonyl]amino]sulfonyl]benzoate]	1.0
101200-48-0	Tribenuron methyl [2-[[[(4-Methoxy-6-methyl-1,3,5-triazin-2-yl)methylamino]carbonyl]amino]sulfonyl]benzoic acid methyl ester]	1.0
111512-56-2	1,1-Dichloro-1,2,3,3,3-pentafluoropropane (HCFC-225eb)	1.0
111984-09-9	3,3'-Dimethoxybenzidine hydrochloride (o-Dianisidine hydrochloride)	0.1
127564-92-5	Dichloropentafluoropropane	1.0
128903-21-9	2,2-Dichloro-1,1,1,3,3-pentafluoropropane (HCFC-225aa)	1.0
136013-79-1	1,3-Dichloro-1,1,2,3,3-pentafluoropropane (HCFC-225ea)	1.0

specified, are defined as including any unique chemical substance that contains the named metal (e.g., antimony, nickel, etc.) as part of that chemical's structure.

EPCRA Section 313 chemical categories are subject to the 1% *de minimis* concentration unless the substance involved meets the definition of an OSHA carcinogen in which case the 0.1% *de minimis* concentration applies. The *de minimis* concentration for each category is provided in parentheses. The *de minimis* exemption is not available for PBT chemicals, therefore an asterisk appears where a *de minimis* limit would otherwise appear. However, for purposes of the supplier notification requirement only, such limits are provided in Appendix D.

N010 Antimony Compounds (1.0)

Includes any unique chemical substance that contains antimony as part of that chemical's infrastructure.

N020 Arsenic Compounds (inorganic compounds: 0.1; organic compounds: 1.0)

Includes any unique chemical substance that contains arsenic as part of that chemical's infrastructure.

N040 Barium Compounds (1.0)

Includes any unique chemical substance that contains barium as part of that chemical's infrastructure. This category does not include: Barium sulfate CAS Number 7727-43-7

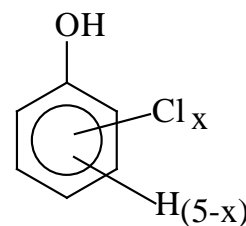
N050 Beryllium Compounds (0.1)

Includes any unique chemical substance that contains beryllium as part of that chemical's infrastructure.

N078 Cadmium Compounds (0.1)

Includes any unique chemical substance that contains cadmium as part of that chemical's infrastructure.

N084 Chlorophenols (0.1)



Where $x = 1$ to 5

c. Chemical Categories

Section 313 requires reporting on the EPCRA Section 313 chemical categories listed below, in addition to the specific EPCRA Section 313 chemicals listed above.

