

**U.S. ENVIRONMENTAL PROTECTION AGENCY**  
Office of Atmospheric Programs  
Washington, DC 20460

THE SIGNIFICANT NEW ALTERNATIVES POLICY (SNAP) PROGRAM  
INFORMATION NOTICE INSTRUCTION MANUAL  
Revised January 2020

The U.S. Environmental Protection Agency (EPA) has prepared this instruction manual to help you in submitting information on alternatives to the Significant New Alternatives Policy (SNAP) program. This manual provides instructions on submitting the SNAP Information Notice form, asserting confidentiality claims, and submitting test data and optional information. However, please note that in the event of any discrepancies between this document and the Code of Federal Regulations (CFR), the CFR requirements are legally binding and take precedence.

This revised form has been updated to clarify the information requested by EPA. In addition, a response checker has been added that, in the Excel version of the form, can identify questions that are missing responses. Also, for those submitting an alternative that contains one or more chemicals that the SNAP program has not listed, the form now includes a new Part XII with lists of recommended toxicological studies to include with your submission.

## **Part I: Introduction and Confidentiality Claims**

### **Section A: Introduction**

All submitters must complete all of Part I: Introduction and CBI, Part II: Contact Information, Part III: General Information, Part XIV: Attachments, and Part XV: Certification. If you are submitting an alternative that contains one or more chemicals that the SNAP program has not listed, you must also complete Part XII: Toxicology Studies. For each sector for which the alternative is being submitted, submitters must also complete the corresponding sector-specific data requirements found in Parts IV to XI, outlined below for your submission to be accepted for review under SNAP.

- Part IV: Refrigeration and Air Conditioning
- Part V: Foam Blowing
- Part VI: Cleaning Solvents
- Part VII: Fire Suppression
- Part VIII: Aerosols
- Part IX: Sterilants
- Part X: Adhesives, Coatings, and Inks
- Part XI: Tobacco Expansion

Enter any additional information in Part XIII. Before submitting the Notice form, you may review the completeness of the form using the Response Checker, which can be found prior to Part XV: Certification.

Please select the appropriate box on the Introduction and CBI tab indicating the type of submission: new alternative not previously listed under SNAP or new end-use or application of substitute currently listed under SNAP.

### **Section B: Identification of Alternatives**

Please identify the name of the alternative, as well as the sector(s), end-use(s), and application(s) (if applicable) for which the form is being submitted in Part I, Section B. Sectors, end-uses, and applications are defined in Parts IV through XI.

### **Section C: Confidentiality Claims**

If you submit information for which you would like to request Clean Air Act (CAA) Confidential Business Information (CBI) status, you must make a claim of confidentiality at the time of submission and substantiate that claim.

EPA will treat all claims of confidentiality consistent with 40 CFR Part 2, Subpart B. To claim information as CBI, bracket the specific information you claim as confidential and mark the confidential box in the column on the right-side of the page in the corresponding row.

To ensure that no confidential information is disclosed to the public, you must submit an additional copy of the notice form, including attachments, which does not contain confidential information. This version (“sanitized,” “redacted”) will be placed in the public docket. It must contain all non-confidential information. To assert confidentiality claims for information in attachments to the form, provide a complete copy of the attachment that clearly indicates (e.g., by circling or bracketing) the information you wish to claim as confidential. Bracket only the specific information you claim as confidential.

Provide a Statement of Data Confidentiality Claims in Part I, Section C based on the instructions provided in the form. Provide the following information:

1. Please provide the reasons why the cited passages qualify for confidential treatment.
2. If you assert that disclosure of this information would be likely to result in substantial harmful effects to you, describe those harmful effects and explain why they should be viewed as substantial.
3. Indicate the length of time - until a specific date or event, or permanently - for which the information should be treated as confidential.
4. Identify the measures you have taken to guard against undesired disclosure of this information.
5. Describe the extent to which the information has been disclosed, and what precautions have been taken in connection with these disclosures.
6. Please provide copies of any determinations of confidentiality previously made by EPA, other Federal agencies, or courts concerning this information.

EPA requires substantiation of all CBI claims under SNAP or a submission will be considered incomplete.

## **Part II: Contact Information**

### **Section A: Submitter Contact Information**

All contacts listed in Part II will be granted access to CBI, unless otherwise noted and substantiated in Part I, Section C.

