



Chemical Footprint Project (CFP)

Solar Survey 2023: Manufacturing Module Guidance





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Clean Production Action designs and delivers strategic solutions for green chemicals, sustainable materials and environmentally preferable products.

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Acknowledgments

The Chemical Footprint Project (CFP) envisions a world where chemicals are healthy for people and the environment; where chemically related disease rates for cancer, infertility, asthma, and learning disabilities are low; and where consumer, government, and business demand drives the widespread supply of safer products. To achieve this vision CFP was created to benchmark and share data on corporate progress to safer chemicals in products, manufacturing, and supply chains.

The CFP Solar Survey – Manufacturing Module is a new initiative to advance safer chemicals in manufacturing operations and supply chains in the solar sector. It is specifically designed for the solar sector and builds upon the CFP Survey and the work of the Collaboratory for a Regenerative Economy to identify priority chemicals of high concern and safer alternatives in the solar sector.

Clean Production Action, the Lowell Center for Sustainable Production (LCSP) at the University of Massachusetts Lowell, and the consultancy, Pure Strategies launched the first CFP Survey in 2014. We thank Cheri Peele formerly of Clean Production Action and now with Toxic-Free Future, Sally Edwards, Sc.D. of the LCSP and CFP co-founder, and Tim Greiner of Pure Strategies and CFP co-founder, for their significant contributions to the many iterations of the CFP Survey over the years, which is the foundation to the Solar Survey.

The Collaboratory for a Regenerative Economy (CoRE) is an integrated research, education and civic entrepreneurship initiative that brings together academic experts in materials science with entrepreneurial nonprofit organizations to accelerate clean production and sustainable materials in the renewable energy economy. Partners in CoRE are the Department of Materials Design and Innovation, at the University at Buffalo – The State University of New York, Niagara Share, and Clean Production Action. We thank Krishna Rajan, Sc.D. and Chitra Rajan, Ph.D., of the University at Buffalo, Alexandra McPherson of Niagara Share and Clean Production Action's Investor Environmental Health Network, and Sheila Davis of the Silicon Valley Toxics Coalition for their innovative work in advancing cleaner production in the solar sector, which is integrated into this new Solar Survey.

We thank Kayla Williams and Beverley Thorpe of Clean Production Action for their leading work in developing communication resources and website content to support the dissemination and adoption of the Solar Survey.

The authors take full responsibility for all content and any flaws or errors contained herein. Being practitioners of the ethos, “don’t let the perfect be the enemy of the good,” we look forward to continuing to improve the Solar Survey in future iterations.

Mark S. Rossi, Ph.D., Clean Production Action and Co-Founder of CFP

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Overview

Outline

This guidance document details the following components of the Chemical Footprint Project (CFP) Solar Survey—Manufacturing Module:

- Four pillars of the Survey: Management Strategy, Chemical Inventory, Footprint Measurement, and Disclosure & Verification.
- Questions within each pillar, including response options.
- Process for answering questions.
- Points available for each question, each pillar, and the entire Survey.
- For each question: how to earn points, supporting documentation requirements, and when appropriate, examples.

The CFP Solar Survey has two separate modules: product and manufacturing. This is the manufacturing module.

Clean Production Action's Role

CFP is a program of Clean Production Action. The founding organizations of CFP are Clean Production Action, the Lowell Center for Sustainable Production at the University of Massachusetts Lowell, and Pure Strategies. Clean Production Action is a 20 year old non-profit organization. Our mission is to design and deliver strategic solutions for green chemicals, sustainable materials, and environmentally preferable products.

The two core initiatives of CFP are the:

- Survey, which is holistic assessment of where responding organizations are on the journey away from chemicals of high concern to safer solutions. CPA now offers two versions of the Survey:
 - CFP Survey: a general survey for any company in any sector.
 - CFP Solar Survey: this is a new initiative launched in collaboration with the Collaboratory for a Regenerative Economy (<https://www.corebuffalo.org/>) and is designed specifically for manufacturers and the supply chain in the design and manufacture of photovoltaics (PV), PV components, and PV inverters.
- Chemical footprint metric: a quantitative measure for tracking the use and reduction of chemicals of high concern.

The BizNGO Chemicals Management Work Group, which is a stakeholder group of businesses, environmental organizations, and government agencies, provides feedback and comments on revisions to the CFP Survey and chemical footprint metric. BizNGO is a program of Clean Production Action.

For the CFP 2023 Solar Survey – Manufacturing Module, Clean Production Action will:

- Score responders to the Survey.
- Publicize results from the Survey through a final report. For responders that agree, include in the final report and on the website, www.chemicalfootprint.org, their: organization name, responses to the Survey, and/or final score for the Survey.

Signatories to the CFP Survey & Investors for Sustainable Solar

CFP Signatories are investors, retailers, large-scale purchasers, governments, and non-governmental organization (NGOs) that agree to:

- Encourage companies in their sphere of influence to participate in the CFP Survey.
- Be listed on the CFP website.
- Provide feedback on how to improve implementation of the CFP Survey.

For a complete list of CFP Signatories, which represent investors with \$3 trillion in assets under management and purchasers with \$900 billion in buying power, see <https://chemicalfootprint.org/value/cfp-signatories>. Organizations can be both Signatories and Responders to the Survey.

Investors for Sustainable Solar is a collaboration coordinated by the Investor Environmental Health Network (IEHN), including Boston Common Asset Management, Domini Impact Investments, Mercy Investment Services, and WHEB Asset Management LLP. This new collaboration is engaging solar photovoltaic energy and inverter companies in their efforts to adopt best practices for safer, more sustainable, and responsible solar energy production (see <https://iehn.org/our-work/investors-for-sustainable-solar>).

Responders to the CFP Solar Survey

The CFP Solar Survey – Manufacturing Module applies to companies manufacturing products in the solar sector. Responders voluntarily answer questions to the Survey and submit their answers along with documentation to Clean Production Action.

Four Pillars of the CFP Solar Survey

The CFP Solar Survey scores companies across four pillars of chemicals management beyond regulatory compliance: Management Strategy, Chemical Inventory, Footprint Measurement, and Disclosure & Verification.

Total maximum points for each pillar are:

- Management Strategy = 20 points
- Chemical Inventory = 30 points
- Footprint Measurement = 33 points
- Disclosure & Verification = 22 points

The total maximum points for the CFP Solar Survey 2023 equals 105 points.

Contact Information

For more information on the Solar Survey visit www.chemicalfootprint.org or contact us at moreinfo@cleanproduction.org.

Terms & Definitions

TERM	DEFINITION
Alternatives assessment	A process for identifying, comparing and selecting safer alternatives to chemicals of concern (including those in materials, processes or technologies) on the basis of their hazards, performance, and economic viability. A primary goal of alternatives assessment is to reduce risk to humans and the environment by identifying safer choices.
Article	An object which during production is given a special shape, surface or design which determines its function to a greater degree than its chemical composition (https://www.reach-compliance.eu/english/REACH-ME/engine/sources/definitions.html , accessed 3/28/2023).
Chemical	A molecule (or molecular entity) composed of atoms of more than one element held together by chemical bonds and typically identified by CASRN.
Chemical footprint	Total mass of chemicals of high concern (CoHCs) used by an event, organization, service, building, or product. For a list of CoHCs see the CFP CoHCs Reference List.
Chemical footprint of an organization	Total mass of chemicals of high concern (CoHCs) in products sold by a company; used in its manufacturing operations, facilities, and by its suppliers; and contained in packaging. For a list of CoHCs see the CFP CoHCs Reference List.
Chemical Footprint Project Chemicals of High Concern Reference List – “CFP CoHCs Reference List”	<p>List of CoHCs generated using GreenScreen® for Safer Chemicals chemical hazard assessment scores of: GreenScreen List Translator-1 (LT-1) and GreenScreen Benchmark-1 (https://www.greenscreenchemicals.org/learn/lt-vs-gs). GreenScreen List Translator uses authoritative lists of hazardous chemicals to identify LT-1 chemicals, including EU REACH Substances of Very High Concern Candidate List, International Agency for Research on Cancer (IARC), and California Proposition 65 (https://www.greenscreenchemicals.org/learn/greenscreen-list-translator).</p> <p>Substances on these lists that could not plausibly be an intentionally added ingredient of a product were excluded from the CFP CoHCs Reference List (e.g., viruses). While each source list is dynamic, to provide a consistent baseline for reporting the CFP CoHCs Reference List reflects the underlying lists as of October 31, 2018. For the CFP CoHCs Reference List go to https://chemicalfootprint.org/assess/survey-resources.</p>

TERM	DEFINITION
Chemical Footprint Project Solar Chemicals of High Concern Reference List – “CFP Solar CoHCs Reference List”	<p>The CFP Solar CoHCs Reference List encompasses:</p> <ol style="list-style-type: none"> Chemicals on the Clean Electronics Production Network’s Toward Zero Exposure pledge Priority Chemical List (https://www.towardzeroexposure.org/priority-chemicals). Chemicals on the European Union (EU) REACH Candidate Substances of Very High Concern (SVHCs) List (see https://echa.europa.eu/candidate-list-table). Chemicals restricted by the EU Restriction of Hazardous Substances in Electrical and Electronic Equipment (RoHS) Directive (see https://environment.ec.europa.eu/topics/waste-and-recycling/rohs-directive_en#background). Chemicals on the International Electrotechnical Commission (IEC) 62474 Material Declaration for Products of and for the Electrotechnical Industry – Declarable Substance List (see https://std.iec.ch/iec62474/iec62474.nsf/Index?open&q=181540). Chlorine, bromine, and fluorine in electrical cables and plastic parts as referenced in NSF/ANSI 457 – 2019 Sustainability Leadership Standard for Photovoltaic Modules and Photovoltaic Inverters (https://globalelectronicscouncil.org/wp-content/uploads/NSF-457-2019-1.pdf). Per- and polyfluoroalkyl substances (PFAS): For the PFAS reference list see The Comprehensive Global Database of PFAS by the Organisation for Economic Cooperation and Development (OECD) (http://www.oecd.org/chemicalsafety/portal-perfluorinated-chemicals).
Chemical hazard	<p>Inherent property of a substance having the potential to cause adverse effects when an organism, system, or population is exposed, based on its chemical or physical characteristics.</p>
Chemical hazard assessment	<p>The process of determining whether a chemical is capable of causing adverse effects to human health or the environment and the circumstances under which these effects may occur.</p>
Chemical mixture	<p>See “Mixture.”</p>
Chemical of concern	<p>A chemical that is of moderate to high concern for ecotoxicity or human toxicity, but is not a Chemical of High Concern (CoHC).</p>
Chemical of high concern (CoHC)	<p>A carcinogen, mutagen, or developmental/reproductive toxicant; persistent, bioaccumulative, and toxic substance (PBT); very persistent and very bioaccumulative (vPvB); or any other chemical for which there is scientific evidence of probable serious effects to human health or the environment that give rise to an equivalent level of concern, such as endocrine disruption or neurotoxicity, or a chemical whose breakdown products result in a CoHC that meets any of the above criteria.</p> <p>This definition of a CoHC aligns with criteria for GreenScreen Benchmark-1, GreenScreen List Translator-1 chemicals, as well as the Globally Harmonized System of Classification and Labeling of Chemicals (GHS).</p>

