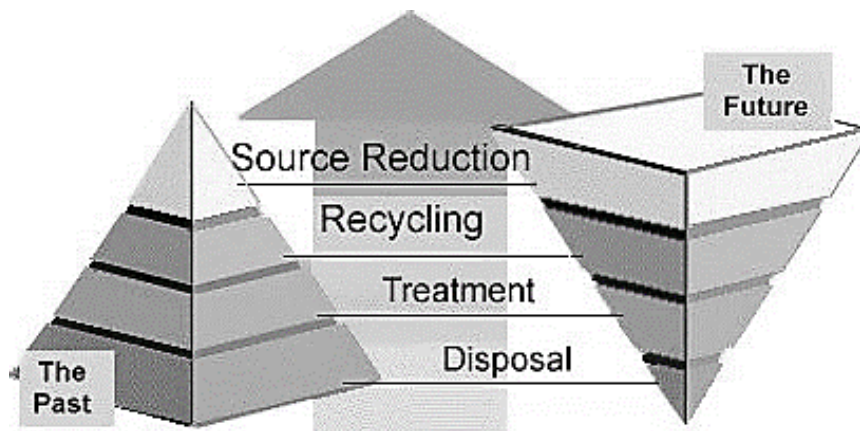


# Toxic Use and Hazardous Waste Reduction (TUHWR) Planning Guide

For Plans Due July 1, 2023



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## Introduction

This resource is Vermont’s written guidance for developing Toxic Use and Hazardous Waste Reduction (TUHWR – formerly referred to as Pollution Prevention, or “P2”) plans for the 2023-2025 planning cycle. **Plans are due July 1, 2023.** For active planners, this will involve updating your existing TUHWR Plan from 2020; new planners will need to develop a TUHWR Plan using this guidance. The requirement for entities that generate hazardous waste and/or use toxic substances in their operations to develop a TUHWR Plan is found in 10 V.S.A. Chapter 159 Sections 6623-6632, passed by the Vermont Legislature in 1991:

<https://legislature.vermont.gov/statutes/chapter/10/159>

This guidance has been designed to walk you through the preparation of your plan, and it refers to a series of “Worksheets” for your TUHWR calculations and reporting. **Once you have completed Worksheets 1-10, you will have developed a complete TUHWR Plan that can be implemented at your facility. The Worksheets are available at the end of this guide and also on the TUHWR website:**

<https://dec.vermont.gov/waste-management/hazardous/toxic-use-hazardous-waste-reduction>

The Hazardous Materials Program is part of the Waste Management and Prevention Division within the Vermont Department of Environmental Conservation (DEC). In addition to administration of TUHWR Planning requirements, staff assist entities with toxic use and hazardous waste reduction strategies. Please contact us with any questions at 802-828-1138.

The TUHWR 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 TUHWR 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.

## Who is Required to Plan?

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

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

A **Class B Generator** is an entity 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 an entity 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./year of a toxic substance; or
- (ii) more than **1,000** lbs./year 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 most current list (from 2021) of toxic substances. This can also be found on the [TUHWR website](#).

### 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 from one medium to another, such as air or water, nor should they create substantial new risks to public health, safety, and/or the environment.

**Hazardous Waste Reduction** is any recycling or other activity applied after hazardous waste is generated to reduce the volume, quantity, and/or toxicity. 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/or the environment than other technically and economically practicable waste reduction alternatives. Toxics use reduction efforts may also reduce hazardous waste by reducing toxicity or hazardous characteristics of waste generated.

## Planning Requirements

**TUHWR Plans** must be developed every three years. The next planning cycle is July 1, 2023, through July 1, 2026. Entities are encouraged to submit a complete TUHWR Plan (i.e., all of the associated Worksheets) for review, however, **entities may choose to submit a “Plan Summary” only. The Plan Summary is comprised of Worksheets 1, 2, and 10, along with a signed Certification of TUHWR Plan Completion form.** The certification form must be signed by an entity official and is found on the next page of this guidance.

Entities are permitted to use their own format to prepare a TUHWR Plan in lieu of the Worksheets contained in this guidance, so long as all the required information is included in the format they use. Entities are also allowed to use the **Environmental Management System (EMS) Alternative**. The EMS Alternative must address TUHWR as well as environmental compliance. Refer to **Appendix B** for details about using the EMS alternative.

**Program staff will review all TUHWR Plans and Plan Summaries.** If a plan is determined to be deficient, the entity will be given between 90 and 180 days to correct the deficiencies. Staff will be available to assist the entity 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 Progress Report on progress made in achieving reduction goals established in the Plan. Reports are due March 31 of each year for the previous year’s toxics use and hazardous waste reduction information. Information contained in annual reports is a public record and may be assembled to provide information for the Vermont Legislature and others on TUHWR. There is a fee associated with the annual progress report. Reporting forms and information about calculating and paying fees are all available on the [TUHWR website](#).

### Summary of Options for Fulfillment of TUHWR Planning Requirement

- **Complete TUHWR Plan as described in this guidance** –Submit completed Worksheets 1-10 (and any attachments) and a signed Certification of TUHWR Plan Completion.
- **Plan Summary only** – Prepare a plan including all Worksheets or equivalent information (if using own format). Only submit Worksheets 1, 2, 10, along with a signed Certification of TUHWR Plan Completion.
- **Complete Plan using own format** - Submit information equivalent to that found in Worksheets 1-10 and a signed Certification of TUHWR Plan Completion
- **Environmental Management System (EMS) Alternative** – Submit an EMS Alternative Application and Certification. See **Appendix B** for more details on the EMS Alternative.

# Overview of Planning Worksheets

The approach to developing a TUHWR Plan should be similar to that used to develop any other entity 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:

## Summary of Worksheets

### **Management Commitment**

**Worksheets 1-3** are designed to help establish a framework for completing a comprehensive and ongoing 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 statute, the focus is on identifying toxic substances and hazardous wastes and determining which processes or practices that 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 goals. Some facilities have chosen to expand their plans to include concepts 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 and Evaluation**

**Worksheets 7-9** will help identify and evaluate TUHWR opportunities for each of your processes. Many entities have found that they can lessen their environmental impact by making chemical substitutions, upgrading equipment, or 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 and Tracking Progress**

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

# Guidance for Worksheet 1 – Facility Information

(If submitting a Plan Summary in lieu of a complete TUHWR Plan, this is one of three Worksheets that must be submitted along with a Certification of TUHWR Plan Completion form.)

## 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 are 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 Hazardous Materials Program at 802-828-1138 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.

**Unit of Product and Production Levels.** The Unit of Product is some measure of output – such as the number of units manufactured, square footage or weight of product, etc. – 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 toxic 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. For the previous calendar year, state the production or activity level(s) for your facility.

## Guidance for Worksheet 2 – Management Policies

(If submitting a Plan Summary in lieu of a complete TUHWR Plan, this is one of three Worksheets that must be submitted along with a Certification of TUHWR Plan Completion form.)

### **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 entity 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 entity policies that encourage TUHWR, (e.g., purchasing restrictions) as applicable.

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

Employee involvement is vital to the successful implementation of TUHWR initiatives. Consider forming a TUHWR team if you haven't already done so. It is a good practice to involve personnel that work in areas such as purchasing, production, inventory control, engineering, and maintenance.

Indicate on Worksheet 2 how employees are made aware of your entity's management policy. For example, note if your policy is posted in a conspicuous place, distributed via facility-wide email, discussed during staff meetings, etc.

### **Tips for Involving Employees in TUHWR Planning and Implementation:**

- Include TUHWR as a part of new employee orientation.
- Encourage two-way communication between employees and management.
- Make TUHWR a topic for monthly or quarterly health & safety meetings.
- Post information about TUHWR 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 TUHWR projects.
- Include TUHWR in continuous improvement (e.g., Lean) efforts.



## Guidance for Worksheet 3 – Ongoing TUHWR Activities

Please use Worksheet 3 to describe any TUHWR initiatives that your facility is implementing or has already completed. This information is important, because:

- It provides valuable information regarding past accomplishments and helps show long-term commitment to TUHWR. It can also show progress made towards TUHWR.
- It can be used to help track past efforts and whether they have been effective.
- Understanding past successes and failures 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 (e.g., lower costs of mature technology or higher costs of waste disposal).
- It provides useful information to Program staff during the plan review process.

## 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.

**Please Note: entities must choose one approach out of the two options** to identify toxic substances, and Annual Progress Reports must be completed using the selected approach **for the duration of the plan cycle (2023-2026)**. The two approaches are as follows:

- **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** or the [TUHWR website](#) for the list of toxic substances). The term “product” refers to inputs to the manufacturing process, or constituent(s) found in or used on the final product produced by the facility. For some entities, focusing on products containing the greatest percentage of toxic substances may help in prioritizing reduction efforts.
- **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 entities 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

## 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.)**

Please indicate all processes associated with a given waste stream on this Worksheet. 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 Class 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. Also note that 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 not considered routine, and therefore are *not* included in monthly or annual generation totals for planning purposes. Also note that 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. Please call the Hazardous Materials Program at 802-828-1138 if you believe you have a non-routine waste stream or if you have questions about whether your waste should be exempt from planning requirements.

## Guidance for Worksheet 6 – Process Description

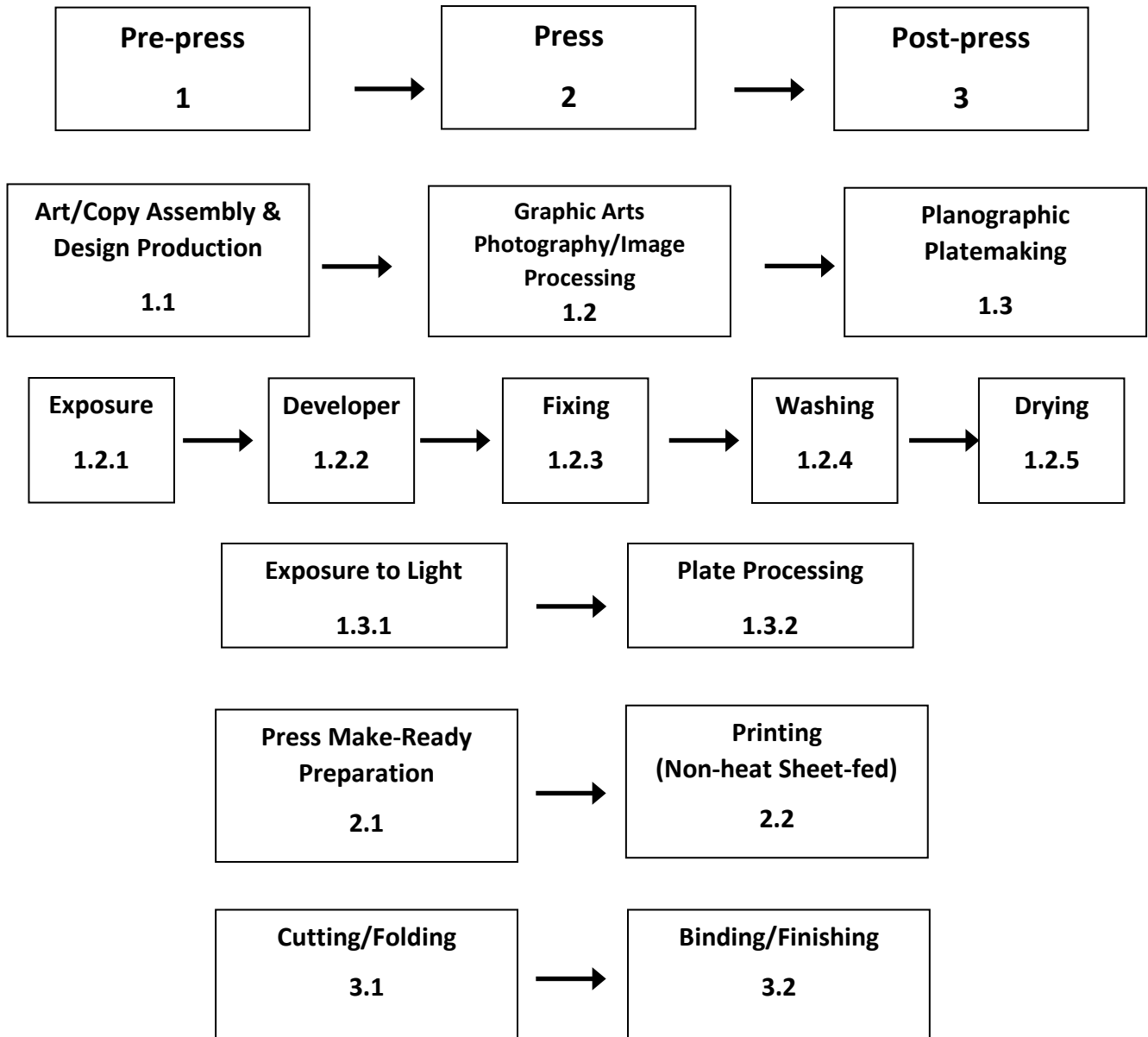
Understanding how your current processes work is crucial to TUHWR. Use Worksheet 6 to describe each process listed on Worksheets 4 and 5. Be sure to identify all individual processes where toxics are used and/or that generate hazardous waste. Include raw material inputs and process losses. A good description 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 also include information about process equipment, including date of installation, maintenance requirements related to the generation of hazardous waste, and the presence of existing pollution control technology. It is often beneficial to identify recycling or disposal methods for each hazardous waste that is generated. Please attach an additional sheet if necessary.

A best practice for properly establishing the relationships between work steps is through process mapping. A process map is a schematic description of a workflow. 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.

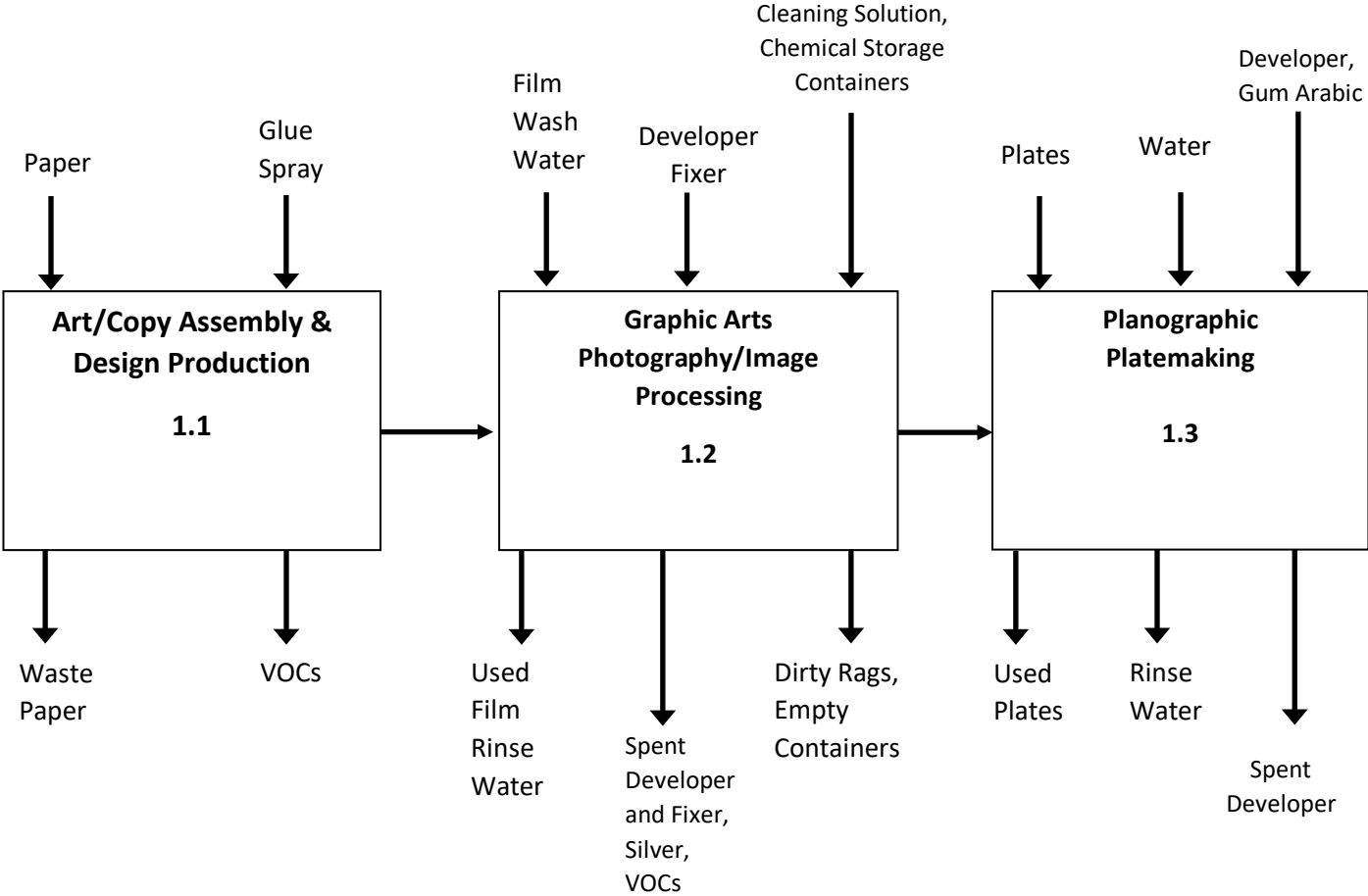
Process maps can show a key process of your facility, such as parts manufacturing, or an ancillary or intermittent process, such as cleaning tanks. In a large facility, you may need several sets of process maps to cover all activities. Developing accurate process maps should involve input from more than one person. Ideally, personnel from engineering, maintenance, environmental compliance, and other areas should be involved. Mapping provides structure to how you seek data, how you turn it into information, and how you can use it to reach conclusions about TUHWR. It leads to a better understanding of the *functionality* of each process.

# Examples of Process Maps

## Process Map 1 – Offset Lithographic Printing Operation



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



## Guidance for Worksheet 7 – Identifying Opportunities

The search for TUHWR 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 can respond to the singular characteristics of the process as well as the culture of the entity. There are many techniques that are useful for generating ideas, from specific analysis of root causes 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. One way is to methodically brainstorm a few ideas for each reduction technique for each toxic or hazardous waste targeted for reduction. We have a brainstorming worksheet (this is not one of the 10 Worksheets referred to in this guidance) on the [TUHWR website](#) that includes definitions and examples of each technique.

Use Worksheet 7 to show any opportunities that will be evaluated during the planning cycle. The overriding concept in evaluating TUHWR 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 TUHWR. There are many good sources of information about TUHWR opportunities that you may already use, including vendors, trade association articles, industry magazines, workshops, and trade shows. You should also refer to the resources outlined in **Appendix C**.

### **Examples of Source Reduction Strategies**

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

**Process Modernization:** install high-performance nozzles or applicators to conserve coatings and reduce the number of defects.

**Improved Operation and Maintenance:** adopt written Standard Operating Procedures for cleaning equipment to minimize solvent use, schedule production to reduce equipment cleaning.

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

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

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

## Guidance for Worksheet 8 - Technical Feasibility Analysis

Opportunities identified on Worksheet 7 must be evaluated to determine if they are technically feasible. This is the next step for your workgroup. Worksheet 8 provides a general checklist of common issues that often arise in assessing technical feasibility. Use the "Comments" space under each set of questions to elaborate on any of the answers given. You may also 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 opportunities requiring further investigation on Worksheet 10. For opportunities that you know make technical and economic sense to implement, it is appropriate to indicate this on the bottom of Worksheet 8 and on Worksheet 10 in the Selected Opportunities section.

## Guidance for Worksheet 9 – Financial Analysis

Once a TUHWR opportunity is determined to be technically feasible, it must be determined whether it is economically viable. Vermont's TUHWR statute only requires entities 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.

The depth of your economic analysis should be based on the extent it is needed. For example, if the avoidance of hazardous waste disposal costs (usually relatively easy to obtain) is enough to economically justify investment in a TUHWR measure, there may not be any reason to do an extensive 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 contact the Program for more information on the financial analysis of TUHWR 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 lifetime 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 TUHWR 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 TUHWR 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 TUHWR project might add to an entity 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 entities, 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 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 (i.e., in today's dollars). Cash flows in the distant future are discounted much more than those in the near future. 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 TUHWR project may be augmented by the evaluation of "qualitative" factors. These can be difficult to quantify but are nonetheless important. Examples of less tangible costs that may be considered include improved public image, market share (consumer acceptance), avoided financial or environmental liability, improved worker health and safety, and increased employee retention and morale.