1. **Person Submitting Notice** - Enter information for the primary submitter of the notice. The person submitting the notice form must sign the certification in Part XV- Certification.
2. **Agent** - Complete only if you authorize an agent to assist you in preparing this notice. The agent must also sign the certification in Part XV: Certification.
3. **Technical Contact** - Identify a person who can provide EPA with additional technical information on the substitute during the review period if that contact is different than the "Person Submitting Notice" and the "Agent." The technical contact identified should be located within the U.S. and be available to be reached by telephone during normal business hours.
4. **Joint Submitter** - Identify the joint submitter, if any, who is authorized by the primary submitter to provide some of the information required in the submission form. A submission will not be considered complete until EPA receives all information.

If you have a Joint Submitter who is authorized to provide information directly to EPA (e.g., a foreign manufacturer or supplier), indicate which information will be supplied by the other person in Part XIII: Additional Information. A letter in support of your submission should be provided by the Joint Submitter on their company letterhead. An example of where this could apply would be in situations where alternative formulation information is held confidentially by a foreign manufacturer. A submission will be considered incomplete until this information is provided. Whenever possible, use the same name for the alternative (e.g., generic name) to link this information to your submission.

## Part III: General Information

### Section A: Alternative-Specific Information

EPA must receive a complete and unambiguous identification of the new substitute. If the alternative is not adequately identified, we will consider the submission incomplete. If you are an importer of an alternative and do not know the chemical identity of a substitute because it is confidential, you must contact the manufacturer or supplier and have the specific chemical identity provided directly to EPA. In this way, manufacturers can protect confidential business information. This information may be provided in a letter on company letterhead from the supplier.

1. **Identify Proposed Substitute - (a-d)** Enter the specific name of the chemical substance, the percent of the composition, the Chemical Abstracts Service (CAS) registry number, and the molecular formula of the alternative. In describing chemical substances, EPA prefers that International Union of Pure and Applied Chemistry (IUPAC) nomenclature be used for identification purposes. If the substitute is a blend of chemicals, you must provide the exact composition and/or the range of percent composition of all components of the blend. In addition to active ingredients, you must also list other chemical substances in blends, such as solvents, inhibitors, etc., that may also be present in the alternative. If your substitute is a technology or process change, rather than a chemical substitute, then provide the name of the alternative technology or process in (a) and proceed to (e).  
  
(e) For alternative technologies and/or processes, provide a detailed description and diagram of the technology or process and information on any chemical constituents.

(f) If you have applied for or hold a U.S. patent on the substitute, provide the patent name, number (if available), and information on topics covered in the patent. It is not necessary to provide the patent.

2. **Commercial/Trade name(s) of alternative** - Indicate the name(s) under which the alternative would be marketed.
3. **Generic name** - If the identity of a substitute and the commercial/trade name are claimed as confidential, provide a generic name that is specific enough to identify the substance uniquely. The generic name may be published in the Federal Register document announcing EPA's acceptability determination of your alternative. If the name seems more generic than necessary, EPA will contact you and assist you in developing an adequate name.

The generic name should provide sufficient information for the public by indicating the classes of chemicals which the alternative contains without revealing specific information about the product's composition. For example, it may be necessary to reveal that a refrigerant blend contains an HCFC in order to allow users or importers to comply with regulations issued under sections 604, 605 or 608 of the CAA.