TERM	DEFINITION
Chemicals policy	A statement of how a company manages chemicals in its products, supply chains, manufacturing operations, facilities, and/or packaging beyond legal requirements.
Chemicals policy – facilities	Addresses chemicals in products used or contained in offices, retail spaces, laboratories, distribution centers, cafeterias, or outdoor spaces. For example, chemicals contained in furniture, furnishings, and/or products used for cleaning, food service ware, and landscape maintenance. Note a facility chemicals policy does not include chemicals used directly in manufacturing operations.
Chemicals policy – manufacturing operations	Addresses chemicals used in manufacturing operations, which are used on their own or in mixtures, directly in or created during the manufacture of a product that are not incorporated in whole or in part in the product.
Chemicals policy – packaging	Addresses chemicals in primary, secondary, and/or tertiary packaging. See “packaging” definition.
Chemicals policy – products	Addresses chemicals in products sold, licensed, or distributed by a company.
Chemicals policy – supply chains	Addresses chemicals used, at a minimum, by Tier 1 suppliers.
Chemical substance	See “Substance.”
Formulated product	A mix of substances and/or mixtures. Examples include: paints, adhesives, cosmetics, lubricants, detergents, and cleaning products. Can be sold to another formulator, fabricator, or distributor, or sold as a final product to a retailer or consumer.
Formulator	Downstream user who produces mixtures and usually supplies them further down the supply chain or directly to consumers. A formulator mixes together substances and/or mixtures, with no chemical reaction taking place during the process. Examples of such mixtures include paints, adhesives, cosmetics, lubricants, detergents and diagnostic kits https://echa.europa.eu/regulations/reach/downstream-users/who-is-a-downstream-user/formulators/classifying-mixtures , accessed 3/28/2023).
Full chemical ingredient information	CFP defines “full chemical ingredient information” as follows: <ul style="list-style-type: none"> • For formulated products: a company knows: <ul style="list-style-type: none"> ○ 100% of the intentionally added substances by mass and ○ any impurities that are both a CoHC and present at 100 parts per million (ppm) or higher in the formulation. • For articles: a company knows: <ul style="list-style-type: none"> ○ 95% of the intentionally added substances by mass and ○ any impurities that are both a CoHC and present at 1000 ppm or higher in a homogeneous material.
Generic material content	The general name of a material, such as steel, nylon fabric, adhesive, or type of plastic (for example, polyethylene terephthalate or PET). CAS Registry Number is not required.

TERM	DEFINITION
Global Harmonized System of Classification and Labeling of Chemicals (GHS)	<p>An international system for standardizing and harmonizing the classification and labeling of chemicals (https://unece.org/about-ghs).</p>
Green chemistry approach to chemicals management	<p>A Green Chemistry approach utilizes the 12 Principles for Green Chemistry* for an organization’s chemicals management framework, with a particular focus on replacing/avoiding hazardous chemicals with inherently safer chemicals by following Principles:</p> <p>“#1. Prevention: It is better to prevent waste than to treat or clean up waste after it has been created.”</p> <p>“#3. Less Hazardous Chemical Syntheses: Wherever practicable, synthetic methods should be designed to use and generate substances that possess little or no toxicity to human health and the environment.”</p> <p>“#4. Designing Safer Chemicals: Chemical products should be designed to effect their desired function while minimizing their toxicity.”</p> <p>“#5. Safer Solvents and Auxiliaries: The use of auxiliary substances (e.g., solvents, separation agents, etc.) should be made unnecessary wherever possible and innocuous when used.”</p> <p>“#12. Inherently Safer Chemistry for Accident Prevention: Substances and the form of a substance used in a chemical process should be chosen to minimize the potential for chemical accidents, including releases, explosions, and fires.”</p> <p>*Source: Anastas, P. T. and Warner, J. C. <i>Green Chemistry: Theory and Practice</i>. Oxford University Press: New York, 1998, p. 30 (see https://greenchemistry.yale.edu/about/principles-green-chemistry, accessed 3/29/2023).</p>
GreenScreen Benchmark™ Score	<p>A score that is assigned to a chemical evaluated using the GreenScreen® for Safer Chemicals method. GreenScreen Benchmark scores range from 1 to 4, with each increasing Benchmark score defining progressively less hazardous chemicals (GreenScreen Guidance and Resources; https://www.greenscreenchemicals.org/learn/full-greenscreen-method).</p>
GreenScreen List Translator™	<p>A streamlined chemical hazard assessment method developed by Clean Production Action that produces a GreenScreen List Translator score (GreenScreen Guidance and Resources Section IV; https://www.greenscreenchemicals.org/learn/guidance-and-method-documents-downloads).</p>
GreenScreen List Translator™ Score	<p>A score that is assigned to a chemical screened against all GreenScreen Specified Lists (Annex 11) using GreenScreen List Translator guidance. List Translator scores include LT-1, LT-P1, LT-UNK and NoGSLT (GreenScreen Guidance and Resources Section IV; https://www.greenscreenchemicals.org/learn/guidance-and-method-documents-downloads).</p>

TERM	DEFINITION
Homogenous material	One material of uniform composition throughout or a material, consisting of a combination of materials, that cannot be disjointed or separated into different materials by mechanical actions such as unscrewing, cutting, crushing, grinding and abrasive processes. This definition is consistent with Directive 2011/65/EU on the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment (RoHS 2).
Impurity	“An unintended constituent present in a substance as manufactured. It may, for example, originate from the starting materials or be the result of secondary or incomplete reactions during the production process. While it is present in the final substance, it was not intentionally added. In most cases impurities constitute less than 10% of the substance” (ECHA; https://echa-term.echa.europa.eu , accessed 4/1/2023)
Incidental component	(1) a chemical which was added during the manufacturing process at any point in a product, a raw material, or an ingredient’s supply chain, but which has no functional or technical effect in the finished product, including an unreacted chemical; or (2) a chemical present in the environment as a contaminant which was introduced into a product, a raw material, or a product ingredient at any point in the supply chain for the product, raw material, or ingredient, as a result of the use of an environmental medium, such as a naturally occurring mineral, air, soil, or water, in the manufacturing process.
Intentionally added	Included to serve a desired function; not an impurity, non-functional constituent, incidental component, or a residual.
Manufacturing Restricted Substances List (MRSL)	A list of chemicals banned from intentional use in facilities that process materials, components, and/or products. An MRSL establishes acceptable concentration limits for substances in chemical formulations used within manufacturing facilities (adapted from ZDHC - https://mrsl.roadmaptozero.com/).
Mixture	“A mixture or a solution composed of two or more substances in which they do not react” (GHS Rev. 9; https://unece.org/sites/default/files/2021-09/GHS_Rev9E_0.pdf , accessed 3/28/2023).
Non-functional constituent	A chemical that has no functional or technical effect on the designated product and is present as an <i>incidental component</i> of an intentionally added ingredient, a breakdown product of an intentionally added ingredient, or a byproduct of the manufacturing process.
Precautionary approach to chemicals management	A precautionary approach to chemicals management includes a commitment to avoid adverse inherently hazardous chemicals, even in the face of lacking full scientific certainty. For example, as defined by Principle 15 of the 1992 Rio Declaration: “Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation” (source: https://www.un.org/en/development/desa/population/migration/generalassembly/docs/globalcompact/A_CONF.151_26_Vol.I_Declaration.pdf , accessed 3/29/2023).

TERM	DEFINITION
Preventive approach to chemicals management	<p>Based on the concepts of pollution prevention and toxics use reduction, a preventive approach includes a commitment to reduce exposure to hazardous chemicals by reducing, eliminating, or avoiding the use of hazardous chemicals.</p> <p>For example, see the Commonwealth of Massachusetts’s definition of: “Toxics use reduction:” “in-plant changes in production processes or raw materials that reduce, avoid, or eliminate the use of toxic or hazardous substances or generation of hazardous byproducts per unit of product, so as to reduce risks to the health of workers, consumers, or the environment, without shifting risks between workers, consumers, or parts of the environment” (source: https://malegislature.gov/Laws/GeneralLaws/PartI/TitleII/Chapter21I/Section2, accessed 3/29/2023).</p>
Product	<p>A finished good composed of parts, homogeneous materials, and/or chemical substances. A product may function as part of another product. A product may be made of one or more homogeneous materials.</p>
Residual	<p>Chemical or substance added upstream in the supply chain to serve a desired function:</p> <ol style="list-style-type: none"> 1) In the additive or homogeneous material but not in the final product as placed on the market; or 2) In the production of the additive or homogeneous material. <p>For example, this may refer to substances included in a manufacturing process to aid processing, as well as inputs to a reaction process such as reagents, catalysts, monomers, or preservatives for raw materials.</p>
Restricted Substances List (RSL)	<p>A list of chemicals and/or chemical classes restricted by a company in products, parts, or components from its suppliers.</p>
Safer chemical	<p>A chemical that, due to its inherent chemical and physical properties, exhibits a lower propensity to persist in the environment, accumulate in organisms, and/or induce adverse effects in humans or the environment. For example, GreenScreen® Benchmark-2, -3, or -4 chemical is a safer chemical than a GreenScreen Benchmark-1 chemical.</p>
Safer material	<p>A material that, due to its inherent chemical and physical properties, exhibits a lower propensity to persist in the environment, accumulates in organisms, and/or induces adverse effects in humans or the environment.</p>
Substance	<p>“A chemical element and its compounds in the natural state or obtained by any manufacturing process, including any additive necessary to preserve its stability and any impurity deriving from the process used, but excluding any solvent which may be separated without affecting the stability of the substance or changing its composition” (https://reachonline.eu/reach/en/title-i-chapter-2-article-3.html, accessed 3/28/2023).</p>
Safer alternative	<p>A chemical, material, product, process or technology that is less hazardous for humans and the environment than the existing approach.</p>

TERM	DEFINITION
Supply chain	<p>“A network between a company and its suppliers to produce and distribute a specific product to the final buyer” (https://www.investopedia.com/terms/s/supplychain.asp, accessed 3/28/2023).</p>
Tier 1, 2, and 3 suppliers	<p>Tier 1 Suppliers: Partners that a company directly conducts business with, including contracted manufacturing facilities or production partners.</p> <p>Tier 2 Suppliers: Sources of chemicals, materials, or products for Tier 1 suppliers.</p> <p>Tier 3 Suppliers: Sources of chemicals, materials, or products for a Tier 2 suppliers.</p> <p>See for example https://www.sustain.life/blog/tier-suppliers#:~:text=TIER%20%20SUPPLIERS,is%20a%20Tier%20%20supplier (accessed 3/28/2023).</p>
Watch list	<p>A list of chemicals of concern and/or classes of chemicals of concern that a company does not restrict, but is considering restricting in the future.</p>

Pre-Questions

Pre-questions address general questions including: company size and scope of manufacturing facilities covered by your Survey responses. All pre-questions must be answered. No points are awarded for these questions. If pre-questions are not answered, then the responses will not be scored.