## Example Financial Analysis

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 entity 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 \$3,000, will reduce the purchase of virgin thinner by 90%.

Distillation of Used Thinner	Current Cost	New Process Cost	Differential (Cost) or Savings
<b>OPERATING COSTS</b>			
Raw Materials Thinner: 10 drums/year to 1 drum/year @ \$275/drum	\$2,750	\$275	\$2,475
Waste Disposal 6 drums/year @ \$108/drum vs. 1 drum still bottoms @ \$375	\$650	\$375	\$275
Regulatory Compliance manifesting reduced from 4 to 1 times/year @ 1.5 hours x \$30/hour	\$180	\$45	\$135
Utilities operate still 8 hours/week x 4 kw/week = 32 kw/week or 1,664 kw/year 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
<b>Net Operating Cash Flow in Year 1 = sum of all operating cost differentials</b>			\$3,652
<b>CAPITAL COSTS (one-time expenditures)</b>			
Equipment Purchase		\$3,000	(\$3,000)
Installation & Start-up		\$340	(\$340)
<b>Total Capital Costs</b>			(\$3,340)

**Payback Period** = Total Capital Costs ÷ Net Operating Cash Flow

$$= \$3,340 \div \$3,652 = 0.9 \text{ years}$$

$$= 0.9 \text{ years} \times 12 \text{ months} = \mathbf{10.8 \text{ months}}$$

## Guidance for Worksheet 10 - Performance Goals

**(If submitting a Plan Summary in lieu of a complete TUHWR Plan, this is one of three worksheets that must be submitted along with a Certification of TUHWR Plan Completion form.)**

Vermont's TUHWR statute requires that entities 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.

# Appendices

**Appendix A** - List of Toxic Substances

**Appendix B** - Environmental Management System (EMS) Alternative

**Appendix C** - TUHWR Planning Resources

## Table II. EPCRA Section 313 Chemical List For Reporting Year 2021 (including Toxic Chemical Categories)

The EPCRA Section 313 chemicals are listed beginning on page II-4. The chemicals are broken out into five sections, sections a and b list the individually-listed non-PFAS chemicals alphabetically and then CASRN order. Section c lists the chemical categories. Sections d and e list the PFAS chemicals alphabetically and then CASRN order.

See section B.3.d of the instructions for more information on the *de minimis* % limits listed below. The *de minimis* concentration for each individually listed chemical is listed under the “*De minimis* % Limit” column; for chemical categories, the *de minimis* level is in parenthesis. The *de minimis* exemption is not available for chemicals of special concern, therefore an asterisk (\*) appears where a *de minimis* limit would otherwise appear. However, for purposes of the supplier notification requirement only, such limits are listed in the Supplier Notification Requirements guidance document and can be found here: [https://ofmpub.epa.gov/apex/guideme\\_ext/f?p=guideme:gd-title:::::title:supplier\\_notification](https://ofmpub.epa.gov/apex/guideme_ext/f?p=guideme:gd-title:::::title:supplier_notification).

**Note:** Chemicals may be added to or deleted from the list. The TRI website (<https://www.epa.gov/toxics-release-inventory-tri-program/tri-listed-chemicals>) provides up-to-date information on the status of changes.

### Chemical Qualifiers

Certain EPCRA Section 313 chemicals listed in Table II have parenthetic “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, and/or otherwise used in the specific form(s) listed below:

Chemical/ Chemical Category	CASRN/ Category Code	Qualifier
<b>Aluminum</b> (fume or dust)	7429-90-5	<b><u>Only</u></b> if it is a fume or dust form.
<b>Aluminum oxide</b> (fibrous forms)	1344-28-1	<b><u>Only</u></b> if it is a fibrous form.
<b>Ammonia</b> (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	<b><u>Only</u></b> 10% of aqueous forms. 100% of anhydrous forms.
<b>Asbestos</b> (friable)	1332-21-4	<b><u>Only</u></b> if it is a friable form.
<b>Hydrochloric acid</b> (acid aerosols including mists, vapors, gas, fog, and other airborne forms of any particle size)	7647-01-0	<b><u>Only</u></b> if it is an aerosol form as defined.
<b>Nitrate compounds</b> (water dissociable; reportable only when in aqueous solution)	N511	<b><u>Only</u></b> if in aqueous solution
<b>Phosphorus</b> (yellow or white)	12185-10-3	<b><u>Only</u></b> if it is a yellow or white form.
<b>Sulfuric acid</b> (acid aerosols including mists, vapors, gas, fog, and other airborne forms of any particle size)	7664-93-9	<b><u>Only</u></b> if it is an aerosol form as defined.
<b>Vanadium</b> (except when contained in an alloy)	7440-62-2	<b><u>Except</u></b> if it is contained in an alloy.
<b>Zinc</b> (fume or dust)	7440-66-6	<b><u>Only</u></b> 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.

*Table II. EPCRA Section 313 Chemical List for Reporting Year 2021*

Chemical/ Chemical Category	CASRN/ Category Code	Qualifier
<b>Dioxin and dioxin-like compounds</b> (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.)	N150	<b>Only</b> 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.
<b>Isopropyl alcohol</b> (only persons who manufacture by the strong acid process are subject, no supplier notification)	67-63-0	<b>Only</b> 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.
<b>Saccharin</b> (only persons who manufacture are subject, no supplier notification)	81-07-2	<b>Only</b> 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 processors or 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 thresholds, releases, and other waste management quantities, all anhydrous ammonia is included but only 10% of total

*Table II. EPCRA Section 313 Chemical List for Reporting Year 2021*

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 aerosols generated from aqueous solutions are.

**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.

### Chemical Categories with Exemptions

The four EPCRA section 313 chemical categories listed below have specific chemical exemptions.

Chemical Category	Category Code	Exempted Chemical(s)
Barium Compounds	N040	Barium sulfate (7727-43-7)
Chromium Compounds	N090	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.
Copper Compounds	N100	Copper phthalocyanine compounds that are substituted with only hydrogen, and/or chlorine, and/or bromine.
Cyanide Compounds	N106	Hydrogen cyanide (74-90-8) <sup>1</sup>

<sup>1</sup> Hydrogen cyanide is an individually-listed chemical

Table II. EPCRA Section 313 Chemical List for Reporting Year 2021

**Notes for sections a and b of the following list of TRI chemicals:**

“Color Index” indicated by “C.I.”

\* There are no *de minimis* % limit for chemicals of special concern, except for supplier notification purposes (see: [https://ofmpub.epa.gov/apex/guideme\\_ext/f?p=guideme:gd-title:::::title:supplier\\_notification](https://ofmpub.epa.gov/apex/guideme_ext/f?p=guideme:gd-title:::::title:supplier_notification)).

The *de minimis* % limit for lead when contained in stainless steel, brass or bronze alloys is 0.1%. For lead not in such alloys there is no *de minimis* level.

**a. Individually-Listed Toxic Chemicals Arranged Alphabetically**

CASRN	Chemical Name	<i>De minimis</i> % Limit
71751-41-2	Abamectin	1
30560-19-1	Acephate	1
75-07-0	Acetaldehyde	0.1
60-35-5	Acetamide	0.1
75-05-8	Acetonitrile	1
98-86-2	Acetophenone	1
53-96-3	2-Acetylaminofluorene	0.1
62476-59-9	Acifluorfen, sodium salt	1
107-02-8	Acrolein	1
79-06-1	Acrylamide	0.1
79-10-7	Acrylic acid	1
107-13-1	Acrylonitrile	0.1
15972-60-8	Alachlor	1
116-06-3	Aldicarb	1
309-00-2	Aldrin	*
28434-00-6	<i>d-trans</i> -Allethrin	1
107-18-6	Allyl alcohol	1
107-11-9	Allylamine	1
107-05-1	Allyl chloride	1
7429-90-5	Aluminum (fume or dust)	1
1344-28-1	Aluminum oxide (fibrous forms) (Alumina)	1
20859-73-8	Aluminum phosphide	1
834-12-8	Ametryn	1
117-79-3	2-Aminoanthraquinone	0.1
60-09-3	4-Aminoazobenzene	0.1
92-67-1	4-Aminobiphenyl	0.1
81-49-2	1-Amino-2,4-dibromoanthraquinone	0.1
82-28-0	1-Amino-2-methylantraquinone	0.1
33089-61-1	Amitraz	1
61-82-5	Amitrole	0.1

CASRN	Chemical Name	<i>De minimis</i> % Limit
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
101-05-3	Anilazine	1
62-53-3	Aniline	1
90-04-0	<i>o</i> -Anisidine	0.1
104-94-9	<i>p</i> -Anisidine	1
134-29-2	<i>o</i> -Anisidine hydrochloride	0.1
120-12-7	Anthracene	1
7440-36-0	Antimony	1
7440-38-2	Arsenic	0.1
1332-21-4	Asbestos (friable)	0.1
1912-24-9	Atrazine	1
7440-39-3	Barium	1
22781-23-3	Bendiocarb	1
1861-40-1	Benfluralin	1
17804-35-2	Benomyl	1
98-87-3	Benzal chloride	1
55-21-0	Benzamide	1
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
94-36-0	Benzoyl peroxide	1
100-44-7	Benzyl chloride	1
7440-41-7	Beryllium	0.1
82657-04-3	Bifenthrin	1
92-52-4	Biphenyl	1
3296-90-0	2,2-Bis(bromomethyl)-1,3-propanediol	0.1
111-91-1	Bis(2-chloroethoxy)methane	1
111-44-4	Bis(2-chloroethyl) ether	1
542-88-1	Bis(chloromethyl) ether	0.1
108-60-1	Bis(2-chloro-1-methylethyl) ether	1
56-35-9	Bis(tributyltin) oxide	1
10294-34-5	Boron trichloride	1
7637-07-2	Boron trifluoride	1
314-40-9	Bromacil	1
53404-19-6	Bromacil, lithium salt	1
7726-95-6	Bromine	1
35691-65-7	1-Bromo-1-(bromomethyl)-1,3-propanedicarbonitrile	1
353-59-3	Bromochlorodifluoromethane (Halon 1211)	1
75-25-2	Bromoform (Tribromomethane)	1

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CASRN	Chemical Name	De minimis % Limit
74-83-9	Bromomethane (Methyl bromide)	1
106-94-5	1-Bromopropane	0.1
75-63-8	Bromotrifluoromethane (Halon 1301)	1
1689-84-5	Bromoxynil	1
1689-99-2	Bromoxynil octanoate	1
357-57-3	Brucine	1
106-99-0	1,3-Butadiene	0.1
141-32-2	Butyl acrylate	1
71-36-3	<i>n</i> -Butyl alcohol (1-Butanol)	1
78-92-2	<i>sec</i> -Butyl alcohol (2-Butanol)	1
75-65-0	<i>tert</i> -Butyl alcohol (tert-Butanol)	1
106-88-7	1,2-Butylene oxide	0.1
123-72-8	Butyraldehyde	1
4680-78-8	C.I. Acid Green 3	1
6459-94-5	C.I. Acid Red 114	0.1
569-64-2	C.I. Basic Green 4 (Malachite green)	1
989-38-8	C.I. Basic Red 1	1
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
16071-86-6	C.I. Direct Brown 95	0.1
2832-40-8	C.I. Disperse Yellow 3	1
3761-53-3	C.I. Food Red 5	0.1
81-88-9	C.I. Food Red 15 (Rhodamine B)	1
3118-97-6	C.I. Solvent Orange 7	1
97-56-3	C.I. Solvent Yellow 3	0.1
842-07-9	C.I. Solvent Yellow 14	1
492-80-8	C.I. Solvent Yellow 34 (Auramine)	0.1
128-66-5	C.I. Vat Yellow 4	1
7440-43-9	Cadmium	0.1
156-62-7	Calcium cyanamide	1
133-06-2	Captan	1
63-25-2	Carbaryl	1
1563-66-2	Carbofuran	1
75-15-0	Carbon disulfide	1
56-23-5	Carbon tetrachloride	0.1
463-58-1	Carbonyl sulfide	1
5234-68-4	Carboxin	1
120-80-9	Catechol	0.1
2439-01-2	Chinomethionate	1
133-90-4	Chloramben	1
57-74-9	Chlordane	*
115-28-6	Chlorendic acid	0.1
90982-32-4	Chlorimuron-ethyl	1
7782-50-5	Chlorine	1
10049-04-4	Chlorine dioxide	1
79-11-8	Chloroacetic acid	1

CASRN	Chemical Name	De minimis % Limit
532-27-4	2-Chloroacetophenone	1
4080-31-3	1-(3-Chloroallyl)-3,5,7-triaza-1-azoniaadamantane chloride	1
106-47-8	<i>p</i> -Chloroaniline	0.1
108-90-7	Chlorobenzene	1
510-15-6	Chlorobenzilate	1
75-68-3	1-Chloro-1,1-difluoroethane (HCFC-142b)	1
75-45-6	Chlorodifluoromethane (HCFC-22)	1
75-00-3	Chloroethane	1
67-66-3	Chloroform	0.1
74-87-3	Chloromethane	1
107-30-2	Chloromethyl methyl ether	0.1
563-47-3	3-Chloro-2-methyl-1-propene	0.1
104-12-1	<i>p</i> -Chlorophenyl isocyanate	1
76-06-2	Chloropicrin	1
126-99-8	Chloroprene	0.1
542-76-7	3-Chloropropionitrile	1
63938-10-3	Chlorotetrafluoroethane	1
354-25-6	1-Chloro-1,1,2,2-tetrafluoroethane (HCFC-124a)	1
2837-89-0	2-Chloro-1,1,1,2-tetrafluoroethane (HCFC-124)	1
1897-45-6	Chlorothalonil	0.1
95-69-2	<i>p</i> -Chloro- <i>o</i> -toluidine (4-Chloro-2-methylaniline)	0.1
75-88-7	2-Chloro-1,1,1-trifluoroethane (HCFC-133a)	1
75-72-9	Chlorotrifluoromethane (CFC-13)	1
460-35-5	3-Chloro-1,1,1-trifluoropropane (HCFC-253fb)	1
5598-13-0	Chlorpyrifos-methyl	1
64902-72-3	Chlorsulfuron	1
7440-47-3	Chromium	1
7440-48-4	Cobalt	0.1
7440-50-8	Copper	1
8001-58-9	Creosote	0.1
120-71-8	<i>p</i> -Cresidine	0.1
108-39-4	<i>m</i> -Cresol	1
95-48-7	<i>o</i> -Cresol	1
106-44-5	<i>p</i> -Cresol	1
1319-77-3	Cresol (mixed isomers)	1
4170-30-3	Crotonaldehyde	1
98-82-8	Cumene	0.1
80-15-9	Cumene hydroperoxide	1
135-20-6	Cupferron	0.1
21725-46-2	Cyanazine	1
1134-23-2	Cycloate	1
110-82-7	Cyclohexane	1



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CASRN	Chemical Name	De minimis % Limit
108-93-0	Cyclohexanol	1
68359-37-5	Cyfluthrin	1
68085-85-8	Cyhalothrin	1
94-75-7	2,4-D	0.1
533-74-4	Dazomet	1
53404-60-7	Dazomet, sodium salt	1
94-82-6	2,4-DB	1
1929-73-3	2,4-D 2-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
13684-56-5	Desmedipham	1
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	1
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 (2,4-Toluenediamine)	0.1
25376-45-8	Diaminotoluene (mixed isomers) (Toluenediamine)	0.1
333-41-5	Diazinon	0.1
334-88-3	Diazomethane	1
132-64-9	Dibenzofuran	1
96-12-8	1,2-Dibromo-3-chloropropane	0.1
106-93-4	1,2-Dibromoethane (Ethylene dibromide)	0.1
124-73-2	Dibromotetrafluoroethane (1,2-Dibromo-1,1,2,2-tetrafluoroethane)	1
84-74-2	Dibutyl phthalate	1
1918-00-9	Dicamba	1
99-30-9	Dichloran	1
95-50-1	1,2-Dichlorobenzene ( <i>o</i> -Dichlorobenzene)	1
541-73-1	1,3-Dichlorobenzene ( <i>m</i> -Dichlorobenzene)	1
106-46-7	1,4-Dichlorobenzene ( <i>p</i> -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
110-57-6	<i>trans</i> -1,4-Dichloro-2-butene	1
1649-08-7	1,2-Dichloro-1,1-difluoroethane (HCFC-132b)	1

CASRN	Chemical Name	De minimis % Limit
75-71-8	Dichlorodifluoromethane (CFC-12)	1
107-06-2	1,2-Dichloroethane	0.1
540-59-0	1,2-Dichloroethylene	1
1717-00-6	1,1-Dichloro-1-fluoroethane (HCFC-141b)	1
75-43-4	Dichlorofluoromethane (HCFC-21)	1
75-09-2	Dichloromethane (Methylene chloride)	0.1
127564-92-5	Dichloropentafluoropropane	1
13474-88-9	1,1-Dichloro-1,2,2,3,3-pentafluoropropane (HCFC-225cc)	1
111512-56-2	1,1-Dichloro-1,2,3,3,3-pentafluoropropane (HCFC-225eb)	1
422-44-6	1,2-Dichloro-1,1,2,3,3-pentafluoropropane (HCFC-225bb)	1
431-86-7	1,2-Dichloro-1,1,3,3,3-pentafluoropropane (HCFC-225da)	1
507-55-1	1,3-Dichloro-1,1,2,2,3-pentafluoropropane (HCFC-225cb)	1
136013-79-1	1,3-Dichloro-1,1,2,3,3-pentafluoropropane (HCFC-225ea)	1
128903-21-9	2,2-Dichloro-1,1,1,3,3-pentafluoropropane (HCFC-225aa)	1
422-48-0	2,3-Dichloro-1,1,1,2,3-pentafluoropropane (HCFC-225ba)	1
422-56-0	3,3-Dichloro-1,1,1,2,2-pentafluoropropane (HCFC-225ca)	1
97-23-4	Dichlorophene	1
120-83-2	2,4-Dichlorophenol	1
78-87-5	1,2-Dichloropropane	0.1
10061-02-6	<i>trans</i> -1,3-Dichloropropene	0.1
78-88-6	2,3-Dichloropropene	1
542-75-6	1,3-Dichloropropylene (1,3-Dichloropropene)	0.1
76-14-2	Dichlorotetrafluoroethane (CFC-114)	1
34077-87-7	Dichlorotrifluoroethane	1
90454-18-5	Dichloro-1,1,2-trifluoroethane	1
812-04-4	1,1-Dichloro-1,2,2-trifluoroethane (HCFC-123b)	1
354-23-4	1,2-Dichloro-1,1,2-trifluoroethane (HCFC-123a)	1