4. **Impurities - (a-d)** Identify by name, weight percent, CAS Registry number (where available), and molecular formula each impurity that you reasonably anticipate will be present in the alternative as manufactured for commercial purposes. An impurity is any chemical substance that is unintentionally present in the alternative. List all impurities, regardless of weight percent. If the substance contains some unidentified impurities, also enter "unidentified". Do not include substances that are mixed with the new substance after manufacture of the primary ingredients. If there are no impurities, enter "None." For alternative technologies and/or processes, mark "N/A" in (a) and proceed to 6.
5. **Byproducts- (a-e)** Identify any byproducts that you reasonably anticipate will result from the manufacture or processing of the alternative both at sites you control and in end-use. Identify these byproducts by specific name or class or range of structures (e.g., HF or other acid gases formed during the production of halocarbon compounds via dehalogenation, HFC-143a and/or HCFC-124 formed during the production of HFC-134a), CAS Registry number (where available), when the byproduct is formed (e.g., during manufacture), and the estimated amount formed (grams) relative to the amount of proposed substitute manufactured.
6. **Degradation Products- (a-e)** Identify any degradation products that you reasonably anticipate will result from the use or disposal of the alternative both at sites you control and in end-use. Identify these degradation products by specific name or class or range of structures (e.g., HF or other acid gases formed from the combustion of halocarbon compounds), CAS Registry number (where available), when the degradation product is formed (e.g., during end-use, in the event of a fire, following disposal), and the rate of formation (grams/second).
7. **Test Marketing** - Indicate if a test marketing notification was previously submitted to EPA.
8. **Physical and Chemical Properties - (a-l)** Provide the following physical and chemical properties for chemical alternatives: molecular weight, physical state, melting point, boiling point, specific gravity, bubble point (for blends), and dew point (for blends). If the alternative is flammable, provide the lower flammability limit, upper flammability limit, and flash point. The properties

included in this section are illustrative and are not an exhaustive list of potential data. The physical characteristics requested in this section apply to all sectors; Parts IV through XI request additional sector-specific physical and chemical properties. For alternative technologies and/or processes, mark "N/A" in (a) and proceed to 12.

**(m)** If you are extracting this information from a public reference source (e.g., CRC Handbook of Chemistry and Physics, Merck Index), please provide copies of the references. If references include copyrighted materials, mark as CBI.

**(n)** If you have performed chemical analysis and testing on the substitute (e.g., fractionation testing, ASTM E681 for flammability limits in air) to derive the properties, attach copies of all test reports and specify the protocol used.

- 9. Ozone depletion potential (ODP) - (a)** Provide information on the predicted 100-year ODP of the alternative relative to CFC-11. If the substitute is a blend, provide the ODPs of the individual constituents. You should also provide supporting documentation indicating how and by whom this value was calculated.

For purposes of calculating ODP, EPA recommends the methodology used in the [Scientific Assessment of Ozone Depletion](#) prepared for the United Nations Environment Programme (UNEP) by the World Meteorological Organization (WMO). The ODP refers to the amount of ozone destroyed by a gas over its entire atmospheric lifetime (e.g., at a steady state) relative to that due to emissions of the same mass of CFC-11. It is defined in modeling calculations as follows:

$$ODP_x = \frac{\text{Global } \Delta O_3 \text{ caused by } x}{\text{Global } \Delta O_3 \text{ caused by CFC-11}}$$

Calculations should reflect ground level emissions. For aircraft applications, be sure to also include the ODP of emissions of the substitute at cruising altitude.

**(b-c)** You should also include any other related data available to you, such as information on the substitute's chlorine or bromine loading potential. See the [2018 WMO Scientific Assessment of Ozone Depletion](#) for additional information on calculating ODP and related information.

- 10. Global Warming Characteristics - (a-b)** Provide information on the 100-year global warming potentials (GWPs) of the proposed substitute relative to CO<sub>2</sub>, as well as atmospheric lifetime (ATL) of the proposed substitute. If the substitute is a blend, provide the GWPs of the individual constituents and an estimate of the blend at its nominal composition.

Provide GWPs as listed in the 2007 [Intergovernmental Panel for Climate Change Fourth Assessment Report](#) (IPCC AR4). Alternate sources may include the [2018 WMO Scientific Assessment of Ozone Depletion](#) or the peer-reviewed literature. IPCC defines GWP of the emissions of a greenhouse gas as the time integrated commitment to climate forcing from the instantaneous release of 1 kg of a trace gas expressed relative to that from 1 kg of CO<sub>2</sub>.

$$GWP = \frac{\int_0^n a_i c_i dt}{\int_0^n a_{CO_2} c_{CO_2} dt}$$

Where:

$a_i$  = the instantaneous radiative forcing due to a unit increase in the concentration of trace gas,  $i$

$c_i$  = the concentration of trace gas,  $i$ , remaining at time,  $t$ , after its release, and

$n$  = the number of years over which the calculation is performed.

Corresponding values for  $CO_2$  are in the denominator.

For GWP values that do not come from IPCC AR4 or WMO 2018, you should also include the data used to calculate these potentials such as atmospheric lifetime, infrared adsorption spectrum, and infrared absorption capacity. Provide all supporting documentation.