Question P1: Company Size

P1.1 What size is your company (select one)?

- a. Our company is privately held. If you selected this option, proceed to Question P1.2.
- b. Our company is publicly traded. If you selected this option, proceed to Question P1.3.

P1.2 Our company is privately held, with revenue for the latest fiscal year of (select one):

- a. Revenue greater than \$50 billion
- b. Revenue greater than \$5 billion and less than or equal to \$50 billion
- c. Revenue greater than \$0.5 billion and less than or equal to \$5 billion
- d. Revenue less than or equal to \$0.5 billion

P1.3 Our company is publicly traded, with revenue for the latest fiscal year of (provide annual revenue in US dollars): _____.

Question P2: Scope of Manufacturing Facilities Reported

P2.1 Indicate the scope of your manufacturing facilities for which you are reporting (select one):

- a. Includes all manufacturing facilities. If you selected this option, proceed to Question P3.
- b. Did not include all manufacturing facilities. If you selected this option, proceed to Question P2.2.

P2.2 Indicate the manufacturing facilities for which you are reporting (provide answer below):

Question P3: Disclose Company Name as Responder to the CFP Solar Survey

P3 Does your company agree to allow CFP to publicly list the name of your company as a responder to the CFP Solar Survey - Manufacturing Module (select one)?

- a. Yes
- b. No

Question P4: Time Period Covered by Your Responses

P4 Indicate the time period you are reporting for (select one and provide the dates – mm/yyyy to mm/yyyy):

- a. Most recent fiscal year: _____.
- b. Past two fiscal years: _____.

Management Strategy Pillar (20 points)

Management Strategy (M) measures the scope of corporate chemical policies and their integration into business strategy, internal accountability and incentives for safer chemical use, as well as external support of initiatives and public policies for safer chemicals. The four Management Strategy questions and maximum points for each question are:

- Question M1: Chemicals Policy = 8 points
- Question M2: Business Strategy & Sustainability = 4 points
- Question M3: External Engagement = 4 points
- Question M4: Accountability = 4 points

See below for details on each question, including response options, how to earn points, examples, and documentation requirements.

Question M1: Chemicals Policy (8 points)

Indicate whether you have a chemicals policy for manufacturing operations, supply chains, and/or facilities. For each of these areas, indicate whether the policy: a) addresses the reduction of chemicals of high concern (CoHCs); b) includes an explicit reference to utilizing a precautionary, preventive, or green chemistry approach to reduce the hazards of chemicals in manufacturing operations; c) includes an explicit reference for safer alternatives; and d) is publicly disclosed.

M1.1 Does your company have a chemicals policy that addresses MANUFACTURING OPERATIONS (select one)?

- Yes, proceed to Question M1.2.
- No, proceed to Question M1.3.

M1.2 Our company's chemicals policy for MANUFACTURING OPERATIONS (select all that apply):

- Addresses the reduction of chemicals of high concern (CoHCs).
- Includes an explicit reference to utilizing a precautionary, preventive, or green chemistry approach to reduce the hazards of chemicals.
- Includes an explicit preference for safer alternatives.
- Is publicly disclosed.

M1.3 Does your company have a chemicals policy that addresses its SUPPLY CHAINS (select one)?

- Yes, proceed to Question M1.4.
- No, proceed to Question M1.5.

M1.4 Our company's chemicals policy for SUPPLY CHAINS (select all that apply):

- Addresses the reduction of CoHCs.
- Includes an explicit reference to utilizing a precautionary, preventive, or green chemistry approach to reduce the hazards of chemicals.
- Includes an explicit preference for safer alternatives.
- Is publicly disclosed.

M1.5 Does your company have a chemicals policy that addresses FACILITIES (select one)?

- Yes, proceed to Question M1.4.
- No, proceed to Question M2.

M1.6 Our company's chemicals policy for FACILITIES (select all that apply):

- Addresses the reduction of CoHCs.
- Includes an explicit reference to utilizing a precautionary, preventive, or green chemistry approach to reduce the hazards of chemicals.
- Includes an explicit preference for safer alternatives.
- Is publicly disclosed.

How to earn points, examples, and supporting documentation requirements

Question M1 seeks to understand the scope of a company's chemicals policy or policies that are broader than legal compliance. A chemicals policy must go beyond regulatory compliance. Merely stating that the company complies with all regulations is insufficient to score points for Question M1.

Specifically we are interested in understanding how your chemicals policy or policies address chemicals in manufacturing, supply chains, and/or facilities beyond what is legally required by regulations. A chemicals policy is distinct from a company's overall sustainability policy in providing specific guidance related to chemicals management.

Question M1 has three core components:

- **First, does the chemicals policy apply to chemicals in manufacturing operations, supply chains, and/or facilities?**
 - A chemicals policy for **manufacturing operations** addresses chemicals used in manufacturing processes.
 - A chemicals policy for **supply chains** addresses chemicals used at a minimum by Tier 1 suppliers.
 - A chemicals policy for **facilities** addresses chemicals in products used or contained in offices, retail spaces, laboratories, distribution centers, cafeterias, or outdoor spaces. For example, chemicals contained in: cleaning products, furniture, food service ware products in cafeterias, and landscape maintenance products. Note: a facility chemicals policy does not include chemicals used directly in manufacturing operations.
- **Second, does the chemicals policy cover any of the following, beyond regulatory requirements:**
 - **Addresses the reduction of CoHCs** in manufacturing operations, supply chains, and/or facilities? For example the policy covers: classes of chemicals of concern such as per- and polyfluoroalkyl substances (PFAS); emerging substances of concern such as nanomaterials; chemicals associated with specific adverse health or environmental impacts such as endocrine disruptors; or lists of CoHCs such as the EU REACH Candidate Substances of Very High Concern (SVHCs) List.
 - **Includes an explicit reference to utilizing a precautionary, preventive, or green chemistry approach** to reducing the hazards of chemicals in manufacturing operations, supply chains, and/or facilities? See Terms & Definitions for an explanation of precautionary, preventive, and green chemistry approaches to chemicals management.

- **Includes an explicit preference for safer alternatives** in manufacturing operations, supply chains, and/or facilities? See Terms & Definitions for definition of “safer alternatives.”
- **Third, is the chemicals policy publicly available on the company’s website?** CFP encourages responders to make their chemicals policies publicly available.

A chemicals policy may aspire to eliminate all chemicals of high concern, may encourage transparency of chemical ingredient information throughout the supply chain, and/or may identify how a company assesses alternatives to chemicals it seeks to reduce or eliminate.

For model chemical policies see:

- BizNGO Model Chemicals Policy for Brands and Manufacturers (<https://www.bizngo.org/safer-chemicals/corporate-chemicals-policy-template>).
- For an example of a comprehensive corporate chemicals policy from the technology sector, see HP’s Materials and Chemical Management Policy (<https://h20195.www2.hp.com/v2/getpdf.aspx/c05354207.pdf>).

Supporting documentation requirements:

- Provide a narrative summary of how your company's chemicals policy addresses each appropriate response option.
- Provide a copy of and/or a link to your chemicals policy. Links must be provided to receive credit for public disclosure.

If policies are embedded within a larger document, provide the page number(s) you would like to be considered as relevant documentation.

Question M2: Business Strategy & Sustainability (4 points)

Question M2 seeks to understand how chemicals management strategies and policies are integrated into a company’s business strategy as well as other sustainability initiatives, such as circularity.

M2.1 Is safer chemicals management integrated into your business strategy and other sustainability initiatives (select one)?

- a. Our company has integrated safer chemicals management into our business strategy or other sustainability initiatives as listed in Question M2.2. If you selected this option, proceed to Question M2.2.
- b. Our company has not integrated safer chemicals management into our business strategy or other corporate sustainability initiatives as listed in Question M.2.2. If you selected this option, proceed to Question M3.

M2.2 Our company has integrated safer chemicals management into our business strategy and other sustainability initiatives by (select all that apply):

- a. Highlighting the use of safer chemicals and/or materials in marketing content.
- b. Completing a materiality assessment or participating in an industry sector-based materiality assessment that analyzed where and how chemicals use is relevant to the topics included in the materiality assessment.

- c. Connecting safer chemicals management to other sustainability efforts, such as circularity, biodiversity loss, climate change, environmental justice, and/or plastic reduction in publicly available documents or webpages.
- d. Explicitly linking our safer chemicals/materials management work to one or more of the following: the Sustainability Accounting Standards Board (SASB) industry standard, the Global Reporting Initiative (GRI) Standard, or the UN Sustainable Development Goals (SDGs).

How to earn points and supporting documentation requirements

Option M2.2a

Specify how your organization includes information on safer chemicals and materials in marketing materials for customers. This information needs to appear in other places beyond a company's sustainability webpage or equivalent.

Option M2.2b

Option b encourages companies to analyze the role of chemicals within the context of their materiality assessments. Environmental, Social, and Governance (ESG) materiality assessments are becoming standard business practice. Yet, companies may not consider how chemical-related issues interconnect to topics identified in their materiality assessment.

How companies approach a materiality assessment varies given the lack of a standardized definition of and criteria for a materiality assessment. The Global Reporting Initiative (GRI), for example, defines "material topics" as "those that reflect the organization's significant economic, environmental and social impacts; or that substantively influence the assessments and decisions of stakeholders. To determine if a topic is material, qualitative analysis, quantitative assessment and discussion are needed" (source: <https://www.globalreporting.org/standards/media/2335/item-20-transition-to-gri-standards-mock-up-of-sustainability-reporting-standard-2-content-principles.pdf>).

Currently, CFP does not specify an approach or approaches to performing a materiality assessment. GRI, for one, is advancing the concept of "double materiality" which encompasses both "financial materiality" – "information on economic value creation at the level of the reporting company for the benefit of investors (shareholders)" and "impact materiality" – "information on the reporting company's impact on the economy, environment and people for the benefit of multiple stakeholders, such as investors, employees, customers, suppliers and local communities" (source: <https://www.globalreporting.org/media/r2oojx53/gri-perspective-the-materiality-madness.pdf>).

Option b has two parts and companies only receive a point for Option b if they answer "yes" to both parts of the question. First, has your company completed a materiality assessment or participated in an industry sector-based materiality assessment? If yes, then has your company analyzed where and how chemicals are relevant to the topic(s) identified in the materiality assessment?

Chemicals are relevant to many materiality topics, including circularity, packaging, biodiversity, product design/stewardship, occupational health and safety, human rights, supply chains, responsible sourcing, responsible production, and social and environmental justice. Companies will receive credit for the second part of the question by demonstrating that they assessed how chemicals are relevant to one or more of their materiality topics. For example, if "circularity" was identified as a topic in the materiality assessment by the company or stakeholders, then the organization would receive credit by

demonstrating that it has assessed whether/how hazardous chemicals are a risk to its circularity initiatives.