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CASRN	Chemical Name	De minimis % Limit	CASRN	Chemical Name	De minimis % Limit
306-83-2	2,2-Dichloro-1,1,1-trifluoroethane (HCFC-123)	1	136-45-8	Dipropyl isocinchomerate	1
62-73-7	Dichlorvos	0.1	138-93-2	Disodium cyanodithioimidocarbonate	1
51338-27-3	Diclofop methyl	1	94-11-1	2,4-D isopropyl ester	0.1
115-32-2	Dicofol	1	541-53-7	2,4-Dithiobiuret (Dithiobiuret)	1
77-73-6	Dicyclopentadiene	1	330-54-1	Diuron	1
1464-53-5	Diepoxybutane	0.1	2439-10-3	Dodine	1
111-42-2	Diethanolamine	1	120-36-5	2,4-DP (Dichlorprop)	0.1
38727-55-8	Diethyl ethyl	1	1320-18-9	2,4-D propylene glycol butyl ether ester (2,4-D 2-butoxymethylethyl ester)	0.1
117-81-7	Di(2-ethylhexyl) phthalate	0.1	2702-72-9	2,4-D sodium salt	0.1
64-67-5	Diethyl sulfate	0.1	106-89-8	Epichlorohydrin	0.1
35367-38-5	Diflubenzuron	1	13194-48-4	Ethoprop	1
101-90-6	Diglycidyl resorcinol ether	0.1	110-80-5	2-Ethoxyethanol	1
94-58-6	Dihydrosafrole	0.1	140-88-5	Ethyl acrylate	0.1
55290-64-7	Dimethipin	1	100-41-4	Ethylbenzene	0.1
60-51-5	Dimethoate	1	541-41-3	Ethyl chloroformate	1
119-90-4	3,3'-Dimethoxybenzidine	0.1	759-94-4	S-Ethyl dipropylthiocarbamate	1
20325-40-0	3,3'-Dimethoxybenzidine dihydrochloride	0.1	74-85-1	Ethylene	1
111984-09-9	3,3'-Dimethoxybenzidine monohydrochloride	0.1	107-21-1	Ethylene glycol	1
124-40-3	Dimethylamine	1	151-56-4	Ethyleneimine (Aziridine)	0.1
2300-66-5	Dimethylamine dicamba	1	75-21-8	Ethylene oxide	0.1
60-11-7	4-Dimethylaminoazobenzene	0.1	96-45-7	Ethylene thiourea	0.1
121-69-7	N,N-Dimethylaniline	1	75-34-3	Ethylidene dichloride (1,1-Dichloroethane)	1
119-93-7	3,3'-Dimethylbenzidine	0.1	52-85-7	Famphur	1
612-82-8	3,3'-Dimethylbenzidine dihydrochloride	0.1	60168-88-9	Fenarimol	1
41766-75-0	3,3'-Dimethylbenzidine dihydrofluoride	0.1	13356-08-6	Fenbutatin oxide	1
79-44-7	Dimethylcarbamoyl chloride	0.1	66441-23-4	Fenoxaprop-ethyl	1
2524-03-0	Dimethyl chlorothiophosphate	1	72490-01-8	Fenoxycarb	1
68-12-2	N,N-Dimethylformamide	0.1	39515-41-8	Fenpropathrin	1
57-14-7	1,1-Dimethylhydrazine	0.1	55-38-9	Fenthion	1
105-67-9	2,4-Dimethylphenol	1	51630-58-1	Fenvalerate	1
131-11-3	Dimethyl phthalate	1	14484-64-1	Ferbam	1
77-78-1	Dimethyl sulfate	0.1	69806-50-4	Fluazifop-butyl	1
99-65-0	m-Dinitrobenzene	1	2164-17-2	Fluometuron	1
528-29-0	o-Dinitrobenzene	1	7782-41-4	Fluorine	1
100-25-4	p-Dinitrobenzene	1	51-21-8	Fluorouracil (5-Fluorouracil)	1
88-85-7	Dinitrobutyl phenol (Dinoseb)	1	69409-94-5	Fluvalinate	1
534-52-1	4,6-Dinitro-o-cresol	1	133-07-3	Folpet	1
51-28-5	2,4-Dinitrophenol	1	72178-02-0	Fomesafen	1
121-14-2	2,4-Dinitrotoluene	0.1	50-00-0	Formaldehyde	0.1
606-20-2	2,6-Dinitrotoluene	0.1	64-18-6	Formic acid	1
25321-14-6	Dinitrotoluene (mixed isomers)	1	76-13-1	Freon 113 (CFC-113)	1
39300-45-3	Dinocap	1	110-00-9	Furan	0.1
123-91-1	1,4-Dioxane	0.1	556-52-5	Glycidol	0.1
957-51-7	Diphenamid	1	76-44-8	Heptachlor	*
122-39-4	Diphenylamine	1	118-74-1	Hexachlorobenzene	*
122-66-7	1,2-Diphenylhydrazine	0.1	87-68-3	Hexachloro-1,3-butadiene (Hexachlorobutadiene)	1
2164-07-0	Dipotassium endothall	1	319-84-6	alpha-Hexachlorocyclohexane	0.1
			77-47-4	Hexachlorocyclopentadiene	1

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CASRN	Chemical Name	De minimis % Limit	CASRN	Chemical Name	De minimis % Limit
67-72-1	Hexachloroethane	0.1	67-56-1	Methanol	1
1335-87-1	Hexachloronaphthalene	1	20354-26-1	Methazole	1
70-30-4	Hexachlorophene	1	2032-65-7	Methiocarb	1
680-31-9	Hexamethylphosphoramide	0.1	94-74-6	Methoxone (MCPA)	0.1
110-54-3	<i>n</i> -Hexane (Hexane)	1	3653-48-3	Methoxone sodium salt	0.1
51235-04-2	Hexazinone	1	72-43-5	Methoxychlor	*
67485-29-4	Hydramethylnon	1	109-86-4	2-Methoxyethanol	1
302-01-2	Hydrazine	0.1	96-33-3	Methyl acrylate	0.1
10034-93-2	Hydrazine sulfate (1:1)	0.1	1634-04-4	Methyl tert-butyl ether	1
7647-01-0	Hydrochloric acid (acid aerosols including mists, vapors, gas, fog, and other airborne forms of any particle size)	1	79-22-1	Methyl chlorocarbonate	1
74-90-8	Hydrogen cyanide	1	101-14-4	4,4'-Methylenebis(2-chloroaniline)	0.1
7664-39-3	Hydrogen fluoride (Hydrofluoric acid)	1	101-61-1	4,4'-Methylenebis( <i>N,N</i> -dimethyl)benzenamine (4,4'-Methylenebis[ <i>N,N</i> -dimethylaniline])	0.1
7783-06-4	Hydrogen sulfide	1	74-95-3	Methylene bromide (Dibromomethane)	1
123-31-9	Hydroquinone	1	101-77-9	4,4'-Methylenedianiline	0.1
35554-44-0	Imazalil	1	93-15-2	Methyleugenol	0.1
55406-53-6	3-Iodo-2-propynyl butylcarbamate	1	60-34-4	Methyl hydrazine	1
13463-40-6	Iron pentacarbonyl	1	74-88-4	Methyl iodide	1
78-84-2	Isobutyraldehyde	1	108-10-1	Methyl isobutyl ketone	0.1
465-73-6	Isodrin	*	624-83-9	Methyl isocyanate	1
25311-71-1	Isofenphos	1	556-61-6	Methyl isothiocyanate	1
78-79-5	Isoprene	0.1	75-86-5	2-Methylactonitrile (Acetone cyanohydrin)	1
67-63-0	Isopropyl alcohol (Isopropanol) (only persons who manufacture by the strong acid process are subject, no supplier notification)	1	80-62-6	Methyl methacrylate	1
80-05-7	4,4'-Isopropylidenediphenol	1	924-42-5	<i>N</i> -Methylolacrylamide	1
120-58-1	Isosafrole	1	298-00-0	Methyl parathion	1
77501-63-4	Lactofen	1	109-06-8	2-Methylpyridine	1
7439-92-1	Lead	* see notes	872-50-4	<i>N</i> -Methyl-2-pyrrolidone	1
58-89-9	Lindane	0.1	9006-42-2	Metiram	1
330-55-2	Linuron	1	21087-64-9	Metribuzin	1
554-13-2	Lithium carbonate	1	7786-34-7	Mevinphos	1
121-75-5	Malathion	0.1	90-94-8	Michler's ketone	0.1
108-31-6	Maleic anhydride	1	2212-67-1	Molinate	1
109-77-3	Malononitrile	1	1313-27-5	Molybdenum trioxide	0.1
12427-38-2	Maneb	1	76-15-3	Monochloropentafluoroethane (CFC-115)	1
7439-96-5	Manganese	1	150-68-5	Monuron	1
93-65-2	Mecoprop	0.1	505-60-2	Mustard gas	0.1
149-30-4	2-Mercaptobenzothiazole	0.1	88671-89-0	Myclobutanil	1
7439-97-6	Mercury	*	142-59-6	Nabam	1
150-50-5	Merphos	1	300-76-5	Naled	1
126-98-7	Methacrylonitrile	1	91-20-3	Naphthalene	0.1
137-42-8	Metham sodium (Sodium methylthiocarbamate)	1	134-32-7	<i>alpha</i> -Naphthylamine (1-Naphthalenamine)	0.1
			91-59-8	<i>beta</i> -Naphthylamine (2-Naphthalenamine)	0.1
			7440-02-0	Nickel	0.1
			1929-82-4	Nitrapyrin	1
			7697-37-2	Nitric acid	1

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CASRN	Chemical Name	De minimis % Limit
139-13-9	Nitrilotriacetic acid	0.1
100-01-6	<i>p</i> -Nitroaniline	1
99-59-2	5-Nitro- <i>o</i> -anisidine (2-Methoxy-5-nitroaniline)	1
91-23-6	<i>o</i> -Nitroanisole	0.1
98-95-3	Nitrobenzene	0.1
92-93-3	4-Nitrobiphenyl	0.1
1836-75-5	Nitrofen	0.1
51-75-2	Nitrogen mustard (HN-2)	0.1
55-63-0	Nitroglycerin	1
75-52-5	Nitromethane	0.1
88-75-5	2-Nitrophenol ( <i>o</i> -Nitrophenol)	1
100-02-7	4-Nitrophenol ( <i>p</i> -Nitrophenol)	1
79-46-9	2-Nitropropane	0.1
924-16-3	<i>N</i> -Nitrosodi- <i>n</i> -butylamine	0.1
55-18-5	<i>N</i> -Nitrosodiethylamine	0.1
62-75-9	<i>N</i> -Nitrosodimethylamine	0.1
86-30-6	<i>N</i> -Nitrosodiphenylamine	1
156-10-5	<i>p</i> -Nitrosodiphenylamine	1
621-64-7	<i>N</i> -Nitrosodi- <i>n</i> -propylamine	0.1
759-73-9	<i>N</i> -Nitroso- <i>N</i> -ethylurea	0.1
684-93-5	<i>N</i> -Nitroso- <i>N</i> -methylurea	0.1
4549-40-0	<i>N</i> -Nitrosomethylvinylamine	0.1
59-89-2	<i>N</i> -Nitrosomorpholine	0.1
16543-55-8	<i>N</i> -Nitrosornicotine	0.1
100-75-4	<i>N</i> -Nitrosopiperidine	0.1
88-72-2	<i>o</i> -Nitrotoluene	0.1
99-55-8	5-Nitro- <i>o</i> -toluidine (2-Methyl-5-nitroaniline)	1
27314-13-2	Norflurazon	1
2234-13-1	Octachloronaphthalene	1
29082-74-4	Octachlorostyrene	*
19044-88-3	Oryzalin	1
20816-12-0	Osmium tetroxide	1
19666-30-9	Oxadiazon	1
301-12-2	Oxydemeton-methyl	1
42874-03-3	Oxyfluorfen	1
10028-15-6	Ozone	1
123-63-7	Paraldehyde	1
1910-42-5	Paraquat dichloride	1
56-38-2	Parathion	0.1
1114-71-2	Pebulate	1
40487-42-1	Pendimethalin	*
608-93-5	Pentachlorobenzene	*
76-01-7	Pentachloroethane	1
87-86-5	Pentachlorophenol	0.1
57-33-0	Pentobarbital sodium	1
79-21-0	Peracetic acid	1
594-42-3	Perchloromethyl mercaptan	1
52645-53-1	Permethrin	1
85-01-8	Phenanthrene	1
108-95-2	Phenol	1

CASRN	Chemical Name	De minimis % Limit
77-09-8	Phenolphthalein (3,3-Bis(4-hydroxyphenyl)phthalide)	0.1
26002-80-2	Phenothrin	1
95-54-5	1,2-Phenylenediamine	0.1
108-45-2	1,3-Phenylenediamine	1
106-50-3	<i>p</i> -Phenylenediamine	1
615-28-1	1,2-Phenylenediamine dihydrochloride	0.1
624-18-0	1,4-Phenylenediamine dihydrochloride	1
90-43-7	2-Phenylphenol	1
57-41-0	Phenytoin	0.1
75-44-5	Phosgene	1
7803-51-2	Phosphine	1
12185-10-3	Phosphorus (yellow or white)	1
85-44-9	Phthalic anhydride	1
1918-02-1	Picloram	1
88-89-1	Picric acid	1
51-03-6	Piperonyl butoxide	1
29232-93-7	Pirimiphos-methyl	1
1336-36-3	Polychlorinated biphenyls	*
7758-01-2	Potassium bromate	0.1
128-03-0	Potassium dimethyldithiocarbamate	1
137-41-7	Potassium <i>N</i> -methyldithiocarbamate	1
41198-08-7	Profenofos	1
7287-19-6	Prometryn	1
23950-58-5	Pronamide	1
1918-16-7	Propachlor	1
1120-71-4	1,3-Propane sultone	0.1
709-98-8	Propanil	1
2312-35-8	Propargite	1
107-19-7	Propargyl alcohol	1
31218-83-4	Propetamphos	1
60207-90-1	Propiconazole	1
57-57-8	<i>beta</i> -Propiolactone	0.1
123-38-6	Propionaldehyde	1
114-26-1	Propoxur	1
115-07-1	Propylene	1
75-55-8	Propyleneimine	0.1
75-56-9	Propylene oxide	0.1
110-86-1	Pyridine	0.1
91-22-5	Quinoline	0.1
106-51-4	Quinone	1
82-68-8	Quintozene (Pentachloronitrobenzene)	1
76578-14-8	Quizalofop-ethyl	1
10453-86-8	Resmethrin	1
81-07-2	Saccharin (only persons who manufacture are subject, no supplier notification)	1
94-59-7	Safrole	0.1

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CASRN	Chemical Name	De minimis % Limit	CASRN	Chemical Name	De minimis % Limit
7782-49-2	Selenium	1	26471-62-5	Toluene diisocyanate (mixed isomers)	0.1
74051-80-2	Sethoxydim	1	95-53-4	<i>o</i> -Toluidine	0.1
7440-22-4	Silver	1	636-21-5	<i>o</i> -Toluidine hydrochloride	0.1
122-34-9	Simazine	1	8001-35-2	Toxaphene	*
26628-22-8	Sodium azide	1	43121-43-3	Triadimefon	1
1982-69-0	Sodium dicamba	1	2303-17-5	Triallate	1
128-04-1	Sodium dimethyldithiocarbamate	1	68-76-8	Triaziquone	1
62-74-8	Sodium fluoroacetate	1	101200-48-0	Tribenuron-methyl	1
7632-00-0	Sodium nitrite	1	1983-10-4	Tributyltin fluoride	1
131-52-2	Sodium pentachlorophenate	0.1	2155-70-6	Tributyltin methacrylate	1
132-27-4	Sodium <i>o</i> -phenylphenoxide	0.1	78-48-8	<i>S,S,S</i> -Tributyltrithiophosphate (Tribufos)	1
100-42-5	Styrene	0.1	52-68-6	Trichlorfon	1
96-09-3	Styrene oxide	0.1	76-02-8	Trichloroacetyl chloride	1
7664-93-9	Sulfuric acid (acid aerosols including mists, vapors, gas, fog, and other airborne forms of any particle size)	1	120-82-1	1,2,4-Trichlorobenzene	1
2699-79-8	Sulfuryl fluoride	1	71-55-6	1,1,1-Trichloroethane	1
35400-43-2	Sulprofos	1	79-00-5	1,1,2-Trichloroethane	1
34014-18-1	Tebuthiuron	1	79-01-6	Trichloroethylene	0.1
3383-96-8	Temephos	1	75-69-4	Trichlorofluoromethane (CFC-11)	1
5902-51-2	Terbacil	1	95-95-4	2,4,5-Trichlorophenol	1
79-94-7	Tetrabromobisphenol A	*	88-06-2	2,4,6-Trichlorophenol	0.1
630-20-6	1,1,1,2-Tetrachloroethane	0.1	96-18-4	1,2,3-Trichloropropane	0.1
79-34-5	1,1,2,2-Tetrachloroethane	0.1	57213-69-1	Triclopyr-triethylammonium salt	1
127-18-4	Tetrachloroethylene	0.1	121-44-8	Triethylamine	1
354-11-0	1,1,1,2-Tetrachloro-2-fluoroethane (HCFC-121a)	1	1582-09-8	Trifluralin	*
354-14-3	1,1,2,2-Tetrachloro-1-fluoroethane (HCFC-121)	1	26644-46-2	Triforine	1
961-11-5	Tetrachlorvinphos	0.1	95-63-6	1,2,4-Trimethylbenzene	1
64-75-5	Tetracycline hydrochloride	1	2655-15-4	2,3,5-Trimethylphenyl methylcarbamate	1
116-14-3	Tetrafluoroethylene (Tetrafluoroethene)	0.1	639-58-7	Triphenyltin chloride	1
7696-12-0	Tetramethrin	1	76-87-9	Triphenyltin hydroxide	1
509-14-8	Tetranitromethane	0.1	126-72-7	Tris(2,3-dibromopropyl) phosphate	0.1
7440-28-0	Thallium	1	72-57-1	Trypan blue	0.1
148-79-8	Thiabendazole	1	51-79-6	Urethane	0.1
62-55-5	Thioacetamide	0.1	7440-62-2	Vanadium (except when contained in an alloy)	1
28249-77-6	Thiobencarb	1	50471-44-8	Vinclozolin	1
139-65-1	4,4'-Thiodianiline	0.1	108-05-4	Vinyl acetate	0.1
59669-26-0	Thiodicarb	1	593-60-2	Vinyl bromide	0.1
23564-06-9	Thiophanate-ethyl	1	75-01-4	Vinyl chloride	0.1
23564-05-8	Thiophanate-methyl	1	75-02-5	Vinyl fluoride	0.1
79-19-6	Thiosemicarbazide	1	75-35-4	Vinylidene chloride (1,1-Dichloroethylene)	0.1
62-56-6	Thiourea	0.1	108-38-3	<i>m</i> -Xylene	1
137-26-8	Thiram	1	95-47-6	<i>o</i> -Xylene	1
1314-20-1	Thorium dioxide	1	106-42-3	<i>p</i> -Xylene	1
7550-45-0	Titanium tetrachloride	1	1330-20-7	Xylene (mixed isomers)	1
108-88-3	Toluene	1	87-62-7	2,6-Xylidine	0.1
584-84-9	Toluene-2,4-diisocyanate	0.1	7440-66-6	Zinc (fume or dust)	1
91-08-7	Toluene-2,6-diisocyanate	0.1			

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CASRN	Chemical Name	De minimis % Limit
12122-67-7	Zineb	1

**b. Individually-Listed Toxic Chemicals Arranged by CASRN**

CASRN	Chemical Name	De minimis % Limit
50-00-0	Formaldehyde	0.1
51-03-6	Piperonyl butoxide	1
51-21-8	Fluorouracil (5-Fluorouracil)	1
51-28-5	2,4-Dinitrophenol	1
51-75-2	Nitrogen mustard (HN-2)	0.1
51-79-6	Urethane	0.1
52-68-6	Trichlorfon	1
52-85-7	Famphur	1
53-96-3	2-Acetylaminofluorene	0.1
55-18-5	N-Nitrosodiethylamine	0.1
55-21-0	Benzamide	1
55-38-9	Fenthion	1
55-63-0	Nitroglycerin	1
56-23-5	Carbon tetrachloride	0.1
56-35-9	Bis(tributyltin) oxide	1
56-38-2	Parathion	0.1
57-14-7	1,1-Dimethylhydrazine	0.1
57-33-0	Pentobarbital sodium	1
57-41-0	Phenytoin	0.1
57-57-8	beta-Propiolactone	0.1
57-74-9	Chlordane	*
58-89-9	Lindane	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
60-35-5	Acetamide	0.1
60-51-5	Dimethoate	1
61-82-5	Amitrole	0.1
62-53-3	Aniline	1
62-55-5	Thioacetamide	0.1
62-56-6	Thiourea	0.1
62-73-7	Dichlorvos	0.1
62-74-8	Sodium fluoroacetate	1
62-75-9	N-Nitrosodimethylamine	0.1
63-25-2	Carbaryl	1
64-18-6	Formic acid	1
64-67-5	Diethyl sulfate	0.1
64-75-5	Tetracycline hydrochloride	1
67-56-1	Methanol	1

CASRN	Chemical Name	De minimis % Limit
67-63-0	Isopropyl alcohol (Isopropanol) (only persons who manufacture by the strong acid process are subject, no supplier notification)	1
67-66-3	Chloroform	0.1
67-72-1	Hexachloroethane	0.1
68-12-2	N,N-Dimethylformamide	0.1
68-76-8	Triaziquone	1
70-30-4	Hexachlorophene	1
71-36-3	n-Butyl alcohol (1-Butanol)	1
71-43-2	Benzene	0.1
71-55-6	1,1,1-Trichloroethane	1
72-43-5	Methoxychlor	*
72-57-1	Trypan blue	0.1
74-83-9	Bromomethane (Methyl bromide)	1
74-85-1	Ethylene	1
74-87-3	Chloromethane	1
74-88-4	Methyl iodide	1
74-90-8	Hydrogen cyanide	1
74-95-3	Methylene bromide (Dibromomethane)	1
75-00-3	Chloroethane	1
75-01-4	Vinyl chloride	0.1
75-02-5	Vinyl fluoride	0.1
75-05-8	Acetonitrile	1
75-07-0	Acetaldehyde	0.1
75-09-2	Dichloromethane (Methylene chloride)	0.1
75-15-0	Carbon disulfide	1
75-21-8	Ethylene oxide	0.1
75-25-2	Bromoform (Tribromomethane)	1
75-27-4	Dichlorobromomethane	0.1
75-34-3	Ethylidene dichloride (1,1-Dichloroethane)	1
75-35-4	Vinylidene chloride (1,1-Dichloroethylene)	0.1
75-43-4	Dichlorofluoromethane (HCFC-21)	1
75-44-5	Phosgene	1
75-45-6	Chlorodifluoromethane (HCFC-22)	1
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
75-65-0	tert-Butyl alcohol (tert-Butanol)	1