(c) If the alternative is captured as a byproduct of another manufacturing or industrial process, indicate the source of the alternative. This information is important in assessing the effects of the new use of the substitute versus those effects occurring strictly because of the release of a byproduct.

11. **VOC Status Information - (a-d)** Indicate whether the alternative is considered to be a volatile organic compound (VOC) and is subject to regulation under Title I of the CAA (40 CFR 51.100(s)) or exempt as a VOC, due to low photochemical reactivity. If a petition for VOC exemption has been submitted to EPA under Title I, please provide information on that submission and the current status of that request and provide the information on reactivity below in (d). For compounds that are not VOC exempt, provide information on the reactivity of the compound in the atmosphere, such as the maximum incremental reactivity (MIR) in grams of  $O_3$  (ozone) per gram of VOC and the KOH (298 K) value. Include the reference for each reported value.
12. **Cost of Proposed Substitute** - Estimate the cost of the chemical substitute. Information on costs of the alternative for a specific use is requested in Parts IV through XI. Specify the units used.
13. **Toxicity Limits (a-d)** - For the proposed substitute (and constituents if the proposed substitute is a blend), impurities, and/or byproducts, provide all available concentration-based exposure limits that have been set, such as Permissible Exposure Limits (PELs), occupational exposure limits including Short-Term Exposure Limits (STELs), Threshold Limit Values (TLVs), Recommended Exposure Limits (RELs), or Workplace Environmental Exposure Limits (WEELs), or acceptable exposure limits (AELs) set by the manufacturer. Submit any supporting documentation, including public literature and information previously submitted to the SNAP program for a different submission. If the submission includes one or more chemicals that the SNAP program has not listed, please reference Part XII Recommended Toxicity Studies in this SNAP Information Notice to see a list of toxicological studies, for each sector, that are recommended for a critical toxicity review of chemicals submitted to the SNAP program.

(e) If available, summarize the acute and chronic toxicity of the proposed substitute and of its constituent chemicals on any organism (e.g. human and/or other mammals, fish, wildlife, and plants). Attach all complete test reports that are reasonably available to you.

(f) If the proposed substitute is a blend, indicate if the acute and chronic toxicity of the proposed substitute has been evaluated on a blend basis.

(g) If the proposed substitute is a blend and the acute and chronic toxicity of the proposed substitute has not been evaluated on a blend basis (and therefore, only on a component basis), please explain why and provide supporting documentation as applicable.

14. **Safety Documents** – Please attach a copy of any hazard warning statement, warning labels, safety data sheet (SDS), or other information which will be provided to any person who is reasonably likely to be exposed.
15. **Environmental Regulations** – List any environmental statute (such as those included in the form) applicable to the manufacture, use, and disposal of the proposed substitute. Provide citations for implementing regulations and a brief explanation of the nature of the regulatory requirement (for example, 40 CFR part 63 subpart T, National Emission Standards for Hazardous Air Pollutants for Halogenated Solvent Cleaning).
16. **Health and Safety Regulations** – Describe whether and how occupational, consumer, or general population exposure to the proposed substitute is regulated under health and safety related statutory authorities, such as those listed in the form. Provide regulatory citations where available, e.g., 29 CFR 1910.132.

## Parts IV to XI: Sector-Specific Information

Due to the unique uses and exposures of alternatives for each of the SNAP industrial sectors, the submission form includes individual tabs for each sector. You are only required to complete those sections for which you are submitting to SNAP. Below are instructions for Parts IV-X. Instructions are organized by Section, beginning with instructions for the common elements. Instructions for questions that are unique to a specific sector, are noted below the common elements or within the instructions for each Section.

If you are submitting the substitute for several end-uses or applications, you must provide the requested information for each. Part XI: Tobacco Expansion does not require the submission of any additional data; therefore, no instructions are provided. For an explanation of each end-use and application visit the SNAP website: <https://www.epa.gov/snap/snap-substitutes-sector>.

Information claimed as confidential should be placed in [brackets] and marked as CBI. If information is claimed as CBI, then a public version must be submitted with the bracketed information redacted or removed.