Option M2.2c

Chemicals are interlinked with other global environmental crises, including biodiversity loss, climate change, plastic pollution, and environmental injustices. Companies will receive credit for this question by demonstrating that they publicly connect the need to address CoHCs, chemical pollution, and/or use safer alternatives to other critical sustainability issues.

Option M2.2d

Sound management of chemicals for sustainable development and protecting human health and the environment are part of the commitments to achieve the UN Sustainable Development Goals (SDGs). In addition, globally recognized reporting standards such as the Sustainability Accounting Standards Board (SASB) include key performance indicators (KPIs) for chemicals management. Companies will receive credit if their KPIs and information reported in sustainability reports are interlinked to global strategic goals for chemical management, such as the UN SDGs, or to global reporting standards, such as the GRI or SASB.

For examples of how the SDGs relate to the CFP Survey in general see page 8 from CFP 2018 Report (<https://chemicalfootprint.org/assets/downloads/2018ChemicalFootprintProjectReport.pdf>).

Supporting documentation requirements:

- Option M2.2a: Provide marketing materials that highlight use of safer chemicals/materials or avoidance of chemicals of concern in manufacturing operations.
- Option M2.2b: Provide a copy of your materiality assessment and analysis of how chemicals or chemical pollution relate to topics in the materiality assessment.
- Option M2.2c: Provide evidence, for example from a sustainability report, of how your company connects chemicals to biodiversity loss, climate change, plastic pollution, or environmental injustices.
- Option M2.2d: Provide evidence, for example from a sustainability report, of how your company connects chemicals to UN SDGs, SASB, and/or GRI.

Question M3: External Engagement (4 points)

Question M3 seeks to understand how your company engages externally to: increase chemical ingredient transparency in manufacturing operations and supply chains, restrict chemicals of concern based on inherent hazards (such as PFAS), and promote inherently safer alternatives.

M3.1 Does your company advocate externally for proactive chemicals management that includes: increasing the transparency of chemical ingredients in manufacturing operations and supply chains, restricting chemicals of concern based on their inherent hazards including classes of chemicals of concern such as PFAS, and promoting inherently safer alternatives (select one)?

- a. Our company advocates externally to promote the actions listed in Question M3.2. If you selected this option, proceed to Question M3.2.
- b. Our company does not advocate externally to promote the actions listed in Question M3.2. If you selected this option, proceed to Question M4.

M3.2 Our company (select all that apply):

- a. Collaborates with **non-governmental organizations (NGOs)** that advance inherently safer alternatives to chemicals of concern.
- b. **Advocates for safer chemicals/materials in government legislation or regulation**, either directly or is a member of a trade association that advocates for increasing chemical ingredients transparency in manufacturing operations and supply chains, restricting chemicals of concern based on inherent hazards, or promoting inherently safer alternatives. Advocacy includes submitting written comments, making oral comments, or testifying to elected bodies or regulatory agencies.
- c. **Supports safer chemicals/materials management in standards, certifications, eco-labels, or NGO-led pledges**, either directly or as a member of a trade association that advocates for increasing chemical ingredient transparency in manufacturing operations and supply chains, restricting chemicals of concern based on inherent hazards, or requiring inherently safer alternatives. Support includes written and verbal comments to standard setting bodies.
- d. **Presents publicly, states on our website, or publishes documents** that support hazard-based frameworks for increasing chemical ingredient transparency in manufacturing operations and supply chains, restricting chemicals of concern based on inherent hazards, or requiring inherently safer alternatives.

How to earn points, examples, and supporting documentation requirements

This question evaluates whether the company advocates for the proactive management of chemicals in diverse settings. For example, a company may be a proactive member of a group advocating for better chemicals management, a supporter of better regulations of chemical ingredients and restriction of chemicals of concern, and may be part of an industry group working towards these goals in public policies or industry standards.

Option M3.2a

A company earns points for Option a if it is an active member of an NGO initiative or collaborates with NGOs that advance inherently safer alternatives to chemicals of concern. Examples include: Collaboratory for a Regenerative Economy (<https://www.corebuffalo.org/>), Green Chemistry & Commerce Council (GC3), Green America's Clean Electronics Production Network, Clean Production Action's BizNGO Working Group for Safer Chemicals & Sustainable Materials, and ChemSec's Business Group. For example, see HP's Green Chemistry Timeline, which highlights numerous collaborations with NGOs, including GC3 and Clean Production Action (<https://h20195.www2.hp.com/v2/GetDocument.aspx?docname=c06048911>). Being an "active member" means that your company does more than pay membership dues; for example, a company representative attends annual meetings and actively supports, participates, and engages in work groups.

Option M3.2b

A company earns points for Option b if it, or a trade association to which it is a member, is on public record in supporting legislation or regulations that: increase the transparency of chemical ingredients in manufacturing operations and supply chains, restrict chemicals of concern based on their inherent hazards, or promote inherently safer alternatives. For example, in 2017, Reckitt Benckiser (RB) publicly supported legislation in California that mandated specific ingredient disclosure for cleaning products

(see <https://markets.businessinsider.com/news/stocks/rb-supports-california-ingredient-disclosure-bill-675459?miRedirects=1>).

Option M3.2c

A company earns points for Option c if it, or a trade association to which it is a member, is on public record in supporting safer chemicals/materials management (increasing transparency, restricting chemicals of concern based on inherent hazards, or requiring inherently safer alternatives) in: comments on standards, certifications; eco-labels; peer reviews of standards, certifications, or eco-labels; or NGO-led pledges or sign-on documents. For example, a company that is a signatory to the BizNGO Principles for Chemical Ingredient Disclosure (<https://www.bizngo.org/public-policies/principles-for-chemical-ingredient-disclosure>) or the Clean Electronics Production Network Toward Zero Exposure commitment (<https://www.towardzeroexposure.org/>).

Option M3.2d

A company earns points for Option d if it made public presentations, has statements on its website, or statements in publications (such as a corporate sustainability report) in support of hazard-based frameworks for prioritizing and restricting chemicals of concern, increased transparency of chemical ingredients in manufacturing operations, and safer alternatives.

Supporting documentation requirements for demonstrating how your company engages externally to increase chemical ingredient transparency in manufacturing operations and supply chains, restrict chemicals of concern based on inherent hazards (PFAS), and promote inherently safer alternatives are:

- Option M3.2a: Provide name of NGO(s) your company collaborates with and describe how your organization actively supports this work by, for example, participating in work groups, attending annual meetings, making presentations, etc.
- Option M3.2b: Provide references to/examples of written/oral comments/testimonies to regulatory/legislative bodies by your company or a trade association you are a member of in support of this work.
- Option M3.2c: Provide: a) references to/examples of written comments to standard setting bodies by your company or a trade association you are a member of in support of this work; and/or b) link to NGO website stating your organization signed on to an NGO-led pledge.
- Option M3.2d: Provide links to public presentations, articles, blogs, webinars, or corporate statements in support of this work by your company. If listing a corporate sustainability report, must include relevant page number(s).

Question M4: Accountability (4 points)

Question M4 evaluates whether the implementation of your chemicals policy and achievement of footprint reduction goals is clearly delineated in the work responsibilities of your company's employees, senior management, and/or board members.

M4 What means of accountability does your company have in place to ensure the implementation of your chemicals policy (M1) and/or footprint reduction goal(s) (F1)?

M4.1 Our company (select one):

- a. Has a means of accountability listed in Question M4.2 below to ensure the implementation of our chemicals policy and/or footprint reduction goal. If you selected this option, proceed to Question M4.2.
- b. Does not have the means of accountability listed in Question M4.2 below to ensure the implementation of our chemicals policy and/or footprint reduction goals. If you selected this option, proceed to Question I1.

M4.2 Our company (select all that apply):

- a. Delineates chemicals management responsibilities in job descriptions and individual annual performance metrics.
- b. Assigns member(s) of senior management responsibility for meeting chemical policy goals and objectives.
- c. Have financial incentives for senior management to meet corporate sustainability goals, including chemicals policy-related or footprint reduction goals.
- d. Has Board level engagement in implementing our chemicals policy or footprint reduction goal.

How to earn points, example, and supporting documentation requirements

Implementing a chemicals policy and/or footprint reduction goal includes setting objectives and targets, tracking and reporting on performance, and reviewing of activities. Implementation of this work requires having employees who are knowledgeable about the policy and/or footprint reduction goal, engaged in its implementation, and rewarded for success. In addition, a systematic transition toward using safer chemicals in manufacturing operations requires support and accountability at the highest levels of an organization. When an organization's executive team member is responsible for reducing the use of chemicals of high concern, this member will engage other company members to help achieve this objective. Board-level visibility of chemicals policy goals and progress toward those goals signals a high level of commitment to implementing the policy and achieving the goal.

For an example of meeting Options a, b, and c, see HP's 2019 Sustainable Impact Report, which states that: "All members of the executive leadership team oversee Sustainable Impact targets relevant to their organizations and are evaluated annually against objective related to Sustainable Impact ... Performance against these and other business objectives is tied to total compensation" (source: <https://h20195.www2.hp.com/v2/getpdf.aspx/c06601778.pdf>, page 15).

Supporting documentation requirements: provide a narrative summary for each option selected, including the title and description of responsibilities for the highest ranking person in the company responsible for chemicals management. When referencing any document, such as a sustainability report, you must provide the page numbers(s) relevant to each option selected.

Chemical Inventory Pillar (30 points)

Chemical Inventory (I) assesses a company's knowledge of the chemicals in its manufacturing operations, systems for managing chemical data, and processes for ensuring supplier compliance with reporting requirements. The six Chemical Inventory questions and maximum points for each question are:

- Question I1: Manufacturing Restricted Substances List (MRSL) = 5 points
- Question I2: MRSL Compliance = 5 points
- Question I3: Data Collection = 5 points
- Question I4: Full Chemical Ingredient Information = 5 points
- Question I5: Data Management = 5 points
- Question I6: Supplier Conformance = 5 points

See below for details on each question, including response options, how to earn points, examples, and documentation requirements.

Question I1: Manufacturing Restricted Substances List (MRSL) (5 points)

Question I1 assesses whether your company has a manufacturing restricted substances list (MRSL) for chemicals used in manufacturing operations that is more stringent than legal requirements and, if yes, the scope of that MRSL.

I1. What is the scope of chemicals of concern restricted in manufacturing operations?

I1.1 What is the scope of chemicals of concern restricted in manufacturing operations (select one)?

- a. Our company has developed a list of chemicals of concern. If you selected this option, proceed to Question I1.2.
- b. Our company has not developed a list of chemicals of concern. If you selected this option, proceed to Question I3.