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CASRN	Chemical Name	De minimis % Limit	CASRN	Chemical Name	De minimis % Limit
75-68-3	1-Chloro-1,1-difluoroethane (HCFC-142b)	1	81-49-2	1-Amino-2,4-dibromoanthraquinone	0.1
75-69-4	Trichlorofluoromethane (CFC-11)	1	81-88-9	C.I. Food Red 15 (Rhodamine B)	1
75-71-8	Dichlorodifluoromethane (CFC-12)	1	82-28-0	1-Amino-2-methylantraquinone	0.1
75-72-9	Chlorotrifluoromethane (CFC-13)	1	82-68-8	Quintozene (Pentachloronitrobenzene)	1
75-86-5	2-Methylactonitrile (Acetone cyanohydrin)	1	84-74-2	Dibutyl phthalate	1
75-88-7	2-Chloro-1,1,1-trifluoroethane (HCFC-133a)	1	85-01-8	Phenanthrene	1
76-01-7	Pentachloroethane	1	85-44-9	Phthalic anhydride	1
76-02-8	Trichloroacetyl chloride	1	86-30-6	N-Nitrosodiphenylamine	1
76-06-2	Chloropicrin	1	87-62-7	2,6-Xylidine	0.1
76-13-1	Freon 113 (CFC-113)	1	87-68-3	Hexachloro-1,3-butadiene (Hexachlorobutadiene)	1
76-14-2	Dichlorotetrafluoroethane (CFC-114)	1	87-86-5	Pentachlorophenol	0.1
76-15-3	Monochloropentafluoroethane (CFC-115)	1	88-06-2	2,4,6-Trichlorophenol	0.1
76-44-8	Heptachlor	*	88-72-2	<i>o</i> -Nitrotoluene	0.1
76-87-9	Triphenyltin hydroxide	1	88-75-5	2-Nitrophenol ( <i>o</i> -Nitrophenol)	1
77-09-8	Phenolphthalein (3,3-Bis(4-hydroxyphenyl)phthalide)	0.1	88-85-7	Dinitrobutyl phenol (Dinoseb)	1
77-47-4	Hexachlorocyclopentadiene	1	88-89-1	Picric acid	1
77-73-6	Dicyclopentadiene	1	90-04-0	<i>o</i> -Anisidine	0.1
77-78-1	Dimethyl sulfate	0.1	90-43-7	2-Phenylphenol	1
78-48-8	S,S,S-Tributyltrithiophosphate (Tribufos)	1	90-94-8	Michler's ketone	0.1
78-79-5	Isoprene	0.1	91-08-7	Toluene-2,6-diisocyanate	0.1
78-84-2	Isobutyraldehyde	1	91-20-3	Naphthalene	0.1
78-87-5	1,2-Dichloropropane	0.1	91-22-5	Quinoline	0.1
78-88-6	2,3-Dichloropropene	1	91-23-6	<i>o</i> -Nitroanisole	0.1
78-92-2	<i>sec</i> -Butyl alcohol (2-Butanol)	1	91-59-8	<i>beta</i> -Naphthylamine (2-Naphthalenamine)	0.1
79-00-5	1,1,2-Trichloroethane	1	91-94-1	3,3'-Dichlorobenzidine	0.1
79-01-6	Trichloroethylene	0.1	92-52-4	Biphenyl	1
79-06-1	Acrylamide	0.1	92-67-1	4-Aminobiphenyl	0.1
79-10-7	Acrylic acid	1	92-87-5	Benzidine	0.1
79-11-8	Chloroacetic acid	1	92-93-3	4-Nitrobiphenyl	0.1
79-19-6	Thiosemicarbazide	1	93-15-2	Methyleugenol	0.1
79-21-0	Peracetic acid	1	93-65-2	Mecoprop	0.1
79-22-1	Methyl chlorocarbonate	1	94-11-1	2,4-D isopropyl ester	0.1
79-34-5	1,1,2,2-Tetrachloroethane	0.1	94-36-0	Benzoyl peroxide	1
79-44-7	Dimethylcarbamoyl chloride	0.1	94-58-6	Dihydrosafrole	0.1
79-46-9	2-Nitropropane	0.1	94-59-7	Safrole	0.1
79-94-7	Tetrabromobisphenol A	*	94-74-6	Methoxone (MCPA)	0.1
80-05-7	4,4'-Isopropylidenediphenol	1	94-75-7	2,4-D	0.1
80-15-9	Cumene hydroperoxide	1	94-80-4	2,4-D butyl ester	0.1
80-62-6	Methyl methacrylate	1	94-82-6	2,4-DB	1
81-07-2	Saccharin (only persons who manufacture are subject, no supplier notification)	1	95-47-6	<i>o</i> -Xylene	1
			95-48-7	<i>o</i> -Cresol	1
			95-50-1	1,2-Dichlorobenzene ( <i>o</i> -Dichlorobenzene)	1
			95-53-4	<i>o</i> -Toluidine	0.1
			95-54-5	1,2-Phenylenediamine	0.1
			95-63-6	1,2,4-Trimethylbenzene	1

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CASRN	Chemical Name	De minimis % Limit
95-69-2	<i>p</i> -Chloro- <i>o</i> -toluidine (4-Chloro-2-methylaniline)	0.1
95-80-7	2,4-Diaminotoluene (2,4-Toluediamine)	0.1
95-95-4	2,4,5-Trichlorophenol	1
96-09-3	Styrene oxide	0.1
96-12-8	1,2-Dibromo-3-chloropropane	0.1
96-18-4	1,2,3-Trichloropropane	0.1
96-33-3	Methyl acrylate	0.1
96-45-7	Ethylene thiourea	0.1
97-23-4	Dichlorophene	1
97-56-3	C.I. Solvent Yellow 3	0.1
98-07-7	Benzoic trichloride (Benzotrichloride)	0.1
98-82-8	Cumene	0.1
98-86-2	Acetophenone	1
98-87-3	Benzal chloride	1
98-88-4	Benzoyl chloride	1
98-95-3	Nitrobenzene	0.1
99-30-9	Dichloran	1
99-55-8	5-Nitro- <i>o</i> -toluidine (2-Methyl-5-nitroaniline)	1
99-59-2	5-Nitro- <i>o</i> -anisidine (2-Methoxy-5-nitroaniline)	1
99-65-0	<i>m</i> -Dinitrobenzene	1
100-01-6	<i>p</i> -Nitroaniline	1
100-02-7	4-Nitrophenol ( <i>p</i> -Nitrophenol)	1
100-25-4	<i>p</i> -Dinitrobenzene	1
100-41-4	Ethylbenzene	0.1
100-42-5	Styrene	0.1
100-44-7	Benzyl chloride	1
100-75-4	<i>N</i> -Nitrosopiperidine	0.1
101-05-3	Anilazine	1
101-14-4	4,4'-Methylenebis(2-chloroaniline)	0.1
101-61-1	4,4'-Methylenebis( <i>N,N</i> -dimethyl)benzenamine (4,4'-Methylenebis[ <i>N,N</i> -dimethylaniline])	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	<i>p</i> -Chlorophenyl isocyanate	1
104-94-9	<i>p</i> -Anisidine	1
105-67-9	2,4-Dimethylphenol	1
106-42-3	<i>p</i> -Xylene	1
106-44-5	<i>p</i> -Cresol	1
106-46-7	1,4-Dichlorobenzene ( <i>p</i> -Dichlorobenzene)	0.1
106-47-8	<i>p</i> -Chloroaniline	0.1
106-50-3	<i>p</i> -Phenylenediamine	1
106-51-4	Quinone	1
106-88-7	1,2-Butylene oxide	0.1

CASRN	Chemical Name	De minimis % Limit
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
107-05-1	Allyl chloride	1
107-06-2	1,2-Dichloroethane	0.1
107-11-9	Allylamine	1
107-13-1	Acrylonitrile	0.1
107-18-6	Allyl alcohol	1
107-19-7	Propargyl alcohol	1
107-21-1	Ethylene glycol	1
107-30-2	Chloromethyl methyl ether	0.1
108-05-4	Vinyl acetate	0.1
108-10-1	Methyl isobutyl ketone	0.1
108-31-6	Maleic anhydride	1
108-38-3	<i>m</i> -Xylene	1
108-39-4	<i>m</i> -Cresol	1
108-45-2	1,3-Phenylenediamine	1
108-60-1	Bis(2-chloro-1-methylethyl) ether	1
108-88-3	Toluene	1
108-90-7	Chlorobenzene	1
108-93-0	Cyclohexanol	1
108-95-2	Phenol	1
109-06-8	2-Methylpyridine	1
109-77-3	Malononitrile	1
109-86-4	2-Methoxyethanol	1
110-00-9	Furan	0.1
110-54-3	<i>n</i> -Hexane (Hexane)	1
110-57-6	<i>trans</i> -1,4-Dichloro-2-butene	1
110-80-5	2-Ethoxyethanol	1
110-82-7	Cyclohexane	1
110-86-1	Pyridine	0.1
111-42-2	Diethanolamine	1
111-44-4	Bis(2-chloroethyl) ether	1
111-91-1	Bis(2-chloroethoxy)methane	1
114-26-1	Propoxur	1
115-07-1	Propylene	1
115-28-6	Chlorendic acid	0.1
115-32-2	Dicofol	1
116-06-3	Aldicarb	1
116-14-3	Tetrafluoroethylene (Tetrafluoroethene)	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	0.1
120-12-7	Anthracene	1
120-36-5	2,4-DP (Dichlorprop)	0.1
120-58-1	Isosafrole	1



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CASRN	Chemical Name	De minimis % Limit
120-71-8	<i>p</i> -Cresidine	0.1
120-80-9	Catechol	0.1
120-82-1	1,2,4-Trichlorobenzene	1
120-83-2	2,4-Dichlorophenol	1
121-14-2	2,4-Dinitrotoluene	0.1
121-44-8	Triethylamine	1
121-69-7	<i>N,N</i> -Dimethylaniline	1
121-75-5	Malathion	0.1
122-34-9	Simazine	1
122-39-4	Diphenylamine	1
122-66-7	1,2-Diphenylhydrazine	0.1
123-31-9	Hydroquinone	1
123-38-6	Propionaldehyde	1
123-63-7	Paraldehyde	1
123-72-8	Butyraldehyde	1
123-91-1	1,4-Dioxane	0.1
124-40-3	Dimethylamine	1
124-73-2	Dibromotetrafluoroethane (1,2-Dibromo-1,1,2,2-tetrafluoroethane)	1
126-72-7	Tris(2,3-dibromopropyl) phosphate	0.1
126-98-7	Methacrylonitrile	1
126-99-8	Chloroprene	0.1
127-18-4	Tetrachloroethylene	0.1
128-03-0	Potassium dimethyldithiocarbamate	1
128-04-1	Sodium dimethyldithiocarbamate	1
128-66-5	C.I. Vat Yellow 4	1
131-11-3	Dimethyl phthalate	1
131-52-2	Sodium pentachlorophenate	0.1
132-27-4	Sodium <i>o</i> -phenylphenoxide	0.1
132-64-9	Dibenzofuran	1
133-06-2	Captan	1
133-07-3	Folpet	1
133-90-4	Chloramben	1
134-29-2	<i>o</i> -Anisidine hydrochloride	0.1
134-32-7	<i>alpha</i> -Naphthylamine (1-Naphthalenamine)	0.1
135-20-6	Cupferron	0.1
136-45-8	Dipropyl isocinchomeronate	1
137-26-8	Thiram	1
137-41-7	Potassium <i>N</i> -methyldithiocarbamate	1
137-42-8	Metham sodium (Sodium methyldithiocarbamate)	1
138-93-2	Disodium cyanodithioimidocarbonate	1
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

CASRN	Chemical Name	De minimis % Limit
142-59-6	Nabam	1
148-79-8	Thiabendazole	1
149-30-4	2-Mercaptobenzothiazole	0.1
150-50-5	Merphos	1
150-68-5	Monuron	1
151-56-4	Ethyleneimine (Aziridine)	0.1
156-10-5	<i>p</i> -Nitrosodiphenylamine	1
156-62-7	Calcium cyanamide	1
191-24-2	Benzo[ <i>g,h,i</i> ]perylene	*
298-00-0	Methyl parathion	1
300-76-5	Naled	1
301-12-2	Oxydemeton-methyl	1
302-01-2	Hydrazine	0.1
306-83-2	2,2-Dichloro-1,1,1-trifluoroethane (HCFC-123)	1
309-00-2	Aldrin	*
314-40-9	Bromacil	1
319-84-6	<i>alpha</i> -Hexachlorocyclohexane	0.1
330-54-1	Diuron	1
330-55-2	Linuron	1
333-41-5	Diazinon	0.1
334-88-3	Diazomethane	1
353-59-3	Bromochlorodifluoromethane (Halon 1211)	1
354-11-0	1,1,1,2-Tetrachloro-2-fluoroethane (HCFC-121a)	1
354-14-3	1,1,2,2-Tetrachloro-1-fluoroethane (HCFC-121)	1
354-23-4	1,2-Dichloro-1,1,2-trifluoroethane (HCFC-123a)	1
354-25-6	1-Chloro-1,1,2,2-tetrafluoroethane (HCFC-124a)	1
357-57-3	Brucine	1
422-44-6	1,2-Dichloro-1,1,2,3,3-pentafluoropropane (HCFC-225bb)	1
422-48-0	2,3-Dichloro-1,1,1,2,3-pentafluoropropane (HCFC-225ba)	1
422-56-0	3,3-Dichloro-1,1,1,2,2-pentafluoropropane (HCFC-225ca)	1
431-86-7	1,2-Dichloro-1,1,3,3,3-pentafluoropropane (HCFC-225da)	1
460-35-5	3-Chloro-1,1,1-trifluoropropane (HCFC-253fb)	1
463-58-1	Carbonyl sulfide	1
465-73-6	Isodrin	*
492-80-8	C.I. Solvent Yellow 34 (Auramine)	0.1

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CASRN	Chemical Name	De minimis % Limit
505-60-2	Mustard gas	0.1
507-55-1	1,3-Dichloro-1,1,2,2,3-pentafluoropropane (HCFC-225cb)	1
509-14-8	Tetranitromethane	0.1
510-15-6	Chlorobenzilate	1
528-29-0	<i>o</i> -Dinitrobenzene	1
532-27-4	2-Chloroacetophenone	1
533-74-4	Dazomet	1
534-52-1	4,6-Dinitro- <i>o</i> -cresol	1
540-59-0	1,2-Dichloroethylene	1
541-41-3	Ethyl chloroformate	1
541-53-7	2,4-Dithiobiuret (Dithiobiuret)	1
541-73-1	1,3-Dichlorobenzene ( <i>m</i> -Dichlorobenzene)	1
542-75-6	1,3-Dichloropropylene (1,3-Dichloropropene)	0.1
542-76-7	3-Chloropropionitrile	1
542-88-1	Bis(chloromethyl) ether	0.1
554-13-2	Lithium carbonate	1
556-52-5	Glycidol	0.1
556-61-6	Methyl isothiocyanate	1
563-47-3	3-Chloro-2-methyl-1-propene	0.1
569-64-2	C.I. Basic Green 4 (Malachite green)	1
584-84-9	Toluene-2,4-diisocyanate	0.1
593-60-2	Vinyl bromide	0.1
594-42-3	Perchloromethyl mercaptan	1
606-20-2	2,6-Dinitrotoluene	0.1
608-93-5	Pentachlorobenzene	*
612-82-8	3,3'-Dimethylbenzidine 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	0.1
621-64-7	<i>N</i> -Nitrosodi- <i>n</i> -propylamine	0.1
624-18-0	1,4-Phenylenediamine dihydrochloride	1
624-83-9	Methyl isocyanate	1
630-20-6	1,1,1,2-Tetrachloroethane	0.1
636-21-5	<i>o</i> -Toluidine hydrochloride	0.1
639-58-7	Triphenyltin chloride	1
680-31-9	Hexamethylphosphoramide	0.1
684-93-5	<i>N</i> -Nitroso- <i>N</i> -methylurea	0.1
709-98-8	Propanil	1
759-73-9	<i>N</i> -Nitroso- <i>N</i> -ethylurea	0.1
759-94-4	<i>S</i> -Ethyl dipropylthiocarbamate	1
764-41-0	1,4-Dichloro-2-butene	1
812-04-4	1,1-Dichloro-1,2,2-trifluoroethane (HCFC-123b)	1
834-12-8	Ametryn	1

CASRN	Chemical Name	De minimis % Limit
842-07-9	C.I. Solvent Yellow 14	1
872-50-4	<i>N</i> -Methyl-2-pyrrolidone	1
924-16-3	<i>N</i> -Nitrosodi- <i>n</i> -butylamine	0.1
924-42-5	<i>N</i> -Methylolacrylamide	1
957-51-7	Diphenamid	1
961-11-5	Tetrachlorvinphos	0.1
989-38-8	C.I. Basic Red 1	1
1114-71-2	Pebulate	1
1120-71-4	1,3-Propane sultone	0.1
1134-23-2	Cycloate	1
1163-19-5	Decabromodiphenyl oxide	1
1313-27-5	Molybdenum trioxide	0.1
1314-20-1	Thorium dioxide	1
1319-77-3	Cresol (mixed isomers)	1
1320-18-9	2,4-D propylene glycol butyl ether ester (2,4-D 2-butoxymethylethyl ester)	0.1
1330-20-7	Xylene (mixed isomers)	1
1332-21-4	Asbestos (friable)	0.1
1335-87-1	Hexachloronaphthalene	1
1336-36-3	Polychlorinated biphenyls	*
1344-28-1	Aluminum oxide (fibrous forms) (Alumina)	1
1464-53-5	Diepoxybutane	0.1
1563-66-2	Carbofuran	1
1582-09-8	Trifluralin	*
1634-04-4	Methyl tert-butyl ether	1
1649-08-7	1,2-Dichloro-1,1-difluoroethane (HCFC-132b)	1
1689-84-5	Bromoxynil	1
1689-99-2	Bromoxynil octanoate	1
1717-00-6	1,1-Dichloro-1-fluoroethane (HCFC-141b)	1
1836-75-5	Nitrofen	0.1
1861-40-1	Benfluralin	1
1897-45-6	Chlorothalonil	0.1
1910-42-5	Paraquat dichloride	1
1912-24-9	Atrazine	1
1918-00-9	Dicamba	1
1918-02-1	Picloram	1
1918-16-7	Propachlor	1
1928-43-4	2,4-D 2-ethylhexyl ester	0.1
1929-73-3	2,4-D 2-butoxyethyl ester	0.1
1929-82-4	Nitrapyrin	1
1937-37-7	C.I. Direct Black 38	0.1
1982-69-0	Sodium dicamba	1
1983-10-4	Tributyltin fluoride	1
2032-65-7	Methiocarb	1
2155-70-6	Tributyltin methacrylate	1
2164-07-0	Dipotassium endothall	1
2164-17-2	Fluometuron	1
2212-67-1	Molinate	1
2234-13-1	Octachloronaphthalene	1