### Section A: Use Profile

- **Specific End-use** – Identify the specific end-uses and applications (if applicable) within the sector in which the alternative is to be used. Specify the ozone-depleting substance (ODS) (and/or other alternatives) used in the end-use and/or application, and include an estimate of the quantity of

alternative (lb) needed to replace the ODS (and/or other substance) for each end-use. This is known as the replacement ratio. For example, if 100 lb of a new refrigerant will replace 150 lb of CFC-12, the replacement ratio is 1:1.5.

- **Additional End-Use Description** – Provide a written description of the specific uses for which you are submitting.
- **Technology Changes and Cost** – Describe any new equipment technology changes and associated costs that will be necessary in order to use the proposed substitute.
- **Production** – Provide estimated information on production of the proposed substitute or equipment using the proposed substitute. Indicate when you anticipate the substitute or new equipment using the substitute will enter the marketplace. Include the value for total production anticipated during the first year of production in kg. If you are submitting the substitute for several end-uses, you must provide this information for each end-use.
- **Market Share** – Provide information on the levels of market penetration that you expect for the substitute or new use of an existing substitute. Include estimates for the number of years you anticipate until the substitute reaches its maximum market penetration for those uses included in submission, and the total production level that you anticipate for the substitute when it reaches the point of market saturation. Finally, if possible, estimate the percentage of the market held by the substance(s) being replaced that will be captured by this substitute at the maximum market penetration. If you are submitting the substitute for several end-uses, you must provide this information for each end-use.
- **Application of Proposed Substitute** – Provide information requested in each sector-specific section on the specific application of the substitute. These questions are related to both manufacturing and use.
- **Consumer Use** – Where requested, indicate whether the proposed substitute will be used for consumer use. If consumer use is expected, please describe the anticipated consumer applications.
- **End-Use Specific Standards** – List any standard-setting organizations that will evaluate the proposed substitute or will set requirements or guidelines for the substitute from a health and safety perspective in the proposed end-use(s). Examples include Underwriters Laboratories (UL), the American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE), the Society of Automotive Engineers (SAE), the National Fire Protection Association (NFPA), or the International Organization for Standardization (ISO).

### **Refrigeration and Air Conditioning**

- **Energy Efficiency** – Provide the alternative's impact on energy efficiency relative to the substance it is replacing for each end-use. Attach and describe the results of any energy efficiency testing or modeling performed. Laboratory testing of equipment should evaluate the proposed substitute vs. the substance(s) being replaced. Values should be given as a percent difference relative to the substance(s) being replaced or a similar measure. Also address refrigerant/oil solubility. Computer models should account for compressor efficiency, refrigerant transport properties, and mass flow rates for given tubing geometry, capillary tube/suction line heat transfer, and liquid and vapor specific heats.



- **Refrigerant Oil** – Provide information on the chemical class of refrigerant oil you anticipate will be used (e.g., polyalkylene glycol, polyolester, mineral oil) and information on the refrigerant/oil solubility.

#### **Foam Blowing**

- **Energy Efficiency** – Provide the alternative's impact on energy efficiency relative to the substance(s) it is replacing for each end-use. Attach and describe the results of any energy efficiency testing or modeling performed. Laboratory testing of equipment should evaluate the proposed substitute vs. the substance(s) being replaced. Values should be given as a percent difference relative to the substance(s) being replaced or a similar measure.

#### **Cleaning Solvents**

- **Compatibility** – Provide information on the compatibility of the solvent with metals and plastics with regards to its use as a cleaning solvent (e.g., is the solvent corrosive to some materials).

#### **Fire Suppression**

- **Weight and volume equivalence replacement ratio (c):** To respond to Section A, Number 1(c), use the following information for determining weight and volume equivalence:

Weight and volume equivalents are calculated using a single, fuel-specific design concentration (heptane); therefore, they do not represent the exact weight or volume of the agent needed to protect any specific space against any specific hazard. The information used to calculate the equivalents is provided from agent manufacturers and NFPA 2001, "Standard for Clean Agent Fire Extinguishing Systems." Equivalents are included in SNAP rulemakings for general comparison and informational purposes only.

EPA understands that fire suppression agents must be evaluated in the context of the fire extinguishing system equipment with which they are used. Design concentration, and weight and volume equivalents are only meaningful when evaluated in specific system hardware configurations. This is especially important when comparing storage volume where storage container fill density varies with the equipment used. Agent fire suppression performance will vary with the system used and the detailed design of the system. Therefore, fire suppression agent manufacturers do not generally recommend design concentrations as these are also a function of the system hardware in which they are used. Hence, these data are provided for general guidance only and do not reflect a recommendation for system design or a basis for rigorous quantitative comparison.