I1.2 Our company (select all that apply):

- a. Uses an MRSL for manufacturing operations to manage legal compliance within each market where it operates. Our MRSL includes only chemicals that are legally restricted in each market.
- b. Has an MRSL that includes ALL the chemicals restricted by the European Union (EU) Restriction of Hazardous Substances in Electrical and Electronic Equipment (RoHS) Directive with no exceptions (https://environment.ec.europa.eu/topics/waste-and-recycling/rohs-directive_en#background).
- c. Has an MRSL that restricts ALL the chemicals on the European Union (EU) REACH Candidate Substances of Very High Concern (SVHCs) List with no exceptions (<https://echa.europa.eu/candidate-list-table>).
- d. Has an MRSL that restricts ALL PFAS in SOME manufacturing operations. List the functional uses for which PFAS are restricted and for which PFAS are allowed. CFP defines PFAS as a class of fluorinated organic chemicals containing at least one fully fluorinated carbon atom and the OECD's "Comprehensive Global Database of PFASs" to identify PFAS by CAS Registry Number (CASRN) (<https://www.oecd.org/chemicalsafety/portal-perfluorinated-chemicals/>).

- e. Has an MRSL that restricts ALL the chemicals listed by the International Electrotechnical Commission (IEC) 62474 Material Declaration for Products of and for the Electrotechnical Industry – Declarable Substance List with no exceptions (<https://std.iec.ch/iec62474/iec62474.nsf/Index?open&q=181540>).
- f. Has an MRSL that restricts ALL the substances on Clean Electronics Production Network's Toward Zero Exposure pledge Priority Chemical List (<https://www.towardzeroexposure.org/priority-chemicals>).
- g. Has its own MRSL, which goes beyond regulatory compliance, and is different from the above lists.

How to earn points, examples, and supporting documentation requirements

CFP defines an MRSL as a list of chemicals restricted from intentional use in facilities that process materials, components and/or products. An MRSL establishes acceptable concentration limits for substances in chemical formulations used within manufacturing operations.

Option I1.2a

The scope of an MRSL, at minimum, includes chemicals that are currently restricted or banned in manufacturing operations because of a regulation or law; that is, legally restricted substances. Because jurisdictions have different chemical restrictions, a company may maintain separate MRSLs for each jurisdiction where it operates. Select option "a" if your MRSL does not include restrictions on chemicals that go beyond legal compliance for any jurisdiction where you operate. Requiring suppliers to assure that products or components do not contain chemicals on an MRSL designed for legal compliance is a first and significant step in a transition to safer chemicals use. **Select Option a if your MRSL does not include restrictions on chemicals that go beyond legal compliance for any jurisdiction where you operate.**

Option I1.2b

Option b encompasses the European Union's Restriction of Hazardous Chemicals (RoHS) Directive. The EU RoHS restricts hazardous substances in electrical and electronic equipment. EU RoHS includes restrictions on the use of cadmium, hexavalent chromium, lead, mercury, polybrominated biphenyls (PBBs), polybrominated diphenyl ethers (PBDEs), and certain phthalates.

Companies receive points only if **all** RoHS chemicals are restricted from use in manufacturing operations. Provide a copy and/or a link to your MRSL.

Option I1.2c

Option c encompasses the EU's Candidate List of Substances of Very High Concern (SVHCs) developed under the REACH regulations. The SVHC List includes hundreds of chemicals that may harm people or the environment. Companies receive points only if **all** REACH SVHCs are restricted from use in manufacturing operations. Provide a copy and/or a link to your MRSL.

Option I1.2d

Option d encompasses the class of PFAS. Companies receive points if they restrict **all** PFAS in **some** manufacturing operations. See Terms & Definitions for definition of PFAS. List the functional uses for which PFAS are restricted and for which PFAS are allowed. Provide a copy and/or a link to your MRSL.

Option I1.2e

Option e encompasses substances listed by IEC 62474 declarable substance groups. A reportable application and a reporting threshold level accompany each chemical or chemical group entry. The IEC 62474 list specifies to the electrical and electronics industry and its suppliers what substances, substance groups, and material classes need to be included in material declarations. CFP applies the IEC declarable substances list to products used in manufacturing operations.

Companies receive points if their MRSL includes **all** chemicals on the IEC Declarable Substances List. Provide a copy and/or a link to your MRSL.

Option I1.2f

Option f encompasses substances on the Clean Electronics Production Network's (CEPN) Toward Zero Exposure pledge Priority Chemical List (<https://www.towardzeroexposure.org/priority-chemicals>).

Companies receive points if their MRSL includes **all** chemicals on CEPN's Toward Zero Exposure pledge Priority Chemical List. Provide a copy and/or a link to your MRSL.

Option I1.2g

Option g provides an option for companies whose MRSL is broader than legal requirements but differs from the above lists. Describe how your company's MRSL goes beyond legal compliance and provide a copy and/or a link to your MRSL.

HP's Standard 011 General Specification for the Environment is an example from the technology sector that includes many of the above elements (see <https://h20195.www2.hp.com/v2/getpdf.aspx/c04932490.pdf>).

Question I2: MRSL Compliance (5 points)

Question I2 seeks to understand the actions your company takes to ensure compliance with its MRSL for manufacturing operations, keep the MRSL up-to-date, and share the MRSL with the public.

I2.1 What actions does your company take to ensure that its requirements regarding the MRSL are current and implemented effectively (respond only if you selected Option a for Question I1.1)?

- Our company takes the actions listed in Question I2.2 below to ensure that its requirements are current and implemented effectively. If you selected this option, proceed to Question I2.2.
- Our company does not take the actions listed in Question I2.2 below to ensure that requirements regarding our List of chemicals of high concern are current and implemented effectively. If you selected this option, proceed to Question I3.

12.2 Our company (select all that apply)?

- Delineates compliance requirements in contracts with suppliers.
- Trains suppliers about how to comply with our requirements.
- Updates our MRSL and/or other requirements on an annual basis (or more frequently).
- Publicly discloses our MRSL and/or other requirements.

How to earn points, examples, and supporting documentation requirements

A company will earn points for:

- **Option 12.2a** if it provides supporting documentation to verify that supplier contracts specify these requirements. For example see HP's Supplier Code of Conduct, which delineates all supplier compliance requirements (<https://h20195.www2.hp.com/v2/getpdf.aspx/c04797684>).
- **Option 12.2b** if it describes how suppliers receive training on compliance with its MRSL.
- **Option 12.2c** if it provides supporting documentation to verify that the MRSL is updated at least annually.
- **Option 12.2d** if it provides a publicly available link to its MRSL. Note that if you also answer "yes" to Question D2, the link to your chemicals policy will be included in the public listing of your responses on the Chemical Footprint Project's website. Many companies publicly post their MRSL.

Question 13: Data Collection (5 points)

Question 13 seeks to understand the scope of the information you collect from suppliers on chemicals in used in manufacturing operations.

13.1 What chemical information does your company, either directly or through a third-party, collect from suppliers (select one)?

- Our company collects chemical ingredient information from suppliers. If you selected this option, proceed to Question 13.2.
- Our company does not collect chemical ingredient information from suppliers. If you selected this option, proceed to Question 15.

13.2 Our company (select one):

- Requires suppliers of process chemicals confirm that they comply with our MRSL.
- Requires suppliers of process chemicals confirm that they comply with our MRSL and to provide information on chemicals on our Watch List, which includes at least 10 chemicals or one class of chemicals such as PFAS.
- Requests that suppliers of process chemicals provide full chemical ingredient information.
- Requires that suppliers of process chemicals provide full chemical ingredient information.

How to earn points, examples, and supporting documentation requirements

Compiling a comprehensive chemical inventory of manufacturing chemicals involves a number of challenges that vary depending on a company's characteristics. In the manufacturing pilot, participating companies differed in size and sector, which impacted their ability both to acquire information on the chemical ingredients used in their manufacturing processes and to control which chemicals were used.

One participant was a large company that managed its own manufacturing processes. This company spent a number of years asking suppliers for full chemical ingredient information in the formulations it purchased for manufacturing. As a result of this multi-year effort, prior to this pilot it had created a comprehensive database of the chemicals used.

A second participant contracted manufacturing to facilities that manufacture for multiple brands. While the company asked its contract manufacturers for the identity of manufacturing process chemicals, it is unclear whether information received includes process chemicals for its specific contract or for the entire manufacturing facility, including manufacturing done for other brands.

A third participant was a contract manufacturer. Contracts with its customers varied with regard to specificity of chemical formulations used. Some contracts allowed the participant to choose formulations, as long as the customer's product functioned to the customer specifications. Other contracts required the pilot participant to use chemical formulations required by the customer. This pilot participant had limited insight into the chemical content of formulations, whether it chose and purchased them itself or they were specified by the customer. The participant's only source of information for the chemical content of formulations was the Safety Data Sheets (SDSs) provided by the formulator's manufacturer.

For formulated products, the only source of data on chemical ingredients is often an SDS. SDSs are well known to have quality challenges with regard to accuracy. Further, SDSs are not designed to provide full chemical ingredient information; rather, they are required to report on specific chemical composition within a regulatory framework. Finally, SDSs provide chemical ingredients in ranges, for example, a chemical may be listed as comprising 5 – 80% of a product. To calculate a chemical footprint from a range, a user could choose the low, high, or middle of the range, but it is difficult to determine which would be most accurate. One participant in the pilot project who has worked with suppliers for a number of years to get full chemical ingredient information for formulated products beyond SDSs noted that most often the average of the range provided is a good indication of content.

Option I3.2a

A company earns points for Option a if it requires suppliers of process chemicals to confirm compliance to its MRSL.

Provide supporting documentation of how your company requires supplier conformance to your MRSL.

Option I3.2b

A company earns points for Option b if it requires suppliers of process chemicals to confirm compliance to its MRSL and asks suppliers to provide information on its "Watch List" or equivalent. A Watch List is a list of chemicals of concern and/or classes of chemicals that a company does not restrict, but is considering restricting in the future. For example, a company asks suppliers to report on PFAS in products to understand which products contain PFAS and whether safer alternatives are available to PFAS in those products. Organizations may use a variety of terms for a "watch list." We are not concerned with the name of the list. Rather we want to know, does your company have a list of chemicals of concern or classes of chemicals of concern that it does not restrict, but is considering restricting in the future.

Provide a copy of and/or a link to your Watch List or equivalent.

Options I3.2c and I3.2d

A company earns points for Option I3.2c if it “requests,” but does not “require,” that suppliers of process chemicals provide full chemical ingredient information.

A company earns points for Option I3.2d if it “requires” that suppliers of process chemicals provide full chemical ingredient information.

Some companies refer to this as “full materials disclosure” or “full materials declaration.” For CFP, “full chemical ingredient information” is synonymous with “full materials disclosure.”

CFP defines “full chemical ingredient information” as follows:

- **For formulated products:** a company knows:
 - 100% of the intentionally added substances by mass and
 - any impurities that are both a CoHC and present at 100 parts per million (ppm) or higher in the formulation.
- **For articles:** a company knows:
 - 95% of the intentionally added substances by mass and
 - any impurities that are both a CoHC and present at 1000 ppm or higher in a homogeneous material.

A company may have suppliers report directly to them on chemicals in products or utilize a third-party service provider to collect this information to protect confidential business information. Suppliers often utilize a third-party service provider to protect confidential business information when full materials disclosure is required.