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CASRN	Chemical Name	De minimis % Limit
2300-66-5	Dimethylamine dicamba	1
2303-16-4	Diallate	1
2303-17-5	Triallate	1
2312-35-8	Propargite	1
2439-01-2	Chinomethionate	1
2439-10-3	Dodine	1
2524-03-0	Dimethyl chlorothiophosphate	1
2602-46-2	C.I. Direct Blue 6	0.1
2655-15-4	2,3,5-Trimethylphenyl methylcarbamate	1
2699-79-8	Sulfuryl fluoride	1
2702-72-9	2,4-D sodium salt	0.1
2832-40-8	C.I. Disperse Yellow 3	1
2837-89-0	2-Chloro-1,1,1,2-tetrafluoroethane (HCFC-124)	1
2971-38-2	2,4-D chlorocrotyl ester	0.1
3118-97-6	C.I. Solvent Orange 7	1
3296-90-0	2,2-Bis(bromomethyl)-1,3-propanediol	0.1
3383-96-8	Temephos	1
3653-48-3	Methoxone 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
4170-30-3	Crotonaldehyde	1
4549-40-0	N-Nitrosomethylvinylamine	0.1
4680-78-8	C.I. Acid Green 3	1
5234-68-4	Carboxin	1
5598-13-0	Chlorpyrifos-methyl	1
5902-51-2	Terbacil	1
6459-94-5	C.I. Acid Red 114	0.1
7287-19-6	Prometryn	1
7429-90-5	Aluminum (fume or dust)	1
7439-92-1	Lead	* see notes
7439-96-5	Manganese	1
7439-97-6	Mercury	*
7440-02-0	Nickel	0.1
7440-22-4	Silver	1
7440-28-0	Thallium	1
7440-36-0	Antimony	1
7440-38-2	Arsenic	0.1
7440-39-3	Barium	1
7440-41-7	Beryllium	0.1
7440-43-9	Cadmium	0.1
7440-47-3	Chromium	1
7440-48-4	Cobalt	0.1
7440-50-8	Copper	1
7440-62-2	Vanadium (except when contained in an alloy)	1
7440-66-6	Zinc (fume or dust)	1
7550-45-0	Titanium tetrachloride	1
7632-00-0	Sodium nitrite	1

CASRN	Chemical Name	De minimis % Limit
7637-07-2	Boron trifluoride	1
7647-01-0	Hydrochloric acid (acid aerosols including mists, vapors, gas, fog, and other airborne forms of any particle size)	1
7664-39-3	Hydrogen fluoride (Hydrofluoric acid)	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
7664-93-9	Sulfuric acid (acid aerosols including mists, vapors, gas, fog, and other airborne forms of any particle size)	1
7696-12-0	Tetramethrin	1
7697-37-2	Nitric acid	1
7726-95-6	Bromine	1
7758-01-2	Potassium bromate	0.1
7782-41-4	Fluorine	1
7782-49-2	Selenium	1
7782-50-5	Chlorine	1
7783-06-4	Hydrogen sulfide	1
7786-34-7	Mevinphos	1
7803-51-2	Phosphine	1
8001-35-2	Toxaphene	*
8001-58-9	Creosote	0.1
9006-42-2	Metiram	1
10028-15-6	Ozone	1
10034-93-2	Hydrazine sulfate (1:1)	0.1
10049-04-4	Chlorine dioxide	1
10061-02-6	trans-1,3-Dichloropropene	0.1
10294-34-5	Boron trichloride	1
10453-86-8	Resmethrin	1
12122-67-7	Zineb	1
12185-10-3	Phosphorus (yellow or white)	1
12427-38-2	Maneb	1
13194-48-4	Ethoprop	1
13356-08-6	Fenbutatin oxide	1
13463-40-6	Iron pentacarbonyl	1
13474-88-9	1,1-Dichloro-1,2,2,3,3-pentafluoropropane (HCFC-225cc)	1
13684-56-5	Desmedipham	1
14484-64-1	Ferbam	1
15972-60-8	Alachlor	1
16071-86-6	C.I. Direct Brown 95	0.1
16543-55-8	N-Nitrosornicotine	0.1
17804-35-2	Benomyl	1

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CASRN	Chemical Name	De minimis % Limit
19044-88-3	Oryzalin	1
19666-30-9	Oxadiazon	1
20325-40-0	3,3'-Dimethoxybenzidine dihydrochloride	0.1
20354-26-1	Methazole	1
20816-12-0	Osmium tetroxide	1
20859-73-8	Aluminum phosphide	1
21087-64-9	Metribuzin	1
21725-46-2	Cyanazine	1
22781-23-3	Bendiocarb	1
23564-05-8	Thiophanate-methyl	1
23564-06-9	Thiophanate-ethyl	1
23950-58-5	Pronamide	1
25311-71-1	Isofenphos	1
25321-14-6	Dinitrotoluene (mixed isomers)	1
25321-22-6	Dichlorobenzene (mixed isomers)	0.1
25376-45-8	Diaminotoluene (mixed isomers) (Toluenediamine)	0.1
26002-80-2	Phenothrin	1
26471-62-5	Toluene diisocyanate (mixed isomers)	0.1
26628-22-8	Sodium azide	1
26644-46-2	Triforine	1
27314-13-2	Norflurazon	1
28249-77-6	Thiobencarb	1
28407-37-6	C.I. Direct Blue 218	1
28434-00-6	<i>d-trans</i> -Allethrin	1
29082-74-4	Octachlorostyrene	*
29232-93-7	Pirimiphos-methyl	1
30560-19-1	Acephate	1
31218-83-4	Propetamphos	1
33089-61-1	Amitraz	1
34014-18-1	Tebuthiuron	1
34077-87-7	Dichlorotrifluoroethane	1
35367-38-5	Diflubenzuron	1
35400-43-2	Sulprofos	1
35554-44-0	Imazalil	1
35691-65-7	1-Bromo-1-(bromomethyl)-1,3-propanedicarbonitrile	1
38727-55-8	Diethyl ethyl	1
39156-41-7	2,4-Diaminoanisoole sulfates	0.1
39300-45-3	Dinocap	1
39515-41-8	Fenpropathrin	1
40487-42-1	Pendimethalin	*
41198-08-7	Profenofos	1
41766-75-0	3,3'-Dimethylbenzidine dihydrofluoride	0.1
42874-03-3	Oxyfluorfen	1
43121-43-3	Triadimefon	1
50471-44-8	Vinclozolin	1
51235-04-2	Hexazinone	1

CASRN	Chemical Name	De minimis % Limit
51338-27-3	Diclofop methyl	1
51630-58-1	Fenvalerate	1
52645-53-1	Permethrin	1
53404-19-6	Bromacil, lithium salt	1
53404-37-8	2,4-D 2-ethyl-4-methylpentyl ester	0.1
53404-60-7	Dazomet, sodium salt	1
55290-64-7	Dimethipin	1
55406-53-6	3-Iodo-2-propynyl butylcarbamate	1
57213-69-1	Triclopyr-triethylammonium salt	1
59669-26-0	Thiodicarb	1
60168-88-9	Fenarimol	1
60207-90-1	Propiconazole	1
62476-59-9	Acifluorfen, sodium salt	1
63938-10-3	Chlorotetrafluoroethane	1
64902-72-3	Chlorsulfuron	1
64969-34-2	3,3'-Dichlorobenzidine sulfate	0.1
66441-23-4	Fenoxaprop-ethyl	1
67485-29-4	Hydramethylnon	1
68085-85-8	Cyhalothrin	1
68359-37-5	Cyfluthrin	1
69409-94-5	Fluvalinate	1
69806-50-4	Fluazifop-butyl	1
71751-41-2	Abamectin	1
72178-02-0	Fomesafen	1
72490-01-8	Fenoxycarb	1
74051-80-2	Sethoxydim	1
76578-14-8	Quizalofop-ethyl	1
77501-63-4	Lactofen	1
82657-04-3	Bifenthrin	1
88671-89-0	Myclobutanil	1
90454-18-5	Dichloro-1,1,2-trifluoroethane	1
90982-32-4	Chlorimuron-ethyl	1
101200-48-0	Tribenuron-methyl	1
111512-56-2	1,1-Dichloro-1,2,3,3,3-pentafluoropropane (HCFC-225eb)	1
111984-09-9	3,3'-Dimethoxybenzidine monohydrochloride	0.1
127564-92-5	Dichloropentafluoropropane	1
128903-21-9	2,2-Dichloro-1,1,1,3,3-pentafluoropropane (HCFC-225aa)	1
136013-79-1	1,3-Dichloro-1,1,2,3,3-pentafluoropropane (HCFC-225ea)	1

### 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 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.

**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.*

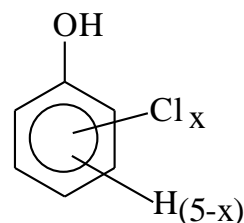
**N050 Beryllium Compounds (0.1)**

*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  $5$

**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; other chromium compounds: 1.0)**

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

**N096 Cobalt Compounds (cobalt compounds that release cobalt ions *in vivo*: 0.1, all other cobalt compounds: 1.0)**

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

**N100 Copper Compounds (1.0)**

*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.*

**N106 Cyanide Compounds (1.0)**

$X^+CN^-$  where  $X^+$  = any group (except  $H^+$ ) where a formal dissociation can be made. For example, KCN or  $Ca(CN)_2$

Table II. EPCRA Section 313 Chemical List for Reporting Year 2021

**N120 Diisocyanates (1.0)**

This category includes only those chemicals listed below.

CASRN	Chemical Name
38661-72-2	1,3-Bis(methylisocyanate)cyclohexane
10347-54-3	1,4-Bis(methylisocyanate)cyclohexane (1,4-Bis(isocyanatomethyl)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	4,4'-Methylenedi(phenyl isocyanate)
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

**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 #	CASRN	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 - (OCH<sub>2</sub>CH<sub>2</sub>)<sub>n</sub> - 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.

Table II. EPCRA Section 313 Chemical List for Reporting Year 2021

**N270 Hexabromocyclododecane (\*)**  
(This category includes only those chemicals covered by the CAS numbers listed below)

CASRN	Chemical Name
3194-55-6	1,2,5,6,9,10-Hexabromocyclododecane
25637-99-4	Hexabromocyclododecane

**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)**

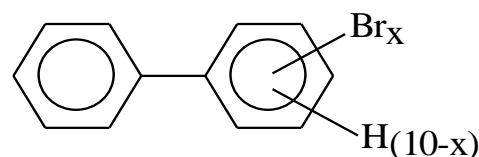
**N530 Nonylphenol (1.0)**  
This category includes only those chemicals listed below.

CASRN	Chemical Name
104-40-5	4-Nonylphenol ( <i>p</i> -Nonylphenol)
11066-49-2	Isononylphenol
25154-52-3	Nonylphenol
26543-97-5	4-Isononylphenol
84852-15-3	4-Nonylphenol, branched (Branched <i>p</i> -nonylphenol)
90481-04-2	Nonylphenol, branched

**N535 Nonylphenol Ethoxylates (1.0)**  
This category includes only those chemicals listed below.

CASRN	Chemical Name
7311-27-5	Ethanol, 2-[2-[2-[2-(4-nonylphenoxy)ethoxy]ethoxy]ethoxy]-
9016-45-9	Poly(oxy-1,2-ethanediyl), $\alpha$ -(nonylphenyl)- $\omega$ -hydroxy-; (Polyethylene glycol nonylphenyl ether)
20427-84-3	Ethanol, 2-[2-(4-nonylphenoxy)ethoxy]-; (2-[2-(4-Nonylphenoxy)ethoxy]ethanol)
26027-38-3	Poly(oxy-1,2-ethanediyl), $\alpha$ -(4-nonylphenyl)- $\omega$ -hydroxy-; ( <i>p</i> -Nonylphenol polyethylene glycol ether)
26571-11-9	3,6,9,12,15,18,21,24-Octaoxahexacosan-1-ol, 26-(nonylphenoxy)-
27176-93-8	Ethanol, 2-[2-(nonylphenoxy)ethoxy]-; (Diethylene glycol nonylphenol ether)
27177-05-5	3,6,9,12,15,18,21-Heptaoxatricosan-1-ol, 23-(nonylphenoxy)-
27177-08-8	3,6,9,12,15,18,21,24,27-Nonaoxanonacosan-1-ol, 29-(nonylphenoxy)-
27986-36-3	Ethanol, 2-(nonylphenoxy)-; (2-(Nonylphenoxy)ethanol)
37205-87-1	Poly(oxy-1,2-ethanediyl), $\alpha$ -(isononylphenyl)- $\omega$ -hydroxy-
51938-25-1	Poly(oxy-1,2-ethanediyl), $\alpha$ (2-nonylphenyl)- $\omega$ -hydroxy-
68412-54-4	Poly(oxy-1,2-ethanediyl), $\alpha$ -(nonylphenyl)- $\omega$ -hydroxy-, branched; (Polyethylene glycol mono(branched nonylphenyl) ether)
127087-87-0	Poly(oxy-1,2-ethanediyl), $\alpha$ -(4-nonylphenyl)- $\omega$ -hydroxy-, branched; (Polyethylene glycol mono(branched <i>p</i> -nonylphenyl) ether)

**N575 Polybrominated Biphenyls (PBBs) (0.1)**

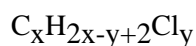


where  $x = 1$  to  $10$

Table II. EPCRA Section 313 Chemical List for Reporting Year 2021

**N583 Polychlorinated alkanes (C<sub>10</sub> to C<sub>13</sub>) (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 C<sub>10</sub>H<sub>19</sub>Cl<sub>3</sub> and C<sub>13</sub>H<sub>16</sub>Cl<sub>12</sub>

**N590 Polycyclic aromatic compounds (PACs) (\*)**

This category includes the chemicals listed below.

CASRN	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]fluorine (Fluoranthene)
189-55-9	Benzo[r,s,t]pentaphene (Dibenzo[a,i]pyrene)
218-01-9	Benzo[a]phenanthrene (Chrysene)
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 (Dibenz[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

CASRN	Chemical Name
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.*



Table II. EPCRA Section 313 Chemical List for Reporting Year 2021

**d. Individually-Listed PFAS Arranged Alphabetically**

CASRN	Chemical Name	De minimis % Limit
68391-08-2	Alcohols, C8-14, $\gamma$ - $\omega$ -perfluoro	1.0
97659-47-7	Alkenes, C8-14 $\alpha$ -, $\delta$ - $\omega$ -perfluoro	1.0
68188-12-5	Alkyl iodides, C4-20, $\gamma$ - $\omega$ -perfluoro	1.0
3825-26-1	Ammonium perfluorooctanoate	1.0
68515-62-8	1,4-Benzenedicarboxylic acid, dimethyl ester, reaction products with bis(2-hydroxyethyl)terephthalate, ethylene glycol, $\alpha$ -fluoro- $\omega$ -(2-hydroxyethyl)poly(difluoromethylene), hexakis(methoxymethyl)melamine and polyethylene glycol	1.0
68187-25-7	Butanoic acid, 4-[[3-(dimethylamino)propyl]amino]-4-oxo-, 2(or 3)-[( $\gamma$ - $\omega$ -perfluoro-C6-20-alkyl)thio] derivs.	1.0
383-07-3	2-[Butyl[(heptadecafluorooctyl)sulfonyl]amino]ethyl acrylate	1.0
68141-02-6	Chromium(III) perfluorooctanoate	1.0
67584-42-3	Cyclohexanesulfonic acid, decafluoro(pentafluoroethyl)-, potassium salt	1.0
68156-07-0	Cyclohexanesulfonic acid, decafluoro(trifluoromethyl)-, potassium salt	1.0
68156-01-4	Cyclohexanesulfonic acid, nonafluorobis(trifluoromethyl)-, potassium salt	1.0
3107-18-4	Cyclohexanesulfonic acid, undecafluoro-, potassium salt	1.0
2043-53-0	Decane, 1,1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8-heptadecafluoro-10-iodo-	1.0
67906-42-7	1-Decanesulfonic acid, 1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,10-heneicosafluoro-, ammonium salt	1.0
27619-90-5	1-Decanesulfonyl chloride, 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,10-heptadecafluoro-	1.0
678-39-7	1-Decanol, 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,10-heptadecafluoro-	1.0
118400-71-8	Disulfides, bis( $\gamma$ - $\omega$ -perfluoro-C6-20-alkyl)	1.0
2043-54-1	Dodecane, 1,1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,10-heneicosafluoro-12-iodo-	1.0
27619-91-6	1-Dodecanesulfonyl chloride, 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,12-heneicosafluoro-	1.0
865-86-1	1-Dodecanol, 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,12-heneicosafluoro-	1.0
65104-65-6	1-Eicosanol, 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,13,13,14,14,15,15,16,16,17,17,18,18,19,19,20,20,20-heptatriacontafuoro-	1.0
65636-35-3	Ethanaminium, <i>N,N</i> -diethyl- <i>N</i> -methyl-2-[(2-methyl-1-oxo-2-propenyl)oxy]-, methyl sulfate, polymer with 2-ethylhexyl 2-methyl-2-propenoate, $\alpha$ -fluoro- $\omega$ -[2-[(2-methyl-1-oxo-2-propenyl)oxy]ethyl]poly(difluoromethylene), 2-hydroxyethyl 2-methyl-2-propenoate and <i>N</i> -(hydroxymethyl)-2-propenamide	1.0
56773-42-3	Ethanaminium, <i>N,N,N</i> -triethyl-, salt with 1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-1-octanesulfonic acid (1:1)	1.0
182176-52-9	Ethaneperoxoic acid, reaction products with 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,10-heptadecafluorodecyl thiocyanate and 3,3,4,4,5,5,6,6,7,7,8,8,8-tridecafluorooctyl thiocyanate	1.0
65530-74-7	Ethanol, 2,2'-iminobis-, compd. with $\alpha$ -fluoro- $\omega$ -[2-(phosphonooxy)ethyl]poly(difluoromethylene) (1:1)	1.0
65530-63-4	Ethanol, 2,2'-iminobis-, compd. with $\alpha$ -fluoro- $\omega$ -[2-(phosphonooxy)ethyl]poly(difluoromethylene) (2:1)	1.0
65530-64-5	Ethanol, 2,2'-iminobis-, compd. with $\alpha,\alpha'$ -[phosphinicobis(oxy-2,1-ethanediy)]bis[ $\omega$ -fluoropoly(difluoromethylene)] (1:1)	1.0
423-82-5	2-[Ethyl[(heptadecafluorooctyl)sulfonyl]amino]ethyl acrylate	1.0
376-14-7	2-[Ethyl[(heptadecafluorooctyl)sulfonyl]amino]ethyl methacrylate	1.0
1691-99-2	<i>N</i> -Ethyl- <i>N</i> -(2-hydroxyethyl)perfluorooctanesulfonamide	1.0
72623-77-9	Fatty acids, C6-18, perfluoro, ammonium salts	1.0
72968-38-8	Fatty acids, C7-13, perfluoro, ammonium salts	1.0
178535-23-4	Fatty acids, linseed-oil, $\gamma$ - $\omega$ -perfluoro-C8-14-alkyl esters	1.0