(1) Weight and volume equivalent data should be presented relative to Halon 1301 at 120 per cent of cup burner as well as at 5 percent, a typical use concentration;

(2) Weight and volume equivalents should be based on agent concentrations at standard temperature and pressure;

(3) Weight and volume equivalents should be done at both the manufacturer's recommended design concentration and at 120 per cent of the cup burner value where the values are not the same;

(4) Volume equivalents will be based on agent volume only (exclusive of container volume, fill density, etc.) at 70 degrees Fahrenheit and the storage pressure specified by the manufacturer since this varies widely and the required agent mass determined in item (5) below; and

(5) The required agent weight equivalents should be determined by the following equation:

$$W = \frac{V}{S} \left( \frac{C}{100 - C} \right)$$

Where:

W = weight of clean agent (lb),

C = design concentration (% volume),

V = one cubic foot, and

S = agent specific vapor volume at 70 degrees F (ft<sup>3</sup>/lb).

(6) Appropriate references to the technical literature on which the data are based should be provided.

(d) Indicate the type (i.e., occupied or unoccupied) and purpose (e.g., engine room, machinery space, cargo room) of space in which the extinguisher will be used.

## Section B: Physical and Chemical Properties

- **Physical and Chemical Properties** – Include data on the physical or chemical properties of the alternative that are relevant to evaluating the proposed substitute in a specific sector. The properties included in each section are illustrative and are not an exhaustive list of potential data.

### Refrigeration and Air Conditioning

- **ASHRAE Designation** – Please identify whether the proposed substitute has been submitted to and/or published by the ASHRAE Standing Standard Project Committee 34 (SSPC 34). If it has been published, specify the ASHRAE designation and classification.

### Foam Blowing

- **Manufacture and Degradation Products** – Provide a study on the catalyst used in the manufacture of the foam blowing agent and the degradation products under different external conditions (e.g., temperature) during use to assess potential hazards of breakdown/degradation products of foam during use.

### Fire Suppression

- **Degradation Products** – Provide information on the degradation products of the alternative following discharge in a fire situation. Explain the conditions used in determining these products (e.g., flame temperature, time required to extinguish the fire, amount of O<sub>2</sub> present, combustible material).

## Section C: Flammability (Required for Refrigeration and Air Conditioning; Foam Blowing; Cleaning Solvents; Aerosols; Sterilants; and Adhesives, Coatings, and Inks Sectors)

- **Flammability-Related Physical and Chemical Properties** – Provide information on the physical and chemical properties relevant to evaluating the flammability of the proposed substitute.

**Flammability Assessments and Test Data** – For flammable substitutes, please include as an attachment the results of ASTM E681 Flammability Limits in Air. The numerical values for the upper and lower flammability limits are requested in Part III.

For flammable refrigerants, please provide information on the maximum pressure of combustion, the maximum rate of pressure increase during combustion, and the minimum ignition energy. If you have conducted any analyses on flammability, please provide them.

For refrigeration and air conditioning, if an alternative is flammable (this applies to both blends and neat chemicals), you must analyze the risk of fire resulting from the use of the substitute in each proposed end-use/application through a risk assessment. For refrigeration and air conditioning, a Fault Tree Analysis (FTA) or Failure Mode and Effects Analysis (FMEA) is also required. An FTA should include, but not be limited to, a description of typical scenarios in which the substitute is used, potential leak scenarios, sources of ignition, and quantified probabilities of ignition. It should also assess the likelihood of injury within each scenario. An FMEA should describe identified failures that could result in a spark, flame, explosion, or other fire risk and mitigation measure for each failure mode. Significant differences exist both in the design and in the ambient conditions for various end-uses. Thus, risk assessments are extremely sensitive to end-use. Low risk in one end-use does not, in general, imply low risk in another end-use.

For refrigerant blends that contain one or more flammable components, provide information on fractionation during leakage, including flammability test results on the worst-case formulation and the worst-case fractionation formulation for the blend.