Provide documentation demonstrating that your company requests or requires full chemical ingredient information.

Question I4: Full Chemical Ingredient Disclosure from Suppliers (5 points)

Question I4 seeks to understand the scope of chemical ingredient information your company collects from suppliers.

I4.1 For what percentage of products used in manufacturing operations do you collect full chemical ingredient information? Respond only if you selected Option “c” or “d” for Question I3.2. Enter percentage: _____.

How to earn points, example, and supporting documentation requirements

Question I4 seeks to understand the scope of your company’s data collection on full chemical ingredient information (Question I3). It is only applicable to your company if you selected Options c or d for Question I3.2. Note that it is essential to use the CFP’s definition of “full chemical ingredient information” for “formulated products” and “articles” (see Question I3 or Terms & Definition section).

Calculate percentage of process chemicals used in manufacturing operations with full chemical ingredient information using mass (kilograms), purchases (dollars), or other appropriate unit of measurement. For example, our company collects full chemical ingredient information of process chemicals for 50% of products purchased for use in manufacturing operations.

Supporting documentation requirement: Companies earn points for I4 if they provide percentage of products for which full chemical ingredient is collected and documentation of how they calculated this percentage.

Question 15: Data Management (5 points)

Question 15 assesses your company's capabilities for interacting with tier 1 suppliers, managing chemical ingredient data, and communicating with customers.

15.1 What capabilities does your company have for managing data on process chemicals used in manufacturing operations (select one)?

- Our company has capabilities for managing data on chemicals uses in manufacturing operations listed in Question 15.2. If you selected this option, proceed to Question 15.2.
- Our company is not capable of managing data on chemicals in manufacturing operations listed in Question 15.2. If you selected this option, proceed to Question 16.

15.2 Our company has (select all that apply):

- An internal named point of contact or outside contractor who communicates with suppliers of process chemicals concerning chemical information requirements.
- A data system, internal or third party, to manage an inventory of process chemicals used in manufacturing operations.
- A data system, internal or third party, which links our inventory of process chemicals to chemical hazard information.
- A data system for generating reports on chemical ingredients used in manufacturing operations for customers.

How to earn points, examples, and supporting documentation requirements

Implementing a data management system is essential after determining what chemicals may be of concern in your company's manufacturing operations and requesting data from suppliers of process chemicals on these substances.

Option 15.2a

A company earns points for Option a if it has a named point of contact to communicate with suppliers of process chemicals concerning chemical information requirements. A point of contact can be a person or a department serving as the coordinator or focal point of information concerning chemical information and management systems for a company. A company could, for example, have a supply chain team responsible for communicating chemical information requirements with suppliers and collecting chemical/material ingredient information.

Supporting documentation requirement: Provide point of contact for suppliers and role of the point of contact.

Options 15.2b-d

A company earns points for Options b-d if it has a data management system, either internal or through a third party, that:

- Manages the inventory of chemicals used in manufacturing operations (Option b).
- Provides hazard data on chemicals used in manufacturing operations (Option c).
- Generates chemical ingredient reports for customers on chemicals used in manufacturing operations (Option d).

Supporting documentation requirement: provide narrative description of your company's chemical data management system and how it manages chemical inventories, provides data on chemical hazards, and/or generates chemical ingredient reports. If referencing publications, provide relevant page numbers for the sources of the information.

Question 16: Supplier Conformance (5 points)

Question 16 assesses the measures your company takes to ensure supplier conformance with reporting requirements concerning chemicals in manufacturing process chemistry.

16.1 How does your company ensure conformance with your chemical management requirements for manufacturing operations (select one)?

- a. Our company ensures conformance with chemical management requirements for manufacturing operations through methods listed in Question 16.2. If you selected this option, proceed to Question 16.2.
- b. Our company does not ensure conformance with the chemical management requirements for manufacturing operations through methods listed in Question 16.2. If you selected this option, proceed to Question F1.

16.2 Our company (select all that apply):

- a. Has an audit program to verify supplier-submitted data.
- b. Requires suppliers to test parts in third-party approved labs and provide results.
- c. Trains suppliers on how to comply with reporting requirements.
- d. Routinely tests products to assure conformance with reporting requirements.

How to earn points, examples, and supporting documentation requirements

Option 16.2a

A company earns points for Option a if it routinely audits suppliers. For example, HP's supplier audit process is an essential component of its assessment framework and for identifying opportunities for sustained improvement with suppliers. HP also works with its final assembly suppliers to confirm that they audit companies in their supply chains (see HP's *Sustainable Impact Report*, 2019, <https://h20195.www2.hp.com/v2/getpdf.aspx/c06601778.pdf>, page 45).

Option I6.2b

A company earns points for Option b if it requires suppliers to test parts in an approved laboratory and provide these results. A company could, for example, require suppliers to comply with chemical requirements by providing the company with up-to-date laboratory analysis results and/or relevant certification documents. Testing requirements may be communicated in supplier contracts to ensure suppliers conduct all relevant tests in certified labs and provide the company with results.

Option I6.2c

A company earns points for Option c if it trains suppliers in complying with its reporting requirements. Companies may train suppliers on how to meet company standards and unacceptable ingredients, ensure compliance with reporting and provide suppliers with clear information. This may include training on how to meet requirements that are beyond legal compliance and how to complete and submit all forms and documents.

Option I6.2d

A company earns points for Option d if it conducts routine testing of products to assure conformance with reporting requirements. For example, routinely sends or products to a third party for testing to ensure that the supply chain meets all chemicals requirements, such as having no PFAS in product formulations.

Supporting documentation requirements: provide a narrative description in support of your answers. If referencing publications, provide relevant page numbers for the sources of the information.

If your company avoids all CoHCs in manufacturing operations, describe how you ensure these chemicals are not in products from suppliers.

Footprint Measurement Pillar (33 points)

Footprint Measurement (F) measures whether a company sets goals to reduce chemicals of high concern, has established a baseline corporate chemical footprint and measured progress in reducing chemicals of high concern, and whether safer alternatives are assessed, identified, and used. The five Footprint Measurement questions and maximum points for each question are:

- Question F1: Chemicals of High Concern (CoHCs) Reduction Goal = 6 points
- Question F2: Footprint Measurement = 8 points
- Question F3: Footprint Change = 10 points
- Question F4: Hazard Assessment = 3 points
- Question F5: Safer Alternatives = 6 points

See below for details on each question, including response options, how to earn points, examples, and documentation requirements.

Question F1: Footprint Reduction Goal (6 points)

Question F1 asks about your company's specific goals for reducing its chemical footprint, particularly CoHCs in manufacturing operations, and its public disclosure of these goals and progress towards achieving them.

F1.1 Has your company set goals for reducing chemicals of high concern (CoHCs) and/or chemical classes in manufacturing operations and measured progress toward these goals (select one)?

- a. Yes, our company has a goal to reduce CoHCs or chemical classes. If you selected this option, proceed to Question F1.2.
- b. No, our company does not have a goal to reduce CoHCs or chemical classes. If you selected this option, proceed to Question F2.

F1.2 Our company (select all that apply from Options "a-f" or Option "g"):

- a. Has set a goal for reducing CoHCs by count or mass.
 - b. Has set a goal to eliminate one or more chemicals classes of concern.
 - c. Has set a goal to reduce its chemical footprint.
 - d. Publicly discloses the goal, which at a minimum includes percentage reduction and time period.
 - e. Publicly discloses specific CoHCs included in the goal.
 - f. Publicly reports annually on progress towards meeting the goal.
- or
- g. Has no CoHCs on the CFP CoHCs Reference List in our manufacturing operations and publicly discloses this information.

F1.3 If you answered "Yes" to F1.2a, which list(s) of chemicals of high concern (CoHCs) in manufacturing operations has your company eliminated or set goals to eliminate (choose all that apply):

- a. European Union (EU) Restriction of Hazardous Substances in Electrical and Electronic Equipment (RoHS) Directive – restricted substances list (see https://environment.ec.europa.eu/topics/waste-and-recycling/rohs-directive_en#background).

- b. EU REACH Candidate Substances of Very High Concern (SVHCs) List (see <https://echa.europa.eu/candidate-list-table>).
- c. International Electrotechnical Commission (IEC) 62474 Material Declaration for Products of and for the Electrotechnical Industry – Declarable Substance List (see <https://std.iec.ch/iec62474/iec62474.nsf/Index?open&q=181540>).
- d. PFAS: For the PFAS reference list see The Comprehensive Global Database of PFAS by the Organisation for Economic Cooperation and Development (OECD) (<http://www.oecd.org/chemicalsafety/portal-perfluorinated-chemicals>).
- e. Clean Electronics Production Network's (CEPN) Toward Zero Exposure pledge Priority Chemical List (<https://www.towardzeroexposure.org/priority-chemicals>).

How to earn points, examples, and supporting documentation requirements

Setting time-bound goals provide a means for measuring progress and communicating progress to stakeholders in reducing chemical footprints. Having a formal process for setting goals and measuring and reporting on progress toward these goals provides accountability to your company's stakeholders and shareholders. Ideally, a regular process for reviewing goals and progress occurs annually and is part of reporting key performance indicators. In addition to setting these goals, publicly sharing them and reporting on progress toward meeting them is an additional means of ensuring accountability.

Option F1.2a

A company earns points for Option a by providing **documentation** that includes the following:

- chemicals of concern,
- reduction goal(s),
- relevant manufacturing operations, and
- timeline.

For example, our company will eliminate all uses of methylene chloride by December 31, 2024.

Option F1.2b

A company earns points for Option b by providing **documentation** that includes the following:

- chemical class(es) of concern,
- definition of each chemical classes, including specific Chemical Abstracts Service Registry Number (CAS RN),
- reduction goal(s),
- relevant manufacturing operations, and
- timeline.

For example, our company will eliminate the use of PFAS in all manufacturing operations by December 31, 2025. CFP uses this definition of PFAS, a class of fluorinated organic chemicals containing at least one fully fluorinated carbon atom, and uses the OECD's "Comprehensive Global Database of PFASs" to identify PFAS by CASRN (<https://www.oecd.org/chemicalsafety/portal-perfluorinated-chemicals/>).

Examples of chemical classes of concern include:

- Alkylphenols and alkylphenol ethoxylates
- Azo dyes
- Benzophenones

- Bisphenols
- Halogenated flame retardants
- Parabens
- Per- and polyfluoroalkyl substances (PFAS)
- Phthalates: Ortho-phthalates
- Polycyclic Aromatic Amines
- Ozone Depleting Substances (ODS)
- Siloxanes: cyclic volatile methyl siloxanes (D4, D5, D6)

By setting goals to eliminate a class of chemicals of concern, companies may reduce the likelihood of a “regrettable substitute” – a chemical alternative that turns out to be as or more toxic than the original chemical of concern.

Option F1.2c

A company earns points for Option c by providing **documentation** that includes the following:

- chemical footprint reduction goal,
- relevant manufacturing operations, and
- timeline.