The metal compound categories listed below, unless otherwise

Table II. EPCRA Section 313 Chemical List for Reporting Year 2016

<p>N090 Chromium Compounds (except for chromite ore mined in the Transvaal Region of South Africa and the unreacted ore component of the chromite ore processing residue (COPR). COPR is the solid waste remaining after aqueous extraction of oxidized chromite ore that has been combined with soda ash and kiln roasted at approximately 2,000 °F.) (chromium VI compounds: 0.1; chromium III compounds: 1.0) <i>Includes any unique chemical substance that contains chromium as part of that chemical's infrastructure.</i></p>	<p>N120 Diisocyanates (1.0) This category includes only those chemicals listed below.</p> <table border="0"> <thead> <tr> <th style="text-align: left;">CAS Number</th> <th style="text-align: left;">Chemical Name</th> </tr> </thead> <tbody> <tr> <td>38661-72-2</td> <td>1,3-Bis(methylisocyanate) - cyclohexane</td> </tr> <tr> <td>10347-54-3</td> <td>1,4-Bis(methylisocyanate)- cyclohexane</td> </tr> <tr> <td>2556-36-7</td> <td>1,4-Cyclohexane diisocyanate</td> </tr> <tr> <td>134190-37-7</td> <td>Diethyldiisocyanatobenzene</td> </tr> <tr> <td>4128-73-8</td> <td>4,4'-Diisocyanatodiphenyl ether</td> </tr> <tr> <td>75790-87-3</td> <td>2,4'-Diisocyanatodiphenyl sulfide</td> </tr> <tr> <td>91-93-0</td> <td>3,3'-Dimethoxybenzidine-4,4'- diisocyanate</td> </tr> <tr> <td>91-97-4</td> <td>3,3'-Dimethyl-4,4'-diphenylene diisocyanate</td> </tr> <tr> <td>139-25-3</td> <td>3,3'-Dimethyldiphenylmethane-4,4'- diisocyanate</td> </tr> <tr> <td>822-06-0</td> <td>Hexamethylene-1,6-diisocyanate</td> </tr> <tr> <td>4098-71-9</td> <td>Isophorone diisocyanate</td> </tr> <tr> <td>75790-84-0</td> <td>4-Methyldiphenylmethane-3,4- diisocyanate</td> </tr> <tr> <td>5124-30-1</td> <td>1,1-Methylenebis(4- isocyanatocyclohexane)</td> </tr> <tr> <td>101-68-8</td> <td>Methylenebis(phenylisocyanate) (MDI)</td> </tr> <tr> <td>3173-72-6</td> <td>1,5-Naphthalene diisocyanate</td> </tr> <tr> <td>123-61-5</td> <td>1,3-Phenylene diisocyanate</td> </tr> <tr> <td>104-49-4</td> <td>1,4-Phenylene diisocyanate</td> </tr> <tr> <td>9016-87-9</td> <td>Polymeric diphenylmethane diisocyanate</td> </tr> <tr> <td>16938-22-0</td> <td>2,2,4-Trimethylhexamethylene diisocyanate</td> </tr> <tr> <td>15646-96-5</td> <td>2,4,4-Trimethylhexamethylene diisocyanate</td> </tr> </tbody> </table>	CAS Number	Chemical Name	38661-72-2	1,3-Bis(methylisocyanate) - cyclohexane	10347-54-3	1,4-Bis(methylisocyanate)- cyclohexane	2556-36-7	1,4-Cyclohexane diisocyanate	134190-37-7	Diethyldiisocyanatobenzene	4128-73-8	4,4'-Diisocyanatodiphenyl ether	75790-87-3	2,4'-Diisocyanatodiphenyl sulfide	91-93-0	3,3'-Dimethoxybenzidine-4,4'- diisocyanate	91-97-4	3,3'-Dimethyl-4,4'-diphenylene diisocyanate	139-25-3	3,3'-Dimethyldiphenylmethane-4,4'- diisocyanate	822-06-0	Hexamethylene-1,6-diisocyanate	4098-71-9	Isophorone diisocyanate	75790-84-0	4-Methyldiphenylmethane-3,4- diisocyanate	5124-30-1	1,1-Methylenebis(4- isocyanatocyclohexane)	101-68-8	Methylenebis(phenylisocyanate) (MDI)	3173-72-6	1,5-Naphthalene diisocyanate	123-61-5	1,3-Phenylene diisocyanate	104-49-4	1,4-Phenylene diisocyanate	9016-87-9	Polymeric diphenylmethane diisocyanate	16938-22-0	2,2,4-Trimethylhexamethylene diisocyanate	15646-96-5	2,4,4-Trimethylhexamethylene diisocyanate
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<p>N096 Cobalt Compounds (inorganic compounds: 0.1; organic compounds: 1.0) <i>Includes any unique chemical substance that contains cobalt as part of that chemical's infrastructure.</i></p>																																											
<p>N100 Copper Compounds (1.0) <i>Includes any unique chemical substance that contains copper as part of that chemical's infrastructure. This category does not include copper phthalocyanine compounds that are substituted with only hydrogen, and/or chlorine, and/or bromine.</i></p>																																											
<p>N106 Cyanide Compounds (1.0) <i>X⁺CN⁻ where X = H⁺ or any other group where a formal dissociation can be made. For example KCN or Ca(CN)₂</i></p>																																											

Table II. EPCRA Section 313 Chemical List for Reporting Year 2016

N150 Dioxin and dioxin-like compounds (Manufacturing; and the processing or otherwise use of dioxin and dioxin-like compounds if the dioxin and dioxin-like compounds are present as contaminants in a chemical and if they were created during the manufacturing of that chemical.) (*) This category includes only those chemicals listed below. [Note: When completing the Form R Schedule 1, enter the data for each member of the category in the order they are listed here (i.e., 1-17).]