- **Flammability Concerns and Mitigation** – Provide all test data regarding flammability of the substitute, including the procedures used for determining flammability and any other information on flammability concerns. If a substitute is flammable under the conditions expected in the proposed end-use/application, describe any abatement techniques being used to minimize the risks associated with use of a flammable substance (e.g., equipment design modifications or alternate labeling).

For flammable foam blowing agents used in spray foam, provide a training program that addresses flammability concerns specific to the substitute. For foam blowing agent blends that contain one or more flammable components, provide information on the range of composition that would render the blend nonflammable (for example, using at least 5% of the nonflammable component in the blend is expected to make the blend nonflammable).

### **Section C: Fire Suppression Agent Toxicity and Hazard Information (Required for Fire Suppression Only)**

- **Inhalation Toxicity Studies** – Provide an inhalation toxicity study if workers are exposed to the chemicals during manufacture or long-term exposure levels have not been determined by Occupational Safety and Health Administration (OSHA), National Institute for Occupational Safety and Health (NIOSH), American Conference of Industrial Hygienists (ACGIH), or American Industrial Hygiene Association (AIHA).

- **Genotoxicity Studies** – Provide genotoxicity studies (e.g., Ames assays, forward mutation assays, cytogenetic assays) to determine the potential for the agent to induce DNA damage.
- **In-kind Halon Alternatives (Gaseous Halocarbons)** – Provide the extinguishing concentration and design concentration. Provide a cardiac sensitization study and acute, sub-acute, and subchronic toxicity inhalation studies with rats for halocarbon steaming agents or flooding agents used in occupied spaces.
- **In-kind Halon Alternatives (Non-Halocarbon Gaseous)** – Provide the extinguishing concentration and design concentration.
- **Not-in-kind Halon Alternatives (Powdered Aerosols or Foam)** – Provide the extinguishing application density and design application density. For foam streaming agents, provide an acute toxicity inhalation study and an ocular irritation study (Draize test). For powdered aerosol flooding agents proposed for use in occupied spaces, provide a static acute toxicity inhalation study with rats at the design application density. For any powdered aerosol fire suppression agent used in occupied spaces, provide a dermal irritation study.
- **Powdered Aerosol Flooding Agents Used in Occupied Spaces (a-j)** – The use of powdered aerosol flooding agents in occupied spaces requires special considerations of the physical properties and toxicity of the agent and visibility in the protected space. Identify the likelihood that the fire extinguisher will accidentally discharge (reported as the number of accidental discharges in 1 million); the number of extinguishing devices (i.e., generators) installed in a room and the location of these devices within the space; the discharge rate (g/s) of the fire extinguishing device; the length of time it takes for the particles to become distributed throughout the space and the particle size distribution over time; the mass median aerodynamic diameter (MMAD) ( $\mu\text{m}$ ) and concentration ( $\text{mg}/\text{m}^3$ ) of the effluent released from the nozzle; the settling rate of the particles; the maximum egress time for personnel from the space and several approaches to facilitate safe egress (e.g., training, installation guidelines); and the composition of flooding agent before and after discharge (including the amounts and weight percentages of all effluent gases and particulates that may not be filtered).

## Section D: Exposure

Provide the information requested within the Information Notice form related to potential exposure scenarios. This section requires information on typical and maximum potential exposure scenarios during manufacturing, use, and disposal. If provided exposures are based on proxy compounds or blends, please identify the proxy compound or blend and explain why they are appropriate for comparison to the proposed substitute. If the substitute and equipment using the substitute are manufactured outside of the United States, information on exposure during manufacturing is not required. However, if the information is readily available, please submit it.

Examples of the type of information required to be submitted are provided within the form.

- **Exposure Media and Release Information:** Provide the requested information regarding the media(s) to which the proposed substitute could be released (e.g., indoor air, outdoor air, water, land), potential contact pathways, and engineering controls and protective equipment to reduce or prevent releases or exposures.

- **Potential Exposure Activities:** Identify the activities during manufacture, use, servicing and disposal during which the potential for exposure is highest. Provide information on typical and maximum potential exposure concentrations during these activities.
- **Training Materials:** Provide information on training materials related to manufacture, installation and servicing, and disposal. If the proposed substitute is flammable, describe how these guidelines differ from training for non-flammable substances.