A company earns points for Option c if it uses either the CFP Chemicals of High Concern (CoHCs) Reference List or the CFP Solar CoHCs Reference List to measure progress to its chemical footprint reduction goal. See Terms & Definitions section for definition of the CFP CoHCs Reference List and CFP Solar CoHCs Reference List. The Solar CoHCs Reference List is a subset of the CoHCs Reference List plus the addition of chemical classes relevant to the solar industry. CFP defines “chemical footprint of manufacturing operations” as the “total mass of chemicals of high concern (CoHCs) used on their own or in mixtures, directly in or created during the manufacture of a product that are not incorporated in whole or in part in the product or its packaging.”

Option C earns companies three points as compared to the one point for Option a or b.

Options F1.2d-f

A company earns points for Options d-f if it publicly discloses:

- The goal, including percentage reduction and time period (Option d).
- Specific CoHCs included in the goal (Option e).
- Progress towards meeting the goal (Option f).

Supporting documentation requirements: provide the public link or publication for with this content. If referencing a publication, include the relevant page numbers. If you choose “yes” in question D2, these links will be included in your publicly available response options posted on the CFP website.

For example, Walmart set a goal to reduce its chemical footprint of priority chemicals in formulated consumables by 10% compared to its 2017 baseline by 2022. In 2022, Walmart reported meeting this goal with 17% reduction of 39 million pounds (see <https://corporate.walmart.com/esgreport/esg-issues/safer-healthier-food-other-products>). In this case, Walmart earns points for Options c-f.

Option F1.2g

Supporting documentation requirement: provide narrative of how you determined that your manufacturing operations have no CoHCs on the CFP CoHCs Reference List and link to where you make that statement public.

Question F2: Footprint Measurement (8 points)

Question F2 inquires about your company's total use of CoHCs in manufacturing operations.

F2.1 How does your company measure its baseline chemical footprint for manufacturing operations sold (select one)?

- Our company has calculated its chemical footprint. If you selected this option, proceed to Question F2.2.
- Our company is unable to calculate its chemical footprint at this time. If you selected this option, proceed to Question F3.

F2.2 Our company (select one and provide narrative of how you calculate your footprint including the time period covered):

- Has calculated its chemical footprint by mass using the CFP CoHCs Reference List. If yes, answer Question F2.3.
- Has calculated its chemical footprint by count using the CFP CoHCs Reference List. If yes, answer Question F2.4.
- Has calculated its chemical footprint by mass using the CFP Solar CoHCs Reference List. If yes, answer Question F2.3.
- Has calculated its chemical footprint by count using the CFP Solar CoHCs Reference List. If yes, answer Question F2.4.
- Has calculated its chemical footprint by mass using the EU REACH Candidate List of SVHCs. If yes, answer Question F2.3.
- Has calculated its chemical footprint by count using the EU REACH Candidate List of SVHCs. If yes, answer Question F2.4.
- Has no intentionally added CoHCs, using the CFP CoHCs Reference List.

F2.3 Our company's chemical footprint in kilograms is (required response if you selected Option "a", "c", or "e" for Question F2.2):

Enter footprint in kilograms: _____.

F2.4 Our company's chemical footprint by count is (required response if you selected Option "b", "d", or "f" for Question F2.2):

Enter footprint by number of CoHCs in manufacturing operations: _____.

How to earn points, examples, and supporting documentation requirements

Note that a chemical footprint as defined by CFP is a hazard-based metric, not a risk-based metric. This means that it is the inherent hazard of a chemical that is considered, rather than taking into account the potential exposure to this substance. While risk mitigation strategies are critically important when hazardous chemicals are used, they can and will fail. Equipment can break, spills can happen, and

human error is inevitable. In addition, where hazardous chemicals are persistent, that is, they do not break down in the environment, and/or are bioaccumulative or highly mobile, it may be impossible to recapture and contain them once released. These chemicals may be taken up in humans through inhalation or ingestion or enter into ecosystems. For example, hazardous flame retardants, plasticizers, and chemicals designed to provide grease and water repellency have been detected at increasing levels in humans, as well as in remote ecosystems of the world.

For this reason, a chemical footprint measures the mass of hazardous chemicals in use, regardless of mitigation measures designed to reduce exposure. It is understood that companies may find it useful to quantify the mass of hazardous chemicals for which they have reduced exposure by using engineering controls, administrative controls, or personal protective equipment, but these mitigation efforts are beyond the scope of this project.

The scope of chemicals included in a chemical footprint of manufacturing operations includes:

- raw chemical production materials,
- chemical intermediaries or transformation products created during the manufacturing process, and
- process chemicals.

“Process chemicals” are chemicals, including both individual chemicals and mixtures, used during the manufacture of a product and/or maintenance of related production equipment that are not intended to be fully incorporated into the product. Examples include cleaning agents, solvents, machine cutting fluids, lubricants, photoresists, plating agents, refrigerants, hydraulic fluids, adhesives, inks and coatings, etc. Inks and coatings are in the scope of process chemicals because volatile organic chemicals from inks and coatings, which are not incorporated into the final product, pose a health risk to workers. The Clean Electronics Production Network, for example, includes inks and coatings as part of its definition of process chemicals.

One implication of this decision is that, if a company calculates both its product and manufacturing chemical footprints, inks and coatings will be double-counted. CFP decided that alignment with CEPN is more important than a concern about double-counting. If companies establish baseline chemical footprints for both their products and manufacturing process chemicals and then take action to reduce these footprints and measure reductions against each, they will meet the overall goal of reducing the use of chemicals of high concern. CFP believes that working to meet this goal is more important than being able to add a company’s chemicals footprints together to arrive at an overall corporate footprint.

CFP best practice, and consistent with the CFP definition of the chemical footprint of manufacturing operations, is to calculate the chemical footprint of manufacturing operations by mass using the CFP CoHCs Reference List. However, recognizing that companies are at different points in knowing chemicals in products used in manufacturing operations, Question F2 offers different pathways for companies to calculate the their chemical footprint.

First, is the list of CoHCs used. Responders to the Solar Survey have three choices for their list:

- **CFP CoHCs Reference List**, which is a broad list of chemicals generated from GreenScreen® List Translator™ and GreenScreen Benchmark-1 chemicals (see <https://chemicalfootprint.org/assess/survey-resources>) or equivalent.

- **CFP Solar CoHCs Reference List**, which is a subset of the CoHCs Reference List plus the addition of chemical classes relevant to the solar industry. See Terms & Definitions section for the scope of the Solar CoHCs Reference List.
- **EU REACH Candidate List of Substances of Very High Concern (SVHCs)** (see <https://echa.europa.eu/candidate-list-table>).

Second, responders can report on CoHCs in manufacturing operations by mass or count:

- **“Mass”** is the weight of CoHCs in manufacturing operations over one year (for example, our manufacturing operations used 1,000,000 kgs CFP CoHCs from 1/1/2022-12/31/2022).
- **“Count”** is the number of CoHCs in manufacturing operations over one year (for example, our manufacturing operations had 21 CFP CoHCs from 1/1/2022-12/31/2022).

Responders earn the most points if they calculate chemical footprint by mass and use the CFP CoHCs Reference List.

Note that if you choose to use the EU REACH Candidate List of SVHCs, calculating your chemical footprint to be zero due to the lack of SVHCs is not an option because the products may have CoHCs included in the much more comprehensive CFP CoHCs Reference List.

To measure your company's chemical footprint:

1. **Select the scope of the footprint.** We ask companies to determine the total mass and/or count of CoHCs in manufacturing operations. Responders may report the chemical footprint for all manufacturing operations or a limited part of their manufacturing operations. The extent of the footprint scope must be provided in the documentation.
2. **Select a CoHC list:** CFP CoHCs Reference List, CFP Solar CoHCs Reference List, or EU REACH Candidate List of SVHCs.
3. **Determine which chemicals on your list occur in manufacturing operations within your given scope.** Sources for this information vary by company but are typically derived from chemical ingredient information provided by suppliers. Generally, the more complete and accurate the chemical ingredient information from suppliers, the more accurate the chemical footprint calculation will be. Other possible sources may include internal knowledge of supplier formulations, literature reviews, and subject expertise.
The number of CoHCs in manufacturing operations is your chemical footprint by count. Note that the count is the total of individual CoHCs added up across manufacturing operations.
4. **Determine the mass of chemicals from your chosen CoHC list in manufacturing operations within your scope.** Data sources to calculate mass vary by company but may include the volume of materials or parts purchased, manufacturing specifications, sales data, or other sources. Report the total in kilograms. CFP sets threshold levels for calculating the chemical footprint of formulated products as follows:
 - 100% of intentionally added CoHCs by mass; and
 - any likely impurities that are both CoHCs and present at 100 ppm or higher in a homogeneous material.
5. **Calculate your company's total chemical footprint.** Calculate the chemical footprint for manufacturing operations and sum footprints for one year.

Calculate the chemical footprint for manufacturing operations and sum footprints for one year.

If you selected Option F2.2g, our manufacturing operations have no intentionally added CoHCs, provide narrative of how you determined that your manufacturing operations have no CoHCs on the CFP CoHCs Reference List.

Question F3: Footprint Change (10 points)

Question F3 asks for a quantitative measurement of changes in intentionally added CoHCs in manufacturing operations over the most recent one or two years.

F3.1 Over the most recent one or two years for which you have data, how much have intentionally added CoHCs in manufacturing operations changed (select one)?

- Our company has calculated the change in intentionally added CoHCs. If you selected this option, proceed to Question F3.2.
- Our company is unable to answer this Question at this time. If you selected this option, proceed to Question F4.

F3.2 Our company (select one):

- Has calculated the change in its chemical footprint by mass using the CFP CoHCs Reference List. If yes, answer Question F3.3.
- Has calculated the change in its chemical footprint by count using the CFP CoHCs Reference List. If yes, answer Question F3.4.
- Has calculated the change in its chemical footprint by mass using the CFP Solar CoHCs Reference List. If yes, answer Question F3.3.
- Has calculated its chemical footprint by count using the CFP Solar CoHCs Reference List. If yes, answer Question F3.4.
- Has calculated the change in its chemical footprint by mass, using the EU REACH Candidate List of SVHCs. If yes, answer Question F3.3.
- Has calculated the change in its chemical footprint by count, using the EU REACH Candidate List of SVHCs. If yes, answer Question F3.4.
- Is unable to calculate its baseline chemical footprint for beginning of reporting period. However, it is able to calculate the change in the number and/or mass of intentionally added CoHCs over the reporting period. If yes, answer Question F3.5.
- Had no CoHCs using the CFP CoHCs Reference List in manufacturing operations for the reporting period.

F3.3 Our company's change in chemical footprint in manufacturing operations in kilograms is (required response if you selected Option "a", "c", or "e" for Question F3.2):

Enter your change in chemical footprint in kilograms below.

Note: an additional two points are awarded to companies that calculated their chemical footprint according to Option F3.2a and reported a reduction in their footprint by mass using the CFP CoHCs Reference List.