Box #	CAS Number	Chemical Name
1	1746-01-6	2,3,7,8-Tetrachlorodibenzo- <i>p</i> -dioxin
2	40321-76-4	1,2,3,7,8-Pentachlorodibenzo- <i>p</i> -dioxin
3	39227-28-6	1,2,3,4,7,8-Hexachlorodibenzo- <i>p</i> -dioxin
4	57653-85-7	1,2,3,6,7,8-Hexachlorodibenzo- <i>p</i> -dioxin
5	19408-74-3	1,2,3,7,8,9-Hexachlorodibenzo- <i>p</i> -dioxin
6	35822-46-9	1,2,3,4,6,7,8-Heptachlorodibenzo- <i>p</i> -dioxin
7	3268-87-9	1,2,3,4,6,7,8,9-Octachlorodibenzo- <i>p</i> -dioxin
8	51207-31-9	2,3,7,8-Tetrachlorodibenzofuran
9	57117-41-6	1,2,3,7,8-Pentachlorodibenzofuran
10	57117-31-4	2,3,4,7,8-Pentachlorodibenzofuran
11	70648-26-9	1,2,3,4,7,8-Hexachlorodibenzofuran
12	57117-44-9	1,2,3,6,7,8-Hexachlorodibenzofuran
13	72918-21-9	1,2,3,7,8,9-Hexachlorodibenzofuran
14	60851-34-5	2,3,4,6,7,8-Hexachlorodibenzofuran
15	67562-39-4	1,2,3,4,6,7,8-Heptachlorodibenzofuran
16	55673-89-7	1,2,3,4,7,8,9-Heptachlorodibenzofuran
17	39001-02-0	1,2,3,4,6,7,8,9-Octachlorodibenzofuran

N171 Ethylenebisdithiocarbamic acid, salts and esters EBDCs) (1.0)
Includes any unique chemical substance that contains an EBDC or an EBDC salt as part of that chemical's infrastructure.

N230 Certain Glycol Ethers (1.0)
R - (OCH₂CH₂)_n - OR'
where:
n = 1, 2, or 3;
R = Alkyl C7 or less; or
R = phenyl or alkyl substituted phenyl;
R' = H or alkyl C7 or less; or
OR' consisting of carboxylic acid ester, sulfate, phosphate, nitrate, or sulfonate.

N420 Lead Compounds (*)
Includes any unique chemical substance that contains lead as part of that chemical's infrastructure.

N450 Manganese Compounds (1.0)
Includes any unique chemical substance that contains manganese as part of that chemical's infrastructure.

N458 Mercury Compounds (*)
Includes any unique chemical substance that contains mercury as part of that chemical's infrastructure.

N495 Nickel Compounds (0.1)
Includes any unique chemical substance that contains nickel as part of that chemical's infrastructure.

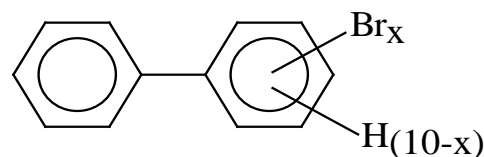
N503 Nicotine and salts (1.0)
Includes any unique chemical substance that contains nicotine or a nicotine salt as part of that chemical's infrastructure.

N511 Nitrate compounds (water dissociable; reportable only when in aqueous solution) (1.0)

N530 Nonylphenol (1.0)
This category includes only those chemicals listed below.

CAS Number	Chemical Name
104-40-5	4-Nonylphenol
11066-49-2	Isononylphenol
25154-52-3	Nonylphenol
26543-97-5	4-Isononylphenol
84852-15-3	4-Nonylphenol, branched
90481-04-2	Nonylphenol, branched

N575 Polybrominated Biphenyls (PBBs) (0.1)

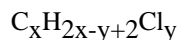


where x = 1 to 10

Table II. EPCRA Section 313 Chemical List for Reporting Year 2016

N583 Polychlorinated alkanes (C₁₀ to C₁₃) (1.0, except for those members of the category that have an average chain length of 12 carbons and contain an average chlorine content of 60% by weight which are subject to the 0.1% *de minimis*)

Includes those chemicals defined by the following formula:



Where x = 10 to 13;

y = 3 to 12; and

where the average chlorine content ranges from 40-70% with the limiting molecular formulas



N590 Polycyclic aromatic compounds (PACs) (*)

This category includes the chemicals listed below.