Table II. EPCRA Section 313 Chemical List for Reporting Year 2021

CASRN	Chemical Name	De minimis % Limit
2991-51-7	Glycine, <i>N</i> -ethyl- <i>N</i> -[(heptadecafluorooctyl)sulfonyl]-, potassium salt	1.0
67584-62-7	Glycine, <i>N</i> -ethyl- <i>N</i> -[(pentadecafluoroheptyl)sulfonyl]-, potassium salt	1.0
67584-53-6	Glycine, <i>N</i> -ethyl- <i>N</i> -[(tridecafluorohexyl)sulfonyl]-, potassium salt	1.0
67584-52-5	Glycine, <i>N</i> -ethyl- <i>N</i> -[(undecafluoropentyl)sulfonyl]-, potassium salt	1.0
55910-10-6	Glycine, <i>N</i> -[(heptadecafluorooctyl)sulfonyl]- <i>N</i> -propyl-, potassium salt	1.0
1652-63-7	3-[[Heptadecafluorooctyl)sulfonyl]amino]- <i>N,N,N</i> -trimethyl-1-propanaminium iodide	1.0
25268-77-3	2-[[Heptadecafluorooctyl)sulfonyl]methylamino]ethyl acrylate	1.0
68957-62-0	1-Heptanesulfonamide, <i>N</i> -ethyl-1,1,2,2,3,3,4,4,5,5,6,6,7,7,7-pentadecafluoro-	1.0
68555-76-0	1-Heptanesulfonamide, 1,1,2,2,3,3,4,4,5,5,6,6,7,7,7-pentadecafluoro- <i>N</i> -(2-hydroxyethyl)- <i>N</i> -methyl-	1.0
68259-07-4	1-Heptanesulfonic acid, 1,1,2,2,3,3,4,4,5,5,6,6,7,7,7-pentadecafluoro-, ammonium salt	1.0
70225-15-9	1-Heptanesulfonic acid, 1,1,2,2,3,3,4,4,5,5,6,6,7,7,7-pentadecafluoro-, compd. with 2,2'-iminobis[ethanol] (1:1)	1.0
60270-55-5	1-Heptanesulfonic acid, 1,1,2,2,3,3,4,4,5,5,6,6,7,7,7-pentadecafluoro-, potassium salt	1.0
335-71-7	1-Heptanesulfonyl fluoride, 1,1,2,2,3,3,4,4,5,5,6,6,7,7,7-pentadecafluoro-	1.0
65510-55-6	Hexadecane, 1,1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,13,13,14,14-nonacosafuoro-16-iodo-	1.0
60699-51-6	1-Hexadecanol, 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,13,13,14,14,15,15,16,16,16-nonacosafuoro-	1.0
13252-13-6	Hexafluoropropylene oxide dimer acid	1.0
62037-80-3	Hexafluoropropylene oxide dimer acid ammonium salt	1.0
135228-60-3	Hexane, 1,6-diisocyanato-, homopolymer, $\gamma$ - $\omega$ -perfluoro-C6-20-alc.-blocked	1.0
68555-75-9	1-Hexanesulfonamide, 1,1,2,2,3,3,4,4,5,5,6,6,6-tridecafluoro- <i>N</i> -(2-hydroxyethyl)- <i>N</i> -methyl-	1.0
68259-08-5	1-Hexanesulfonic acid, 1,1,2,2,3,3,4,4,5,5,6,6,6-tridecafluoro-, ammonium salt	1.0
70225-16-0	1-Hexanesulfonic acid, 1,1,2,2,3,3,4,4,5,5,6,6,6-tridecafluoro-, compd. with 2,2'-iminobis[ethanol] (1:1)	1.0
3871-99-6	1-Hexanesulfonic acid, 1,1,2,2,3,3,4,4,5,5,6,6,6-tridecafluoro-, potassium salt	1.0
29457-72-5	Lithium (perfluorooctane)sulfonate	1.0
376-27-2	Methyl perfluorooctanoate	1.0
17202-41-4	1-Nonanesulfonic acid, 1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,9,9,9-nonadecafluoro-, ammonium salt	1.0
16517-11-6	Octadecanoic acid, pentatriacontafluoro-	1.0
65104-67-8	1-Octadecanol, 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,13,13,14,14,15,15,16,16,17,17,18,18,18-tritriacontafluoro-	1.0
2263-09-4	1-Octanesulfonamide, <i>N</i> -butyl-1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro- <i>N</i> -(2-hydroxyethyl)-	1.0
178094-69-4	1-Octanesulfonamide, <i>N</i> -[3-(dimethyloxidoamino)propyl]-1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-, potassium salt	1.0
67969-69-1	1-Octanesulfonamide, <i>N</i> -ethyl-1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro- <i>N</i> -[2-(phosphonoxy)ethyl]-, diammonium salt	1.0
61660-12-6	1-Octanesulfonamide, <i>N</i> -ethyl-1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro- <i>N</i> -[3-(trimethoxysilyl)propyl]-	1.0
24448-09-7	1-Octanesulfonamide, 1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro- <i>N</i> -(2-hydroxyethyl)- <i>N</i> -methyl-	1.0
31506-32-8	1-Octanesulfonamide, 1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro- <i>N</i> -methyl-	1.0
29081-56-9	1-Octanesulfonic acid, 1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-, ammonium salt	1.0
70225-14-8	1-Octanesulfonic acid, 1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-, compd. with 2,2'-iminobis[ethanol] (1:1)	1.0
335-66-0	Octanoyl fluoride, pentadecafluoro-	1.0

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CASRN	Chemical Name	De minimis % Limit
68555-74-8	1-Pentanesulfonamide, 1,1,2,2,3,3,4,4,5,5,5-undecafluoro- <i>N</i> -(2-hydroxyethyl)- <i>N</i> -methyl-	1.0
68259-09-6	1-Pentanesulfonic acid, 1,1,2,2,3,3,4,4,5,5,5-undecafluoro-, ammonium salt	1.0
70225-17-1	1-Pentanesulfonic acid, 1,1,2,2,3,3,4,4,5,5,5-undecafluoro-, compd. with 2,2'-iminobis[ethanol] (1:1)	1.0
3872-25-1	1-Pentanesulfonic acid, 1,1,2,2,3,3,4,4,5,5,5-undecafluoro-, potassium salt	1.0
71608-60-1	Pentanoic acid, 4,4-bis[( $\gamma$ - $\omega$ -perfluoro-C8-20-alkyl)thio] derivs.	1.0
335-76-2	Perfluorodecanoic acid	1.0
307-55-1	Perfluorododecanoic acid	1.0
355-46-4	Perfluorohexanesulfonic acid	1.0
375-95-1	Perfluorononanoic acid	1.0
1763-23-1	Perfluorooctane sulfonic acid	1.0
335-67-1	Perfluorooctanoic acid	0.1
21652-58-4	Perfluorooctyl ethylene	1.0
507-63-1	Perfluorooctyl iodide	1.0
307-35-7	Perfluorooctylsulfonyl fluoride	1.0
67905-19-5	Perfluoropalmitic acid	1.0
376-06-7	Perfluorotetradecanoic acid	1.0
68412-69-1	Phosphinic acid, bis(perfluoro-C6-12-alkyl) derivs.	1.0
68412-68-0	Phosphonic acid, perfluoro-C6-12-alkyl derivs.	1.0
74499-44-8	Phosphoric acid, $\gamma$ - $\omega$ -perfluoro-C8-16-alkyl esters, compds. with diethanolamine	1.0
123171-68-6	Poly(difluoromethylene), $\alpha$ -[2-(acetyloxy)-3-[(carboxymethyl)dimethylammonio]propyl]- $\omega$ -fluoro-, inner salt	1.0
65530-83-8	Poly(difluoromethylene), $\alpha$ -[2-[(2-carboxyethyl)thio]ethyl]- $\omega$ -fluoro-	1.0
65530-69-0	Poly(difluoromethylene), $\alpha$ -[2-[(2-carboxyethyl)thio]ethyl]- $\omega$ -fluoro-, lithium salt	1.0
65605-56-3	Poly(difluoromethylene), $\alpha$ -fluoro- $\omega$ -(2-hydroxyethyl)-, dihydrogen 2-hydroxy-1,2,3-propanetricarboxylate	1.0
65605-57-4	Poly(difluoromethylene), $\alpha$ -fluoro- $\omega$ -(2-hydroxyethyl)-, hydrogen 2-hydroxy-1,2,3-propanetricarboxylate	1.0
65530-59-8	Poly(difluoromethylene), $\alpha$ -fluoro- $\omega$ -(2-hydroxyethyl)-, 2-hydroxy-1,2,3-propanetricarboxylate (3:1)	1.0
65530-66-7	Poly(difluoromethylene), $\alpha$ -fluoro- $\omega$ -[2-[(2-methyl-1-oxo-2-propenyl)oxy]ethyl]-	1.0
65530-65-6	Poly(difluoromethylene), $\alpha$ -fluoro- $\omega$ -[2-[(1-oxooctadecyl)oxy]ethyl]-	1.0
65605-73-4	Poly(difluoromethylene), $\alpha$ -fluoro- $\omega$ -[2-[(1-oxo-2-propenyl)oxy]ethyl]-, homopolymer	1.0
65530-61-2	Poly(difluoromethylene), $\alpha$ -fluoro- $\omega$ -[2-(phosphonooxy)ethyl]-	1.0
95144-12-0	Poly(difluoromethylene), $\alpha$ -fluoro- $\omega$ -[2-(phosphonooxy)ethyl]-, ammonium salt	1.0
65530-72-5	Poly(difluoromethylene), $\alpha$ -fluoro- $\omega$ -[2-(phosphonooxy)ethyl]-, diammonium salt	1.0
65530-71-4	Poly(difluoromethylene), $\alpha$ -fluoro- $\omega$ -[2-(phosphonooxy)ethyl]-, monoammonium salt	1.0
80010-37-3	Poly(difluoromethylene), $\alpha$ -fluoro- $\omega$ -[2-sulphoethyl]-	1.0
65530-62-3	Poly(difluoromethylene), $\alpha, \alpha'$ -[phosphinicobis(oxy-2,1-ethanediyl)]bis[ $\omega$ -fluoro-	1.0
65530-70-3	Poly(difluoromethylene), $\alpha, \alpha'$ -[phosphinicobis(oxy-2,1-ethanediyl)]bis[ $\omega$ -fluoro-, ammonium salt	1.0
29117-08-6	Poly(oxy-1,2-ethanediyl), $\alpha$ -[2-[ethyl[(heptadecafluorooctyl)sulfonyl]amino]ethyl]- $\omega$ -hydroxy-	1.0
68958-61-2	Poly(oxy-1,2-ethanediyl), $\alpha$ -[2-[ethyl[(heptadecafluorooctyl)sulfonyl]amino]ethyl]- $\omega$ -methoxy-	1.0
68298-81-7	Poly(oxy-1,2-ethanediyl), $\alpha$ -[2-[ethyl[(pentadecafluoroheptyl)sulfonyl]amino]ethyl]- $\omega$ -hydroxy-	1.0
68958-60-1	Poly(oxy-1,2-ethanediyl), $\alpha$ -[2-[ethyl[(pentadecafluoroheptyl)sulfonyl]amino]ethyl]- $\omega$ -methoxy-	1.0
56372-23-7	Poly(oxy-1,2-ethanediyl), $\alpha$ -[2-[ethyl[(tridecafluorohexyl)sulfonyl]amino]ethyl]- $\omega$ -hydroxy-	1.0

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CASRN	Chemical Name	De minimis % Limit
68298-80-6	Poly(oxy-1,2-ethanediyl), $\alpha$ -[2-[ethyl[(undecafluoropentyl)sulfonyl]amino]ethyl]- $\omega$ -hydroxy-	1.0
65545-80-4	Poly(oxy-1,2-ethanediyl), $\alpha$ -hydro- $\omega$ -hydroxy-, ether with $\alpha$ -fluoro- $\omega$ -(2-hydroxyethyl)poly(difluoromethylene) (1:1)	1.0
70983-59-4	Poly(oxy-1,2-ethanediyl), $\alpha$ -methyl- $\omega$ -hydroxy-, 2-hydroxy-3-[( $\gamma$ - $\omega$ -perfluoro-C6-20-alkyl)thio]propyl ethers	1.0
37338-48-0	Poly[oxy(methyl-1,2-ethanediyl)], $\alpha$ -[2-[ethyl[(heptadecafluorooctyl)sulfonyl]amino]ethyl]- $\omega$ -hydroxy-	1.0
68259-39-2	Poly[oxy(methyl-1,2-ethanediyl)], $\alpha$ -[2-[ethyl[(pentadecafluoroheptyl)sulfonyl]amino]ethyl]- $\omega$ -hydroxy-	1.0
68259-38-1	Poly[oxy(methyl-1,2-ethanediyl)], $\alpha$ -[2-[ethyl[(tridecafluorohexyl)sulfonyl]amino]ethyl]- $\omega$ -hydroxy-	1.0
68310-17-8	Poly[oxy(methyl-1,2-ethanediyl)], $\alpha$ -[2-[ethyl[(undecafluoropentyl)sulfonyl]amino]ethyl]- $\omega$ -hydroxy-	1.0
2795-39-3	Potassium perfluorooctanesulfonate	1.0
2395-00-8	Potassium perfluorooctanoate	1.0
1078715-61-3	1-Propanaminium, 3-amino- <i>N</i> -(carboxymethyl)- <i>N,N</i> -dimethyl-, <i>N</i> -[2-[( $\gamma$ - $\omega$ -perfluoro-C4-20-alkyl)thio]acetyl] derivs., inner salts	1.0
38006-74-5	1-Propanaminium, 3-[[heptadecafluorooctyl)sulfonyl]amino]- <i>N,N,N</i> -trimethyl-, chloride	1.0
70983-60-7	1-Propanaminium, 2-hydroxy- <i>N,N,N</i> -trimethyl-, 3-[( $\gamma$ - $\omega$ -perfluoro-C6-20-alkyl)thio] derivs., chlorides	1.0
68555-81-7	1-Propanaminium, <i>N,N,N</i> -trimethyl-3-[[pentadecafluoroheptyl)sulfonyl]amino]-, chloride	1.0
67584-58-1	1-Propanaminium, <i>N,N,N</i> -trimethyl-3-[[pentadecafluoroheptyl)sulfonyl]amino]-, iodide	1.0
52166-82-2	1-Propanaminium, <i>N,N,N</i> -trimethyl-3-[[tridecafluorohexyl)sulfonyl]amino]-, chloride	1.0
68957-58-4	1-Propanaminium, <i>N,N,N</i> -trimethyl-3-[[tridecafluorohexyl)sulfonyl]amino]-, iodide	1.0
68957-55-1	1-Propanaminium, <i>N,N,N</i> -trimethyl-3-[[undecafluoropentyl)sulfonyl]amino]-, chloride	1.0
68957-57-3	1-Propanaminium, <i>N,N,N</i> -trimethyl-3-[[undecafluoropentyl)sulfonyl]amino]-, iodide	1.0
238420-80-9	Propanedioic acid, mono( $\gamma$ - $\omega$ -perfluoro-C8-12-alkyl) derivs., bis[4-(ethenloxy)butyl] esters	1.0
238420-68-3	Propanedioic acid, mono( $\gamma$ - $\omega$ -perfluoro-C8-12-alkyl) derivs., di-me esters	1.0
148240-85-1	1,3-Propanediol, 2,2-bis[[( $\gamma$ - $\omega$ -perfluoro-C4-10-alkyl)thio]methyl] derivs., phosphates, ammonium salts	1.0
148240-87-3	1,3-Propanediol, 2,2-bis[[( $\gamma$ - $\omega$ -perfluoro-C6-12-alkyl)thio]methyl] derivs., phosphates, ammonium salts	1.0
1078142-10-5	1,3-Propanediol, 2,2-bis[[( $\gamma$ - $\omega$ -perfluoro-C6-12-alkyl)thio]methyl] derivs., polymers with 2,2-bis[[( $\gamma$ - $\omega$ -perfluoro-C10-20-alkyl)thio]methyl]-1,3-propanediol, 1,6-diisocyanato-2,2,4(or 2,4,4)-trimethylhexane, 2-heptyl-3,4-bis(9-isocyanatononyl)-1-pentylcyclohexane and 2,2'-(methylimino)bis[ethanol]	1.0
148240-89-5	1,3-Propanediol, 2,2-bis[[( $\gamma$ - $\omega$ -perfluoro-C10-20-alkyl)thio]methyl] derivs., phosphates, ammonium salts	1.0
68187-47-3	1-Propanesulfonic acid, 2-methyl-, 2-[[1-oxo-3-[( $\gamma$ - $\omega$ -perfluoro-C4-16-alkyl)thio]propyl]amino] derivs., sodium salts	1.0
68227-96-3	2-Propenoic acid, butyl ester, telomer with 2-[[heptadecafluorooctyl)sulfonyl]methylamino]ethyl 2-propenoate, 2-[methyl[(nonafluorobutyl)sulfonyl]amino]ethyl 2-propenoate, $\alpha$ -(2-methyl-1-oxo-2-propenyl)- $\omega$ -hydroxypoly(oxy-1,4-butanediyl), $\alpha$ -(2-methyl-1-oxo-2-propenyl)- $\omega$ -[(2-methyl-1-oxo-2-propenyl)oxy]poly(oxy-1,4-butanediyl), 2-[methyl[(pentadecafluoroheptyl)sulfonyl]amino]ethyl 2-propenoate, 2-[methyl[(tridecafluorohexyl)sulfonyl]amino]ethyl 2-propenoate, 2-[methyl[(undecafluoropentyl)sulfonyl]amino]ethyl 2-propenoate and 1-octanethiol	1.0

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CASRN	Chemical Name	De minimis % Limit
68298-62-4	2-Propenoic acid, 2-[butyl[(heptadecafluorooctyl)sulfonyl]amino]ethyl ester, telomer with 2-[butyl[(pentadecafluoroheptyl)sulfonyl]amino]ethyl 2-propenoate, methyloxirane polymer with oxirane di-2-propenoate, methyloxirane polymer with oxirane mono-2-propenoate and 1-octanethiol	1.0
65605-58-5	2-Propenoic acid, esters, 2-methyl-, dodecyl ester, polymer with $\alpha$ -fluoro- $\omega$ -[2-[(2-methyl-1-oxo-2-propen-1-yl)oxy]ethyl]poly(difluoromethylene)	1.0
59071-10-2	2-Propenoic acid, 2-[ethyl[(pentadecafluoroheptyl)sulfonyl]amino]ethyl ester	1.0
68867-60-7	2-Propenoic acid, 2-[[heptadecafluorooctyl)sulfonyl]methylamino]ethyl ester, polymer with 2-[methyl[(nonafluorobutyl)sulfonyl]amino]ethyl 2-propenoate, 2-[methyl[(pentadecafluoroheptyl)sulfonyl]amino]ethyl 2-propenoate, 2-[methyl[(tridecafluorohexyl)sulfonyl]amino]ethyl 2-propenoate, 2-[methyl[(undecafluoropentyl)sulfonyl]amino]ethyl 2-propenoate and $\alpha$ -(1-oxo-2-propenyl)- $\omega$ -methoxypoly(oxy-1,2-ethanediyl)	1.0
150135-57-2	2-Propenoic acid, 2-methyl-, 2-(dimethylamino)ethyl ester, polymers with Bu acrylate, $\gamma$ - $\omega$ -perfluoro-C8-14-alkyl acrylate and polyethylene glycol monomethacrylate, 2,2'-azobis[2,4-dimethylpentanenitrile]-initiated	1.0
196316-34-4	2-Propenoic acid, 2-methyl-, 2-(dimethylamino)ethyl ester, polymers with $\gamma$ - $\omega$ -perfluoro-C10-16-alkyl acrylate and vinyl acetate, acetates	1.0
65605-59-6	2-Propenoic acid, 2-methyl-, dodecyl ester, polymer with $\alpha$ -fluoro- $\omega$ -[2-[(2-methyl-1-oxo-2-propen-1-yl)oxy]ethyl]poly(difluoromethylene) and <i>N</i> -(hydroxymethyl)-2-propenamide	1.0
68555-91-9	2-Propenoic acid, 2-methyl-, 2-[ethyl[(heptadecafluorooctyl)sulfonyl]amino]ethyl ester, polymer with 2-[ethyl[(nonafluorobutyl)sulfonyl]amino]ethyl 2-methyl-2-propenoate, 2-[ethyl[(pentadecafluoroheptyl)sulfonyl]amino]ethyl 2-methyl-2-propenoate, 2-[ethyl[(tridecafluorohexyl)sulfonyl]amino]ethyl 2-methyl-2-propenoate, 2-[ethyl[(undecafluoropentyl)sulfonyl]amino]ethyl 2-methyl-2-propenoate and octadecyl 2-methyl-2-propenoate	1.0
68239-43-0	2-Propenoic acid, 2-methyl-, 2-ethylhexyl ester, polymer with $\alpha$ -fluoro- $\omega$ -[2-[(2-methyl-1-oxo-2-propen-1-yl)oxy]ethyl]poly(difluoromethylene), 2-hydroxyethyl 2-methyl-2-propenoate and <i>N</i> -(hydroxymethyl)-2-propenamide	1.0
2144-54-9	2-Propenoic acid, 2-methyl-, 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,12-heneicosafuorododecyl ester	1.0
65104-45-2	2-Propenoic acid, 2-methyl-, 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,12-heneicosafuorododecyl ester, polymer with 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,10-heptadecafluorodecyl 2-methyl-2-propenoate, methyl 2-methyl-2-propenoate, 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,13,13,14,14,14-pentacosafuorotetradecyl 2-methyl-2-propenoate and 3,3,4,4,5,5,6,6,7,7,8,8,8-tridecafluorooctyl 2-methyl-2-propenoate	1.0
1996-88-9	2-Propenoic acid, 2-methyl-, 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,10-heptadecafluorodecyl ester	1.0
4980-53-4	2-Propenoic acid, 2-methyl-, 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,13,13,14,14,15,15,16,16,16-nonacosafuorohexadecyl ester	1.0
142636-88-2	2-Propenoic acid, 2-methyl-, octadecyl ester, polymer with 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,12-heneicosafuorododecyl 2-propenoate, 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,10-heptadecafluorodecyl 2-propenoate and 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,13,13,14,14,14-pentacosafuorotetradecyl 2-propenoate	1.0
6014-75-1	2-Propenoic acid, 2-methyl-, 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,13,13,14,14,14-pentacosafuorotetradecyl ester	1.0
68084-62-8	2-Propenoic acid, 2-[methyl[(pentadecafluoroheptyl)sulfonyl]amino]ethyl ester	1.0