### Refrigeration and Air Conditioning

- **Information on Recovery Practices:** Section 608 of the Clean Air Act prohibits the intentional release (venting) of ozone-depleting refrigerants and their substitutes while maintaining, servicing, repairing, or disposing of air conditioning or refrigeration equipment unless exempted by EPA. Please provide information on how the substitute will be recovered.

### Foam Blowing

- **Maximum Annual Emissions Rate:** For each end-use, provide maximum annual emission rates for blowing agent leaks from foam application during the foam's lifetime (i.e., after manufacturing and before disposal) as a percentage of the original total amount of blowing agent used to produce the foam. Please also specify the anticipated number of years for which the blowing agent would be leaking from the foam (i.e., the emissive lifetime). For reference, the following are annual emission rates that EPA uses as defaults.
  - Polyurethane (PU) and Polyisocyanurate Rigid Boardstock: 1%
  - PU Rigid Appliance Foam: 0.25%
  - Rigid PU Spray Foam: 1.5%
  - Commercial Refrigeration Foam: 0.25%
  - PU Rigid Slabstock: 0.875%
  - PU Integral Skin Foam: 2.5%
  - PU Rigid: Sandwich Panels: Continuous and Discontinuous: 0.5%
  - XPS: Sheet Foam: 25%
  - XPS Boardstock Foam: 0.75%
  - Polyolefin Foam: 2.5%
  - Phenolic Foam: 0.875%

### Section E: Additional Information for Submission of Requirements for Blends of Foam Blowing Agents (Foam Blowing Only)

For the following end-uses, a submission is required for blends of blowing agents, including blends with blowing agents that are already listed as acceptable:

- Polyolefin
- Polystyrene: Extruded Boardstock and Billet
- Rigid Polyurethane and Polyisocyanurate Laminated Boardstock
- Rigid Polyurethane: Spray Foam\*
- Phenolic Insulation Board and Bunstock

\*For spray foam, if any components of the blend are flammable, then an additional submission is required for the blend.

For the following end-uses, it is permissible to blend blowing agents that are already listed as acceptable without an additional submission for the blend:

- Rigid Polyurethane: Appliance
- Rigid Polyurethane: Commercial Refrigeration
- Rigid Polyurethane: Sandwich Panels
- Rigid Polyurethane: Spray Foam\*
- Rigid Polyurethane: Slabstock and Other
- Flexible Polyurethane
- Integral Skin Polyurethane
- Polystyrene: Extruded Sheet

\*For spray foam, if all components of the blend are acceptable and non-flammable, then it is permissible to blend those blowing agents without an additional submission for the blend.

## **Part XII: Toxicology Studies**

Provide any available toxicology studies related to the end-use/application of the proposed substitute. This section of the form should be used as guidance on recommended studies for each sector:

- Refrigeration and Air Conditioning
- Foam Blowing; Aerosols; Solvents; Adhesives, Coatings, and Inks; Sterilants
- Fire Suppression

“Required” studies are required in order for your submission to be complete and in order for EPA to review your substitute. “Needed for complete database” are studies that provide EPA with information allowing them to use less conservative assumptions when assessing toxicity of the substitute. “Useful but not always required” studies will give EPA the most complete understanding of the substitute's toxicity; if you have this information available, please include it in your submission.

## **Part XIII: Additional Information**

Provide any additional information that may assist EPA's review. Submitters are not required to include information in this section.

## **Part XIV: Attachments**

Clearly identify all attachments being provided in support of the submission.

Mark (X) in the CBI box next to any attachment that you claim as confidential. The public version of the submission form must include the attachment name/citation at a minimum. All claims of confidentiality must be substantiated in Part I.

## **Response Checker**

The Response Checker identifies questions in the Notice form that are missing responses. Please review the questions that are missing responses carefully to ensure that all required information is provided before submitting the Notice form to EPA. Please note that this checker is not an indicator of whether EPA will consider the submission complete, but rather, this checker is an indicator of whether all questions have been answered.

## **Part XV: Certification**

The individual identified in Part I of the form as the person submitting the Information Notice must sign the certification in Part XIV of the form. This official is responsible for the truth and accuracy of each statement in the certification. If an agent assists you in preparing the submission, the agent must also sign the certification.

A printed copy of the certification page, with original signature, must be submitted with electronic or paper submissions. If the submission is not signed, EPA will consider the submission incomplete and will not review the substitute.