CAS Number	Chemical Name
56-55-3	Benz(a)anthracene
205-99-2	Benzo(b)fluoranthene
205-82-3	Benzo(j)fluoranthene
207-08-9	Benzo(k)fluoranthene
206-44-0	Benzo(j,k)fluorene
189-55-9	Benzo(r,s,t)pentaphene
218-01-9	Benzo(a)phenanthrene
50-32-8	Benzo(a)pyrene
226-36-8	Dibenz(a,h)acridine
224-42-0	Dibenz(a,j)acridine
53-70-3	Dibenzo(a,h)anthracene
194-59-2	7H-Dibenzo(c,g)carbazole
5385-75-1	Dibenzo(a,e)fluoranthene
192-65-4	Dibenzo(a,e)pyrene
189-64-0	Dibenzo(a,h)pyrene
191-30-0	Dibenzo(a,l)pyrene
57-97-6	7,12-Dimethylbenz(a)-anthracene
42397-64-8	1,6-Dinitropyrene
42397-65-9	1,8-Dinitropyrene
193-39-5	Indeno(1,2,3-cd)pyrene
56-49-5	3-Methylcholanthrene
3697-24-3	5-Methylchrysene
7496-02-8	6-Nitrochrysene
5522-43-0	1-Nitropyrene
57835-92-4	4-Nitropyrene

N725 Selenium Compounds (1.0)

Includes any unique chemical substance that contains selenium as part of that chemical's infrastructure.

N740 Silver Compounds (1.0)

Includes any unique chemical substance that contains silver as part of that chemical's infrastructure.

N746 Strychnine and salts (1.0)

Includes any unique chemical substance that contains strychnine or a strychnine salt as part of that chemical's infrastructure.

N760 Thallium Compounds (1.0)

Includes any unique chemical substance that contains thallium as part of that chemical's infrastructure.

N770 Vanadium compounds (1.0)

Includes any unique chemical substance that contains vanadium as part of that chemical's infrastructure.

N874 Warfarin and salts (1.0)

Includes any unique chemical substance that contains warfarin or a warfarin salt as part of that chemical's infrastructure.

N982 Zinc Compounds (1.0)

Includes any unique chemical substance that contains zinc as part of that chemical's infrastructure.

APPENDIX B

Environmental Management System (EMS) Alternative to Pollution Prevention Plan

This appendix describes the application process for the EMS alternative to Pollution Prevention Plan development and the criteria for remaining in the program once the EMS is approved. The application form attached to this Appendix must be completed and filed by **July 1, 2017**.

Eligibility

A facility required to prepare a Pollution Prevention Plan may meet these requirements through the EMS alternative if:

- 1) It has received and maintains ISO 14000 certification or developed and implemented an EMS for the facility that addresses the criteria below;
- 2) The application for the EMS Alternative is completed and returned to the Environmental Assistance Office (EAO);
- 3) The facility allows EAO to conduct an on-site review of its EMS;
- 4) The facility submits an Annual Progress Report on Pollution Prevention (and applicable fees) due March 31 as required for all facilities subject to planning.

Important Definitions

Environmental Management System (EMS) means the organizational structure, responsibilities, practices, processes and resources for implementing and maintaining environmental management. To be considered for this alternative, EAO has determined that pollution prevention, as defined herein, must be explicitly considered in such a system.

Pollution Prevention means the use of processes or practices that reduce or eliminate the use of hazardous substances and the generation of pollutants or wastes at the source. This contrasts with pollution control which relies on end of pipe treatment. Pollution prevention also includes practices that reduce the use of energy, water or other resources through conservation or more efficient use.

Pollution Prevention Criteria That Must Be Addressed in the EMS To Qualify for the EMS Alternative

The facility must certify in the application form that it has established and maintains an EMS which meets the following criteria. These criteria do not by themselves represent an environmental management system. Rather they are key components of an environmental management system, which, if adequately implemented, will be accepted from a facility in lieu of a Pollution Prevention Plan.

EAO defines pollution prevention in these criteria as the reductions of hazardous substances and pollutants at the source, whereas the ISO standard includes control and treatment options in its definition of prevention of pollution. This distinction is critical, since in order to be accepted as an alternative to a Pollution Prevention Plan, a facility's EMS must address pollution prevention as EAO defines it, in policy and implementation.

Criterion 1: Pollution Prevention Policy

The facility adopts and implements policies that establish pollution prevention as the preferred approach to pollution management and ensure that these policies:

- a) provide for recycling or treatment of hazardous wastes (in that order) where pollution prevention is not technically or economically feasible.
- b) are available to the public upon request.
- c) are actively communicated to employees; and
- d) establish a commitment from top management to implement the policies and to review and evaluate the EMS at periodic intervals.