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CASRN	Chemical Name	De minimis % Limit
200513-42-4	2-Propenoic acid, 2-methyl-, polymer with butyl 2-methyl-2-propenoate, 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,10-heptadecafluorodecyl 2-propenoate, 2-hydroxyethyl 2-methyl-2-propenoate and methyl 2-methyl-2-propenoate	1.0
67584-57-0	2-Propenoic acid, 2-[methyl[(tridecafluorohexyl)sulfonyl]amino]ethyl ester	1.0
67584-56-9	2-Propenoic acid, 2-[methyl[(undecafluoropentyl)sulfonyl]amino]ethyl ester	1.0
61798-68-3	Pyridinium, 1-(3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,10-heptadecafluorodecyl)-, salt with 4-methylbenzenesulfonic acid (1:1)	1.0
83048-65-1	Silane, (3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,10-heptadecafluorodecyl)trimethoxy-	1.0
78560-44-8	Silane, trichloro(3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,10-heptadecafluorodecyl)-	1.0
125476-71-3	Silicic acid (H <sub>4</sub> SiO <sub>4</sub> ), disodium salt, reaction products with chlorotrimethylsilane and 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,10-heptadecafluoro-1-decanol	1.0
143372-54-7	Siloxanes and Silicones, (3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,10-heptadecafluorodecyl)oxy Me, hydroxy Me, Me octyl, ethers with polyethylene glycol mono-Me ether	1.0
335-93-3	Silver(I) perfluorooctanoate	1.0
335-95-5	Sodium perfluorooctanoate	1.0
4151-50-2	Sulfluramid	1.0
180582-79-0	Sulfonic acids, C6-12-alkane, γ-ω-perfluoro, ammonium salts	1.0
30046-31-2	Tetradecane, 1,1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12-pentacosafuoro-14-iodo-	1.0
68758-57-6	1-Tetradecanesulfonyl chloride, 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,13,13,14,14,14-pentacosafuoro-	1.0
39239-77-5	1-Tetradecanol, 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,13,13,14,14,14-pentacosafuoro-	1.0
27905-45-9	1,1,2,2-Tetrahydroperfluorodecyl acrylate	1.0
17741-60-5	1,1,2,2-Tetrahydroperfluorododecyl acrylate	1.0
34362-49-7	1,1,2,2-Tetrahydroperfluorohexadecyl acrylate	1.0
34395-24-9	1,1,2,2-Tetrahydroperfluorotetradecyl acrylate	1.0
97553-95-2	Thiocyanic acid, γ-ω-perfluoro-C4-20-alkyl esters	1.0
68140-18-1	Thiols, C4-10, γ-ω-perfluoro	1.0
1078712-88-5	Thiols, C4-20, γ-ω-perfluoro, telomers with acrylamide and acrylic acid, sodium salts	1.0
68140-20-5	Thiols, C6-12, γ-ω-perfluoro	1.0
70969-47-0	Thiols, C8-20, γ-ω-perfluoro, telomers with acrylamide	1.0
68140-21-6	Thiols, C10-20, γ-ω-perfluoro	1.0

**e. Individually-Listed PFAS Arranged by CASRN**

CASRN	Chemical Name	De minimis % Limit
307-35-7	Perfluorooctylsulfonyl fluoride	1.0
307-55-1	Perfluorododecanoic acid	1.0
335-66-0	Octanoyl fluoride, pentadecafluoro-	1.0
335-67-1	Perfluorooctanoic acid	0.1
335-71-7	1-Heptanesulfonyl fluoride, 1,1,2,2,3,3,4,4,5,5,6,6,7,7,7-pentadecafluoro-	1.0
335-76-2	Perfluorodecanoic acid	1.0
335-93-3	Silver(I) perfluorooctanoate	1.0
335-95-5	Sodium perfluorooctanoate	1.0
355-46-4	Perfluorohexanesulfonic acid	1.0
375-95-1	Perfluorononanoic acid	1.0
376-06-7	Perfluorotetradecanoic acid	1.0
376-14-7	2-[Ethyl[(heptadecafluorooctyl)sulfonyl]amino]ethyl methacrylate	1.0
376-27-2	Methyl perfluorooctanoate	1.0
383-07-3	2-[Butyl[(heptadecafluorooctyl)sulfonyl]amino]ethyl acrylate	1.0

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CASRN	Chemical Name	De minimis % Limit
423-82-5	2-[Ethyl[(heptadecafluorooctyl)sulfonyl]amino]ethyl acrylate	1.0
507-63-1	Perfluorooctyl iodide	1.0
678-39-7	1-Decanol, 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,10-heptadecafluoro-	1.0
865-86-1	1-Dodecanol, 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,12-heneicosafuoro-	1.0
1652-63-7	3-[[Heptadecafluorooctyl)sulfonyl]amino]-N,N,N-trimethyl-1-propanaminium iodide	1.0
1691-99-2	N-Ethyl-N-(2-hydroxyethyl)perfluorooctanesulfonamide	1.0
1763-23-1	Perfluorooctane sulfonic acid	1.0
1996-88-9	2-Propenoic acid, 2-methyl-, 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,10-heptadecafluorodecyl ester	1.0
2043-53-0	Decane, 1,1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8-heptadecafluoro-10-iodo-	1.0
2043-54-1	Dodecane, 1,1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10-heneicosafuoro-12-iodo-	1.0
2144-54-9	2-Propenoic acid, 2-methyl-, 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,12-heneicosafuorododecyl ester	1.0
2263-09-4	1-Octanesulfonamide, N-butyl-1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-N-(2-hydroxyethyl)-	1.0
2395-00-8	Potassium perfluorooctanoate	1.0
2795-39-3	Potassium perfluorooctanesulfonate	1.0
2991-51-7	Glycine, N-ethyl-N-[(heptadecafluorooctyl)sulfonyl]-, potassium salt	1.0
3107-18-4	Cyclohexanesulfonic acid, undecafluoro-, potassium salt	1.0
3825-26-1	Ammonium perfluorooctanoate	1.0
3871-99-6	1-Hexanesulfonic acid, 1,1,2,2,3,3,4,4,5,5,6,6,6-tridecafluoro-, potassium salt	1.0
3872-25-1	1-Pentanesulfonic acid, 1,1,2,2,3,3,4,4,5,5,5-undecafluoro-, potassium salt	1.0
4151-50-2	Sulfluramid	1.0
4980-53-4	2-Propenoic acid, 2-methyl-, 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,13,13,14,14,15,15,16,16,16-nonacosafuorohexadecyl ester	1.0
6014-75-1	2-Propenoic acid, 2-methyl-, 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,13,13,14,14,14-pentacosafuorotetradecyl ester	1.0
13252-13-6	Hexafluoropropylene oxide dimer acid	1.0
16517-11-6	Octadecanoic acid, pentatriacontafluoro-	1.0
17202-41-4	1-Nonanesulfonic acid, 1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,9,9,9-nonadecafluoro-, ammonium salt	1.0
17741-60-5	1,1,2,2-Tetrahydroperfluorododecyl acrylate	1.0
21652-58-4	Perfluorooctyl ethylene	1.0
24448-09-7	1-Octanesulfonamide, 1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-N-(2-hydroxyethyl)-N-methyl-	1.0
25268-77-3	2-[[Heptadecafluorooctyl)sulfonyl]methylamino]ethyl acrylate	1.0
27619-90-5	1-Decanesulfonyl chloride, 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,10-heptadecafluoro-	1.0
27619-91-6	1-Dodecanesulfonyl chloride, 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,12-heneicosafuoro-	1.0
27905-45-9	1,1,2,2-Tetrahydroperfluorodecyl acrylate	1.0
29081-56-9	1-Octanesulfonic acid, 1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-, ammonium salt	1.0
29117-08-6	Poly(oxy-1,2-ethanediyl), $\alpha$ -[2-[ethyl[(heptadecafluorooctyl)sulfonyl]amino]ethyl]- $\omega$ -hydroxy-	1.0
29457-72-5	Lithium (perfluorooctane)sulfonate	1.0
30046-31-2	Tetradecane, 1,1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,12-pentacosafuoro-14-iodo-	1.0
31506-32-8	1-Octanesulfonamide, 1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-N-methyl-	1.0
34362-49-7	1,1,2,2-Tetrahydroperfluorohexadecyl acrylate	1.0
34395-24-9	1,1,2,2-Tetrahydroperfluorotetradecyl acrylate	1.0

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CASRN	Chemical Name	De minimis % Limit
37338-48-0	Poly[oxy(methyl-1,2-ethanediyl)], $\alpha$ -[2-[ethyl[(heptadecafluorooctyl)sulfonyl]amino]ethyl]- $\omega$ -hydroxy-	1.0
38006-74-5	1-Propanaminium, 3-[[heptadecafluorooctyl)sulfonyl]amino]- <i>N,N,N</i> -trimethyl-, chloride	1.0
39239-77-5	1-Tetradecanol, 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,13,13,14,14,14-pentacosafuoro-	1.0
52166-82-2	1-Propanaminium, <i>N,N,N</i> -trimethyl-3-[[tridecafluorohexyl)sulfonyl]amino]-, chloride	1.0
55910-10-6	Glycine, <i>N</i> -[(heptadecafluorooctyl)sulfonyl]- <i>N</i> -propyl-, potassium salt	1.0
56372-23-7	Poly(oxy-1,2-ethanediyl), $\alpha$ -[2-[ethyl[(tridecafluorohexyl)sulfonyl]amino]ethyl]- $\omega$ -hydroxy-	1.0
56773-42-3	Ethanaminium, <i>N,N,N</i> -triethyl-, salt with 1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-1-octanesulfonic acid (1:1)	1.0
59071-10-2	2-Propenoic acid, 2-[ethyl[(pentadecafluoroheptyl)sulfonyl]amino]ethyl ester	1.0
60270-55-5	1-Heptanesulfonic acid, 1,1,2,2,3,3,4,4,5,5,6,6,7,7,7-pentadecafluoro-, potassium salt	1.0
60699-51-6	1-Hexadecanol, 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,13,13,14,14,15,15,16,16,16-nonacosafuoro-	1.0
61660-12-6	1-Octanesulfonamide, <i>N</i> -ethyl-1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro- <i>N</i> -[3-(trimethoxysilyl)propyl]-	1.0
61798-68-3	Pyridinium, 1-(3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,10-heptadecafluorodecyl)-, salt with 4-methylbenzenesulfonic acid (1:1)	1.0
62037-80-3	Hexafluoropropylene oxide dimer acid ammonium salt	1.0
65104-45-2	2-Propenoic acid, 2-methyl-, 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,12-heneicosafuorododecyl ester, polymer with 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,10-heptadecafluorodecyl 2-methyl-2-propenoate, methyl 2-methyl-2-propenoate, 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,13,13,14,14,14-pentacosafuorotetradecyl 2-methyl-2-propenoate and 3,3,4,4,5,5,6,6,7,7,8,8,8-tridecafluorooctyl 2-methyl-2-propenoate	1.0
65104-65-6	1-Eicosanol, 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,13,13,14,14,15,15,16,16,17,17,18,18,19,19,20,20,20-heptatriacontafuoro-	1.0
65104-67-8	1-Octadecanol, 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,13,13,14,14,15,15,16,16,17,17,18,18,18-tritriacontafuoro-	1.0
65510-55-6	Hexadecane, 1,1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,13,13,14,14-nonacosafuoro-16-iodo-	1.0
65530-59-8	Poly(difluoromethylene), $\alpha$ -fluoro- $\omega$ -(2-hydroxyethyl)-, 2-hydroxy-1,2,3-propanetricarboxylate (3:1)	1.0
65530-61-2	Poly(difluoromethylene), $\alpha$ -fluoro- $\omega$ -[2-(phosphonooxy)ethyl]-	1.0
65530-62-3	Poly(difluoromethylene), $\alpha,\alpha'$ -[phosphinicobis(oxy-2,1-ethanediyl)]bis[ $\omega$ -fluoro-	1.0
65530-63-4	Ethanol, 2,2'-iminobis-, compd. with $\alpha$ -fluoro- $\omega$ -[2-(phosphonooxy)ethyl]poly(difluoromethylene) (2:1)	1.0
65530-64-5	Ethanol, 2,2'-iminobis-, compd. with $\alpha,\alpha'$ -[phosphinicobis(oxy-2,1-ethanediyl)]bis[ $\omega$ -fluoropoly(difluoromethylene)] (1:1)	1.0
65530-65-6	Poly(difluoromethylene), $\alpha$ -fluoro- $\omega$ -[2-[(1-oxooctadecyl)oxy]ethyl]-	1.0
65530-66-7	Poly(difluoromethylene), $\alpha$ -fluoro- $\omega$ -[2-[(2-methyl-1-oxo-2-propenyl)oxy]ethyl]-	1.0
65530-69-0	Poly(difluoromethylene), $\alpha$ -[2-[(2-carboxyethyl)thio]ethyl]- $\omega$ -fluoro-, lithium salt	1.0
65530-70-3	Poly(difluoromethylene), $\alpha,\alpha'$ -[phosphinicobis(oxy-2,1-ethanediyl)]bis[ $\omega$ -fluoro-, ammonium salt	1.0
65530-71-4	Poly(difluoromethylene), $\alpha$ -fluoro- $\omega$ -[2-(phosphonooxy)ethyl]-, monoammonium salt	1.0
65530-72-5	Poly(difluoromethylene), $\alpha$ -fluoro- $\omega$ -[2-(phosphonooxy)ethyl]-, diammonium salt	1.0
65530-74-7	Ethanol, 2,2'-iminobis-, compd. with $\alpha$ -fluoro- $\omega$ -[2-(phosphonooxy)ethyl]poly(difluoromethylene) (1:1)	1.0
65530-83-8	Poly(difluoromethylene), $\alpha$ -[2-[(2-carboxyethyl)thio]ethyl]- $\omega$ -fluoro-	1.0



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CASRN	Chemical Name	De minimis % Limit
65545-80-4	Poly(oxy-1,2-ethanediyl), $\alpha$ -hydro- $\omega$ -hydroxy-, ether with $\alpha$ -fluoro- $\omega$ -(2-hydroxyethyl)poly(difluoromethylene) (1:1)	1.0
65605-56-3	Poly(difluoromethylene), $\alpha$ -fluoro- $\omega$ -(2-hydroxyethyl)-, dihydrogen 2-hydroxy-1,2,3-propanetricarboxylate	1.0
65605-57-4	Poly(difluoromethylene), $\alpha$ -fluoro- $\omega$ -(2-hydroxyethyl)-, hydrogen 2-hydroxy-1,2,3-propanetricarboxylate	1.0
65605-58-5	2-Propenoic acid, esters, 2-methyl-, dodecyl ester, polymer with $\alpha$ -fluoro- $\omega$ -[2-[(2-methyl-1-oxo-2-propen-1-yl)oxy]ethyl]poly(difluoromethylene)	1.0
65605-59-6	2-Propenoic acid, 2-methyl-, dodecyl ester, polymer with $\alpha$ -fluoro- $\omega$ -[2-[(2-methyl-1-oxo-2-propen-1-yl)oxy]ethyl]poly(difluoromethylene) and <i>N</i> -(hydroxymethyl)-2-propenamide	1.0
65605-73-4	Poly(difluoromethylene), $\alpha$ -fluoro- $\omega$ -[2-[(1-oxo-2-propenyl)oxy]ethyl]-, homopolymer	1.0
65636-35-3	Ethanaminium, <i>N,N</i> -diethyl- <i>N</i> -methyl-2-[(2-methyl-1-oxo-2-propenyl)oxy]-, methyl sulfate, polymer with 2-ethylhexyl 2-methyl-2-propenoate, $\alpha$ -fluoro- $\omega$ -[2-[(2-methyl-1-oxo-2-propenyl)oxy]ethyl]poly(difluoromethylene), 2-hydroxyethyl 2-methyl-2-propenoate and <i>N</i> -(hydroxymethyl)-2-propenamide	1.0
67584-42-3	Cyclohexanesulfonic acid, decafluoro(pentafluoroethyl)-, potassium salt	1.0
67584-52-5	Glycine, <i>N</i> -ethyl- <i>N</i> -[(undecafluoropentyl)sulfonyl]-, potassium salt	1.0
67584-53-6	Glycine, <i>N</i> -ethyl- <i>N</i> -[(tridecafluorohexyl)sulfonyl]-, potassium salt	1.0
67584-56-9	2-Propenoic acid, 2-[methyl[(undecafluoropentyl)sulfonyl]amino]ethyl ester	1.0
67584-57-0	2-Propenoic acid, 2-[methyl[(tridecafluorohexyl)sulfonyl]amino]ethyl ester	1.0
67584-58-1	1-Propanaminium, <i>N,N,N</i> -trimethyl-3-[[pentadecafluoroheptyl)sulfonyl]amino]-, iodide	1.0
67584-62-7	Glycine, <i>N</i> -ethyl- <i>N</i> -[(pentadecafluoroheptyl)sulfonyl]-, potassium salt	1.0
67905-19-5	Perfluoropalmitic acid	1.0
67906-42-7	1-Decanesulfonic acid, 1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,10-heneicosafluoro-, ammonium salt	1.0
67969-69-1	1-Octanesulfonamide, <i>N</i> -ethyl-1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro- <i>N</i> -[2-(phosphonooxy)ethyl]-, diammonium salt	1.0
68084-62-8	2-Propenoic acid, 2-[methyl[(pentadecafluoroheptyl)sulfonyl]amino]ethyl ester	1.0
68140-18-1	Thiols, C4-10, $\gamma$ - $\omega$ -perfluoro	1.0
68140-20-5	Thiols, C6-12, $\gamma$ - $\omega$ -perfluoro	1.0
68140-21-6	Thiols, C10-20, $\gamma$ - $\omega$ -perfluoro	1.0
68141-02-6	Chromium(III) perfluorooctanoate	1.0
68156-01-4	Cyclohexanesulfonic acid, nonafluorobis(trifluoromethyl)-, potassium salt	1.0
68156-07-0	Cyclohexanesulfonic acid, decafluoro(trifluoromethyl)-, potassium salt	1.0
68187-25-7	Butanoic acid, 4-[[3-(dimethylamino)propyl]amino]-4-oxo-, 2(or 3)-[( $\gamma$ - $\omega$ -perfluoro-C6-20-alkyl)thio] derivs.	1.0
68187-47-3	1-Propanesulfonic acid, 2-methyl-, 2-[[1-oxo-3-[( $\gamma$ - $\omega$ -perfluoro-C4-16-alkyl)thio]propyl]amino] derivs., sodium salts	1.0
68188-12-5	Alkyl iodides, C4-20, $\gamma$ - $\omega$ -perfluoro	1.0
68227-96-3	2-Propenoic acid, butyl ester, telomer with 2-[[heptadecafluorooctyl)sulfonyl]methylamino]ethyl 2-propenoate, 2-[methyl[(nonafluorobutyl)sulfonyl]amino]ethyl 2-propenoate, $\alpha$ -(2-methyl-1-oxo-2-propenyl)- $\omega$ -hydroxypoly(oxy-1,4-butanediyl), $\alpha$ -(2-methyl-1-oxo-2-propenyl)- $\omega$ -[(2-methyl-1-oxo-2-propenyl)oxy]poly(oxy-1,4-butanediyl), 2-[methyl[(pentadecafluoroheptyl)sulfonyl]amino]ethyl 2-propenoate, 2-[methyl[(tridecafluorohexyl)sulfonyl]amino]ethyl 2-propenoate, 2-[methyl[(undecafluoropentyl)sulfonyl]amino]ethyl 2-propenoate and 1-octanethiol	1.0
68239-43-0	2-Propenoic acid, 2-methyl-, 2-ethylhexyl ester, polymer with $\alpha$ -fluoro- $\omega$ -[2-[(2-methyl-1-oxo-2-propen-1-yl)oxy]ethyl]poly(difluoromethylene), 2-hydroxyethyl 2-methyl-2-propenoate and <i>N</i> -(hydroxymethyl)-2-propenamide	1.0
68259-07-4	1-Heptanesulfonic acid, 1,1,2,2,3,3,4,4,5,5,6,6,7,7,7-pentadecafluoro-, ammonium salt	1.0
68259-08-5	1-Hexanesulfonic acid, 1,1,2,2,3,3,4,4,5,5,6,6,6-tridecafluoro-, ammonium salt	1.0