Criterion 2: Continual Improvement

The facility adopts and implements policies and procedures which ensure ongoing identification, evaluation and implementation of pollution prevention opportunities in all decisions having environmental consequences. Evaluation is defined to include both technical and economic evaluation.

Criterion 3: EMS Implementation - Objectives and Targets

The facility establishes and maintains documented pollution prevention objectives and targets. The objectives and targets should be consistent with pollution prevention criteria and include measurable milestones and time frames for implementation. Objectives and targets should include, whenever possible, both:

- a) identification and implementation of opportunities for reducing hazardous substance use and hazardous waste generation; and
- b) identification and adoption of improvements in the environmental management system which will better allow the facility to identify, evaluate, and implement pollution prevention opportunities in the future.

Criterion 4: EMS Implementation - Roles and Responsibilities

The facility's EMS identifies the responsibilities, resources, and time frame necessary to implement objectives and targets.

Criterion 5: EMS Implementation - Employee Training and Involvement

The facility's EMS provides for employee training in pollution prevention concepts and implementation at each relevant function and level and provides for employee involvement in identification and implementation of pollution prevention opportunities.

Note: "Each relevant function and level" refers to employees whose jobs involve products or activities with a potential to impact the environment.

Criterion 6: Monitoring and Measurement - Periodic Assessment

The facility's EMS provides for a periodic assessment of the implementation of the EMS elements addressed by these criteria and makes this assessment available to EAO for review upon request. The assessment must be conducted at least annually, though it may be conducted more frequently.

The periodic assessment may include an assessment of an entire environmental management system, but must at a minimum address the elements described in these criteria. It must determine that each of these elements is continuing to operate.

Submittal of EMS Alternative Application

The application for the EMS Alternative should be submitted on the application form included in this Appendix. Request for the EMS Alternative should be submitted no later than **July 1, 2017**.

EMS Review by EAO and Withdrawal of Approval

If at any time during the review of an application or review of a facility's EMS it is found by EAO that the facility's EMS does not conform to these criteria, EAO will inform the facility and allow 90 days to correct deficiencies (either through modification of the EMS or submission of a Pollution Prevention Plan).

EMS ALTERNATIVE APPLICATION

The applicant for an EMS Alternative to the Pollution Prevention Plan shall submit the following information and mail to the Environmental Assistance Office. Applications for the EMS Alternative are due on **July 1, 2017**.

Facility Name: _____

Facility Address: _____

Facility Contact: _____

Telephone: _____

E-mail Address: _____

Certification Statement

I certify that this facility has an operating Environmental Management System in place that addresses Criteria 1-6 in Appendix B of the State of Vermont Pollution Prevention Planning Guidance. I understand that this facility's EMS is available for on-site review by staff of the Environmental Assistance Office. I also understand that this facility must submit the Annual Progress Report on Pollution Prevention, due every March 31st.

Signature: _____

Print Name: _____

Title: _____

Date: _____

APPENDIX C

Pollution Prevention Planning Resources

Environmental Assistance Office

Vermont Dept. of Environmental Conservation
1 National Life Dr. – Main 2
Montpelier VT 05620-3804

1-800-974-9559

<http://www.eaovt.org/>

In addition to pollution prevention planning assistance, EAO staff can provide non-regulatory technical assistance on source reduction and recycling opportunities for hazardous and non-hazardous materials, permit assistance, workshops, seminars and confidential compliance assistance.

Online Resources:

Pollution Prevention Resource Exchange (P2Rx)- links to a network of pollution prevention websites

<http://www.p2rx.org/>

P2 Infohouse – searchable online collection of fact sheets, case studies, articles and technical documents related to pollution prevention

<http://infohouse.p2ric.org/>

Toxics Use Reduction Institute at UMASS Lowell – TURI has helped many Massachusetts businesses reduce their use of toxic substance, and find safer alternatives to hazardous chemicals. Their cleaning lab helps manufacturers and others evaluate safer alternatives to hazardous substances used for cleaning, including parts cleaning. Their website has fact sheets, case studies and technical reports on pollution prevention topics. To find information on a specific industry or chemical, try the search feature on their home page:

<http://www.turi.org/>

Washington State Department of Ecology Pollution Prevention Program – Finding Safer Alternatives webpage:

<http://www.ecy.wa.gov/programs/hwtr/P2/SaferAlts.html>

Zero Waste Network Case Study Database – search for P2 and waste reduction case studies by industry type, process type or type of waste reduced. A great place to start.

<http://www.zerowastenetwork.org/success/index.cfm>