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CASRN	Chemical Name	De minimis % Limit
68259-09-6	1-Pentanesulfonic acid, 1,1,2,2,3,3,4,4,5,5,5-undecafluoro-, ammonium salt	1.0
68259-38-1	Poly[oxy(methyl-1,2-ethanediyl)], $\alpha$ -[2-[ethyl[(tridecafluorohexyl)sulfonyl]amino]ethyl]- $\omega$ -hydroxy-	1.0
68259-39-2	Poly[oxy(methyl-1,2-ethanediyl)], $\alpha$ -[2-[ethyl[(pentadecafluoroheptyl)sulfonyl]amino]ethyl]- $\omega$ -hydroxy-	1.0
68298-62-4	2-Propenoic acid, 2-[butyl[(heptadecafluorooctyl)sulfonyl]amino]ethyl ester, telomer with 2-[butyl[(pentadecafluoroheptyl)sulfonyl]amino]ethyl 2-propenoate, methyloxirane polymer with oxirane di-2-propenoate, methyloxirane polymer with oxirane mono-2-propenoate and 1-octanethiol	1.0
68298-80-6	Poly(oxy-1,2-ethanediyl), $\alpha$ -[2-[ethyl[(undecafluoropentyl)sulfonyl]amino]ethyl]- $\omega$ -hydroxy-	1.0
68298-81-7	Poly(oxy-1,2-ethanediyl), $\alpha$ -[2-[ethyl[(pentadecafluoroheptyl)sulfonyl]amino]ethyl]- $\omega$ -hydroxy-	1.0
68310-17-8	Poly[oxy(methyl-1,2-ethanediyl)], $\alpha$ -[2-[ethyl[(undecafluoropentyl)sulfonyl]amino]ethyl]- $\omega$ -hydroxy-	1.0
68391-08-2	Alcohols, C8-14, $\gamma$ - $\omega$ -perfluoro	1.0
68412-68-0	Phosphonic acid, perfluoro-C6-12-alkyl derivs.	1.0
68412-69-1	Phosphinic acid, bis(perfluoro-C6-12-alkyl) derivs.	1.0
68515-62-8	1,4-Benzenedicarboxylic acid, dimethyl ester, reaction products with bis(2-hydroxyethyl)terephthalate, ethylene glycol, $\alpha$ -fluoro- $\omega$ -(2-hydroxyethyl)poly(difluoromethylene), hexakis(methoxymethyl)melamine and polyethylene glycol	1.0
68555-74-8	1-Pentanesulfonamide, 1,1,2,2,3,3,4,4,5,5,5-undecafluoro- <i>N</i> -(2-hydroxyethyl)- <i>N</i> -methyl-	1.0
68555-75-9	1-Hexanesulfonamide, 1,1,2,2,3,3,4,4,5,5,6,6,6-tridecafluoro- <i>N</i> -(2-hydroxyethyl)- <i>N</i> -methyl-	1.0
68555-76-0	1-Heptanesulfonamide, 1,1,2,2,3,3,4,4,5,5,6,6,7,7,7-pentadecafluoro- <i>N</i> -(2-hydroxyethyl)- <i>N</i> -methyl-	1.0
68555-81-7	1-Propanaminium, <i>N,N,N</i> -trimethyl-3-[[pentadecafluoroheptyl)sulfonyl]amino]-, chloride	1.0
68555-91-9	2-Propenoic acid, 2-methyl-, 2-[ethyl[(heptadecafluorooctyl)sulfonyl]amino]ethyl ester, polymer with 2-[ethyl[(nonafluorobutyl)sulfonyl]amino]ethyl 2-methyl-2-propenoate, 2-[ethyl[(pentadecafluoroheptyl)sulfonyl]amino]ethyl 2-methyl-2-propenoate, 2-[ethyl[(tridecafluorohexyl)sulfonyl]amino]ethyl 2-methyl-2-propenoate, 2-[ethyl[(undecafluoropentyl)sulfonyl]amino]ethyl 2-methyl-2-propenoate and octadecyl 2-methyl-2-propenoate	1.0
68758-57-6	1-Tetradecanesulfonyl chloride, 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,13,13,14,14,14-pentacosafuoro-	1.0
68867-60-7	2-Propenoic acid, 2-[[heptadecafluorooctyl)sulfonyl]methylamino]ethyl ester, polymer with 2-[methyl[(nonafluorobutyl)sulfonyl]amino]ethyl 2-propenoate, 2-[methyl[(pentadecafluoroheptyl)sulfonyl]amino]ethyl 2-propenoate, 2-[methyl[(tridecafluorohexyl)sulfonyl]amino]ethyl 2-propenoate, 2-[methyl[(undecafluoropentyl)sulfonyl]amino]ethyl 2-propenoate and $\alpha$ -(1-oxo-2-propenyl)- $\omega$ -methoxypoly(oxy-1,2-ethanediyl)	1.0
68957-55-1	1-Propanaminium, <i>N,N,N</i> -trimethyl-3-[[undecafluoropentyl)sulfonyl]amino]-, chloride	1.0
68957-57-3	1-Propanaminium, <i>N,N,N</i> -trimethyl-3-[[undecafluoropentyl)sulfonyl]amino]-, iodide	1.0
68957-58-4	1-Propanaminium, <i>N,N,N</i> -trimethyl-3-[[tridecafluorohexyl)sulfonyl]amino]-, iodide	1.0
68957-62-0	1-Heptanesulfonamide, <i>N</i> -ethyl-1,1,2,2,3,3,4,4,5,5,6,6,7,7,7-pentadecafluoro-	1.0
68958-60-1	Poly(oxy-1,2-ethanediyl), $\alpha$ -[2-[ethyl[(pentadecafluoroheptyl)sulfonyl]amino]ethyl]- $\omega$ -methoxy-	1.0
68958-61-2	Poly(oxy-1,2-ethanediyl), $\alpha$ -[2-[ethyl[(heptadecafluorooctyl)sulfonyl]amino]ethyl]- $\omega$ -methoxy-	1.0
70225-14-8	1-Octanesulfonic acid, 1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-, compd. with 2,2'-iminobis[ethanol] (1:1)	1.0

Table II. EPCRA Section 313 Chemical List for Reporting Year 2021

CASRN	Chemical Name	De minimis % Limit
70225-15-9	1-Heptanesulfonic acid, 1,1,2,2,3,3,4,4,5,5,6,6,7,7,7-pentadecafluoro-, compd. with 2,2'-iminobis[ethanol] (1:1)	1.0
70225-16-0	1-Hexanesulfonic acid, 1,1,2,2,3,3,4,4,5,5,6,6,6-tridecafluoro-, compd. with 2,2'-iminobis[ethanol] (1:1)	1.0
70225-17-1	1-Pentanesulfonic acid, 1,1,2,2,3,3,4,4,5,5,5-undecafluoro-, compd. with 2,2'-iminobis[ethanol] (1:1)	1.0
70969-47-0	Thiols, C8-20, $\gamma$ - $\omega$ -perfluoro, telomers with acrylamide	1.0
70983-59-4	Poly(oxy-1,2-ethanediyl), $\alpha$ -methyl- $\omega$ -hydroxy-, 2-hydroxy-3-[( $\gamma$ - $\omega$ -perfluoro-C6-20-alkyl)thio]propyl ethers	1.0
70983-60-7	1-Propanaminium, 2-hydroxy- <i>N,N,N</i> -trimethyl-, 3-[( $\gamma$ - $\omega$ -perfluoro-C6-20-alkyl)thio] derivs., chlorides	1.0
71608-60-1	Pentanoic acid, 4,4-bis[( $\gamma$ - $\omega$ -perfluoro-C8-20-alkyl)thio] derivs.	1.0
72623-77-9	Fatty acids, C6-18, perfluoro, ammonium salts	1.0
72968-38-8	Fatty acids, C7-13, perfluoro, ammonium salts	1.0
74499-44-8	Phosphoric acid, $\gamma$ - $\omega$ -perfluoro-C8-16-alkyl esters, compds. with diethanolamine	1.0
78560-44-8	Silane, trichloro(3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,10-heptadecafluorodecyl)-	1.0
80010-37-3	Poly(difluoromethylene), $\alpha$ -fluoro- $\omega$ -[2-sulphoethyl]-	1.0
83048-65-1	Silane, (3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,10-heptadecafluorodecyl)trimethoxy-	1.0
95144-12-0	Poly(difluoromethylene), $\alpha$ -fluoro- $\omega$ -[2-(phosphonoxy)ethyl]-, ammonium salt	1.0
97553-95-2	Thiocyanic acid, $\gamma$ - $\omega$ -perfluoro-C4-20-alkyl esters	1.0
97659-47-7	Alkenes, C8-14 $\alpha$ -, $\delta$ - $\omega$ -perfluoro	1.0
118400-71-8	Disulfides, bis( $\gamma$ - $\omega$ -perfluoro-C6-20-alkyl)	1.0
123171-68-6	Poly(difluoromethylene), $\alpha$ -[2-(acetyloxy)-3-[(carboxymethyl)dimethylammonio]propyl]- $\omega$ -fluoro-, inner salt	1.0
125476-71-3	Silicic acid (H <sub>4</sub> SiO <sub>4</sub> ), disodium salt, reaction products with chlorotrimethylsilane and 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,10-heptadecafluoro-1-decanol	1.0
135228-60-3	Hexane, 1,6-diisocyanato-, homopolymer, $\gamma$ - $\omega$ -perfluoro-C6-20-alc.-blocked	1.0
142636-88-2	2-Propenoic acid, 2-methyl-, octadecyl ester, polymer with 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,12-heneicosafuorododecyl 2-propenoate, 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,10-heptadecafluorodecyl 2-propenoate and 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,13,13,14,14,14-pentacosafuorotetradecyl 2-propenoate	1.0
143372-54-7	Siloxanes and Silicones, (3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,10-heptadecafluorodecyl)oxy Me, hydroxy Me, Me octyl, ethers with polyethylene glycol mono-Me ether	1.0
148240-85-1	1,3-Propanediol, 2,2-bis[[( $\gamma$ - $\omega$ -perfluoro-C4-10-alkyl)thio]methyl] derivs., phosphates, ammonium salts	1.0
148240-87-3	1,3-Propanediol, 2,2-bis[[( $\gamma$ - $\omega$ -perfluoro-C6-12-alkyl)thio]methyl] derivs., phosphates, ammonium salts	1.0
148240-89-5	1,3-Propanediol, 2,2-bis[[( $\gamma$ - $\omega$ -perfluoro-C10-20-alkyl)thio]methyl] derivs., phosphates, ammonium salts	1.0
150135-57-2	2-Propenoic acid, 2-methyl-, 2-(dimethylamino)ethyl ester, polymers with Bu acrylate, $\gamma$ - $\omega$ -perfluoro-C8-14-alkyl acrylate and polyethylene glycol monomethacrylate, 2,2'-azobis[2,4-dimethylpentanenitrile]-initiated	1.0
178094-69-4	1-Octanesulfonamide, <i>N</i> -[3-(dimethyloxidoamino)propyl]-1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-, potassium salt	1.0
178535-23-4	Fatty acids, linseed-oil, $\gamma$ - $\omega$ -perfluoro-C8-14-alkyl esters	1.0
180582-79-0	Sulfonic acids, C6-12-alkane, $\gamma$ - $\omega$ -perfluoro, ammonium salts	1.0
182176-52-9	Ethaneperoxoic acid, reaction products with 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,10-heptadecafluorodecyl thiocyanate and 3,3,4,4,5,5,6,6,7,7,8,8,8-tridecafluorooctyl thiocyanate	1.0
196316-34-4	2-Propenoic acid, 2-methyl-, 2-(dimethylamino)ethyl ester, polymers with $\gamma$ - $\omega$ -perfluoro-C10-16-alkyl acrylate and vinyl acetate, acetates	1.0

*Table II. EPCRA Section 313 Chemical List for Reporting Year 2021*

CASRN	Chemical Name	<i>De minimis</i> % Limit
200513-42-4	2-Propenoic acid, 2-methyl-, polymer with butyl 2-methyl-2-propenoate, 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,10-heptafluorodecyl 2-propenoate, 2-hydroxyethyl 2-methyl-2-propenoate and methyl 2-methyl-2-propenoate	1.0
238420-68-3	Propanedioic acid, mono( $\gamma$ - $\omega$ -perfluoro-C8-12-alkyl) derivs., di-me esters	1.0
238420-80-9	Propanedioic acid, mono( $\gamma$ - $\omega$ -perfluoro-C8-12-alkyl) derivs., bis[4-(ethenoxy)butyl] esters	1.0
1078142-10-5	1,3-Propanediol, 2,2-bis[[( $\gamma$ - $\omega$ -perfluoro-C6-12-alkyl)thio]methyl] derivs., polymers with 2,2-bis[[( $\gamma$ - $\omega$ -perfluoro-C10-20-alkyl)thio]methyl]-1,3-propanediol, 1,6-diisocyanato-2,2,4(or 2,4,4)-trimethylhexane, 2-heptyl-3,4-bis(9-isocyanatononyl)-1-pentylcyclohexane and 2,2'-(methylimino)bis[ethanol]	1.0
1078712-88-5	Thiols, C4-20, $\gamma$ - $\omega$ -perfluoro, telomers with acrylamide and acrylic acid, sodium salts	1.0
1078715-61-3	1-Propanaminium, 3-amino- <i>N</i> -(carboxymethyl)- <i>N,N</i> -dimethyl-, <i>N</i> -[2-[( $\gamma$ - $\omega$ -perfluoro-C4-20-alkyl)thio]acetyl] derivs., inner salts	1.0

# APPENDIX B

## Environmental Management System (EMS) Alternative

This appendix describes the application process for the EMS Alternative to TUHWR Plan development and the criteria for remaining in the program once the EMS is approved. If pursuing the EMS Alternative, the separate application form referred to in this appendix must be submitted by **July 1, 2023**. The EMS Alternative application can be found on the [TUHWR website](#). Applications may be emailed to [andrew.youngs@vermont.gov](mailto:andrew.youngs@vermont.gov).

### **Eligibility**

A facility required to prepare a TUHWR 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 Vermont Hazardous Materials Program (Program);
- 3) The facility allows the Program to conduct an on-site review of its EMS;
- 4) The facility submits an Annual Progress Report on TUHWR and applicable Annual 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, the Program has determined that TUHWR, as defined herein, must be explicitly considered in such a system.

***TUHWR*** 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. TUHWR also includes practices that reduce the use of energy, water or other resources through conservation or more efficient use.

### **TUHWR 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 TUHWR Plan.

The Program defines TUHWR 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 TUHWR Plan, a facility's EMS must address TUHWR as the Program defines it, in policy and implementation.

**Criterion 1: TUHWR Policy**

The facility adopts and implements policies that establish TUHWR 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 TUHWR 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 TUHWR 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 TUHWR objectives and targets. The objectives and targets should be consistent with TUHWR 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 TUHWR 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 TUHWR concepts and implementation at each relevant function and level and provides for employee involvement in identification and implementation of TUHWR 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 the Program 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**

If pursuing the EMS Alternative, the separate application form referred to in this appendix must be submitted by **July 1, 2023**. The EMS Alternative application can be found on the [TUHWR website](#). Applications may be emailed to [andrew.youngs@vermont.gov](mailto:andrew.youngs@vermont.gov).

**EMS Review by the Program 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 the Program that the facility's EMS does not conform to these criteria, the Program will inform the facility and allow 90 days to correct deficiencies (either through modification of the EMS or submission of a TUHWR Plan or alternative as described in the TUHWR Planning guidance document).

# APPENDIX C

## TUHWR Planning Resources

### **Hazardous Materials Program – Hazardous Waste Section**

Waste Management and Prevention Division  
Vermont Department of Environmental Conservation  
1 National Life Drive – Davis 1  
Montpelier, VT 05620-3704  
(802) 828—1138

<https://dec.vermont.gov/waste-management/hazardous/toxic-use-hazardous-waste-reduction>

### **Online Resources**

**Zero Waste Network** – search for TUHWR case studies by industry type, process type, or type of waste reduced:

<http://www.zerowastenetwork.org/P2Options/index.cfm>

**Healthcare Environmental Resource Center** – TUHWR and compliance assistance information for the healthcare industry:

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

**Toxics Use Reduction Institute (TURI) at UMASS Lowell:**

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

**OSHA Transitioning to Safer Chemicals Toolkit:**

[https://www.osha.gov/dsg/safer\\_chemicals/index.html](https://www.osha.gov/dsg/safer_chemicals/index.html)

**Subsport** – chemical substitution support portal with ingredient and case study database:

[https://www.subsportplus.eu/subsportplus/EN/Home/Home\\_node.html](https://www.subsportplus.eu/subsportplus/EN/Home/Home_node.html)

**Chemhat** – chemical hazards and alternatives toolbox showing health effects, hazards, environmental impacts, and safer alternatives:

<http://www.chemhat.org/en>

**Washington State Department of Ecology** – finding safer alternatives to toxic chemicals:

<https://ecology.wa.gov/Regulations-Permits/Guidance-technical-assistance/Preventing-hazardous-waste-pollution/Safer-alternatives>

**EPA's Safer Choice labeling program:**

<http://www.epa.gov/saferchoice>

**Green Seal Certified Products:**

<https://greenseal.org/home-consumers/?set-target=consumer>



**Electronic Product Environmental Assessment Tool:**

<http://www.epeat.net/>

**Energy Star, Energy Efficient Products:**

<https://www.energystar.gov/products>

**EPA Sustainable Marketplace for greener products and services:**

<https://www.epa.gov/greenerproducts>

# Worksheet 1 - Facility Information

Facility Name: \_\_\_\_\_

Facility Mailing Address: \_\_\_\_\_

\_\_\_\_\_

Contact Person: \_\_\_\_\_

Phone: \_\_\_\_\_ E-mail: \_\_\_\_\_

Planning Status (check all that apply)\*

Large User

EPA ID: \_\_\_\_\_

Class A Generator

Class B Generator

\*Note: It is possible for a facility to be *both* a Large User of toxic substances *and either* a Class A or Class B generator of hazardous waste.

## Facility Description

Industry type: \_\_\_\_\_ Primary 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:

Unit of Product and Previous Year's Production Levels:

# Worksheet 2 - Policy and Employee Training

## Management Policy Statement

## Employee Training and Awareness Program(s)

How are the above policies shared with employees?

Management Signature:

Title: \_\_\_\_\_ Date: \_\_\_\_\_

## Worksheet 3 - Ongoing TУHWR Activities

List or describe any source reduction, waste reduction, and/or 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.

Although the TУHWR statute is specific to the use of toxic chemicals and the generation of hazardous waste, entities that implement TУHWR measures may also see a decrease in the quantity or toxicity of wastewater discharges, air emissions, and/or other environmental releases. Any examples of these measures should be described on this Worksheet, as they may represent significant environmental accomplishments.

# Worksheet 4A - Toxic Substance Use – Product Approach

Previous 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 rows below:*

Product	Amount of Product Used (lbs.)	Toxic Substance(s) Found in Products	Total Concentration of Toxics (%)
<i>Example - A+ Lacquer Thinner</i>	<i>2,300 lbs.</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 lbs.</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.

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

Previous 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:*

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

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 5 – Hazardous Waste Generation

Previous 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 Previous Year (lbs.)	Percent of Total Hazardous Waste Generated in the Previous Year (%)	Process(es) Generating the Hazardous Waste
EXAMPLE D002	Alkaline etch solution	60,000 lbs.	75%	Copper etching

# Worksheet 6 - Process Description

Use a separate sheet for each process if you would like. Please attach any process maps.

**Process Name:** \_\_\_\_\_

**Process Description:**

## **Worksheet 7- Opportunities, by Priority**

Identify TUHWR opportunities to be evaluated and the associated process for each. For the opportunities that will be evaluated, determine whether they are source reduction or recycling and initiatives and summarize them below.

**Source Reduction Initiatives:**

**Recycling Initiatives:**

# 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
<b>Environmental Considerations</b>				
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:				
<b>Product and Production Considerations</b>				
Are other entities 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:				
<b>Employee Considerations</b>				
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:				
<b>Equipment Considerations</b>				
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:				
<b>Result of Technical Feasibility Analysis - Check one:</b>				
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:		

# Worksheet 9 - Financial Analysis

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

<b>Opportunity:</b>			
	<b>Current Cost</b>	<b>New Process Cost</b>	<b>Differential (Cost) or Savings</b>
<b>OPERATING COSTS</b>			
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.)			
<b>Net Operating Cash Flow in Year 1</b> (sum of all operating cost differentials)	N/A	N/A	
<b>CAPITAL COSTS (one-time expenditures)</b>			
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		
<b>Total Capital Costs</b>	N/A		
<b>Payback Period = Total Capital Costs ÷ Net Operating Cash Flow =</b>		<b>_____ Years</b>	
<b>Check One:</b>			
<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		

# 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