F3.4 Our company's change in chemical footprint in manufacturing operations by count is (required response if you selected Option "b", "d", or "f" for Question F3.2):

Enter your change in chemical footprint by number of chemicals: _____.

F3.5 Our company's change in the number and/or mass of intentionally added CoHCs is (required response if you selected Option "g" for Question F3.2):

Enter your change in CoHCs by number and/or kilograms: _____.

How to earn points, examples, and supporting documentation requirements

To report a difference in your chemical footprint, subtract the footprint at the end of the reporting period from the footprint at the beginning by count and/or by mass. See Question F2 for details on how to calculate a chemical footprint.

Option F3.2e is for responders that cannot calculate their chemical footprint for both the beginning and the end of the reporting period, but have reduced or phased out the use of some CoHCs for that time. For example, if a company reduced its use of lead by 3,000 kg and cadmium by 2,000 kg over the reporting period, it would select the option "F3.2e" and, for the option "F3.5," enter "- 5,000 kg".

A company earns points for Question F3 primarily based on its ability to calculate the change in its chemical footprint, whether or not the footprint increased or decreased. An additional two points are awarded to companies that calculated their chemical footprint according to Option F3.2a and reported a reduction in their footprint by mass using the CFP CoHCs Reference List in F3.3.

Supporting documentation requirements, provide:

- Reporting period covered: most recent one or two years.
- List of CoHCs that your company has reduced or eliminated.
- Change in mass of CoHCs in kilograms.

If you selected Option F3.2h, our manufacturing operations have no intentionally added CoHCs, provide narrative of how you determined that your manufacturing operations have no CoHCs on the CFP CoHCs Reference List.

Question F4. Hazard Assessment (3 points)

Question F4 assesses how and to what extent your company assesses chemical hazards in manufacturing operations beyond regulatory requirements.

F4.1 How does your company assess the hazards of chemicals in its manufacturing operations and for what percent of manufacturing operations has your company assessed these hazards? Our company (select one):

- a. Assesses the hazards of chemicals in our manufacturing operations. If you selected this option, proceed to Question F4.2.
- b. Does not assess the hazards of chemicals in our manufacturing operations beyond regulatory requirements. If you selected this option, proceed to Question F5.

F4.2 Our company (select all that apply):

- a. Uses a system or tool, internal or third party, to evaluate chemical hazards. Identify the system or tool in attached documentation.
- b. Asks suppliers to provide their evaluations of chemical hazards in the products they sell to us.

F4.3 Our company assessed the hazards for the following percent of our manufacturing operations (required response if you selected Option "a" or "b" for Question F4.2): _____% of manufacturing operations.

How to earn points, examples, and supporting documentation requirements

Many companies begin by reviewing Safety Data Sheets (SDSs) and/or evaluating CAS Registry Numbers against authoritative lists of hazardous chemicals. However, SDSs have their limitations because they often do not contain a complete ingredient listing because of confidential business information. Therefore, using SDSs alone is insufficient to receive credit for this Question.

Authoritative lists of chemicals of concern are helpful. Still, they are lagging indicators of chemical hazards as it takes time to add chemicals of concern when new scientific evidence becomes available. Therefore, to conduct a comprehensive evaluation, it is necessary to go beyond Safety Data Sheets and authoritative lists.

Companies often use in-house expertise or hire a qualified third party, such as a certified toxicologist, to review chemical hazards. To conduct a thorough evaluation, it is expected that the in-house expert or qualified third party will, at a minimum, evaluate chemical ingredients for the following hazard endpoints: carcinogenicity, mutagenicity, reproductive toxicity, persistence, bioaccumulation, aquatic toxicity (chronic and acute), and endocrine disruption. Companies may also request that their suppliers evaluate chemical hazards and provide the results of these reviews.

There are several evaluation tools available and third-party service providers that provide this service. For example, the Organization for Economic Cooperation and Development's (OECD's) *Substitution and Alternatives Assessment Tool Box* includes an inventory of chemical hazard assessment tools, data sources, and service providers to help organizations identify the resources most relevant to their substitution and alternatives assessment goals (<https://www.oecd.org/chemicalsafety/risk-management/substitution-of-hazardous-chemicals/>).

Companies earn points in Question F4 according to the percentage of their manufacturing operations for which they assess hazards (Option F4.2a) and/or for which they receive information from their suppliers (Option F4.2b).

Supporting documentation requirements: Identify and describe the system-, tool, or third-party provider your company uses; and indicate what percent of manufacturing operations are screened for hazards.

Examples – Option F4.2a

GreenScreen™ List Translator (GS-LT): This tool is an abbreviated version of GreenScreen® for Safer Chemicals, a globally recognized chemical hazard assessment method used to identify chemicals of high concern and safer alternatives.

The GreenScreen List Translator provides a “list of lists” approach to quickly identify CoHCs. It does this by scoring chemicals based on information from over 40 hazard lists developed by authoritative scientific bodies convened by international, national and state governmental agencies,

intergovernmental agencies, and NGOs. These GreenScreen Specified Lists include REACH categorizations and chemical hazard classifications by countries using the Globally Harmonized System of Classification and Labeling of Chemicals (GHS). Each of GreenScreen specified list is mapped to hazard endpoints and a hazard level or range based on the GreenScreen hazard criteria.

Similar to a full GreenScreen assessment, the hazard classifications for endpoints are then used to derive a GreenScreen List Translator score. The List Translator scoring criteria align with the GreenScreen Benchmark-1 criteria. A List Translator score of "LT-1" means the hazard classifications for a given chemical meet one or more of the GreenScreen Benchmark-1 criteria. This information is based on authoritative lists: if a full GreenScreen assessment were conducted, the chemical would most likely be a Benchmark-1 chemical. A List Translator score of "LT-P1" means the hazard classifications for a given chemical meet one or more of the GreenScreen Benchmark-1 criteria, but the information is based on screening lists and/or there is some uncertainty about the classification for key endpoints. Further research is needed on the flagged endpoint(s) to determine if the chemical is indeed a GreenScreen Benchmark-1. A List Translator score of "LT-UNK" indicates that although the chemical was present on a list, there is insufficient information to apply the scoring algorithm to the chemical.

The GreenScreen List Translator is helpful in identifying chemicals that are on authoritative lists. It does not evaluate chemicals that may be of concern but are not on a list. These chemicals can be evaluated by doing a search of the toxicological literature for the health endpoints identified above. One approach is to conduct a full GreenScreen assessment on these chemicals. More information on the full GreenScreen method is available at <https://www.greenscreenchemicals.org/learn/full-greenscreenmethod>.

Question F5: Safer Alternatives (6 points)

This Question inquires about how your company encourages the use of safer alternatives to chemicals of concern.

F5.1 How does your company encourage the use of safer alternatives to chemicals of high concern in manufacturing operations? Our company (select one):

- Uses methods listed in Question F5.2 to encourage the use of safer alternatives to CoHCs. If you selected this option, proceed to Question F5.2.
- Does not use any of the methods listed in Question F5.2 to encourage the use of safer alternatives to CoHCs. If you selected this option, proceed to Question D1.

F5.2 Our company (select all that apply for Options "a-f" or only Option "g"):

- Has a definition and criteria for a "safer alternative" that is consistent with the CFP definition, and we include such criteria in our business processes.
- Communicates our criteria for safer alternatives to suppliers and asks suppliers to use our criteria when evaluating alternatives to CoHCs.
- Rewards suppliers that use safer alternatives.
- Has integrated criteria for safer alternatives into our manufacturing requirements (for example, through our design and safety processes).
- Has established a goal and is tracking progress to improve the profile of chemicals across our manufacturing operations, consistent with our company's criteria for a safer alternative.

- f. Publicly discloses our company's definition for a "safer alternative" and our approach to integrating it into our business practices.
- or
- g. Our manufacturing operations do not have CoHCs on the CFP CoHCs Reference List and we publicly disclose how we evaluate the chemical safety of our manufacturing operations using a hazard-based framework. Describe in documentation how your company ensures that the safest chemicals available are used.

How to earn points, examples, and supporting documentation requirements

The search for safer alternatives is an iterative process. It often requires using alternative assessment methods to compare chemical hazards, evaluate trade-offs, and determine whether a safer alternative is technically feasible and commercially available. The OECD's Substitution and Alternatives Survey Toolbox includes a filterable inventory of chemical hazard surveys, data sources, and service providers to help organizations identify tools most relevant to their substitution and alternatives assessment goals (<https://www.oecd.org/chemicalsafety/risk-management/substitution-of-hazardous-chemicals/>).

Safer alternatives to a hazardous chemical may include direct replacement with a less hazardous chemical. However, it is often difficult to identify a drop-in replacement. In addition, using alternatives structurally similar to the original chemical may result in a regrettable substitution, which is a chemical that proves to be equally or more harmful to human health or the environment.

It may be more effective to eliminate the need for the chemical through a production process redesign or material change.

Option F5.2a

CFP defines a safer alternative as a chemical, material, product, process, or technology that is less hazardous to humans and the environment than the existing approach. To define relative hazard, CFP uses the GreenScreen® for Safer Chemicals methodology. CFP's definition of a chemical of high concern aligns with the criteria for a GreenScreen Benchmark 1 chemical. Alternatives meeting the criteria for GreenScreen Benchmarks 2, 3, and 4 would be considered progressively less hazardous.

Supporting documentation: provide your company's definition of "safer alternative" and how it integrates criteria for safer alternatives into business processes. We encourage companies to define "safer alternatives" consistent with the CFP definition.

Option F5.2b

To encourage the use of safer alternatives, it is crucial that a company has defined this term and communicated its meaning and criteria to its suppliers.

Supporting documentation: provide narrative describing how your company communicates your criteria for safer alternatives to suppliers.

Option F5.2c

Including requirements for safer alternatives in contracts can motivate suppliers to seek out safer chemicals and materials. If these alternatives are not commercially available, these requirements can stimulate green chemistry research and development. Green chemistry is the design of chemical products and processes that reduce or eliminate the use and generation of hazardous substances. Green chemistry applies across the life cycle of a chemical product, including its design, manufacture, and use, and includes 12 fundamental principles (<https://www.acs.org/greenchemistry/principles/12-principles-of-green-chemistry.html>).

Supporting documentation: provide narrative describing how your company rewards suppliers that use safer alternatives.

Option F5.2d

Integrating criteria for safer alternatives into manufacturing requirements is a very effective and efficient point in which to reduce the use of hazardous chemicals. It is much harder to eliminate hazardous chemicals in existing processes.

Supporting documentation: provide narrative describing how your company integrates criteria for safer alternatives into manufacturing requirements.

Option F5.2e

Goal setting and tracking progress are helpful internal metrics to motivate the search for and use of safer alternatives.

Supporting documentation: provide your company's goal(s) for using inherently safer and less hazardous chemicals in manufacturing operations, and how it tracks progress to safer alternatives.

Option F5.2f

Public disclosure of your company's definition of safer alternatives and your approach to implementation indicates corporate leadership and commitment to transparency and safer solutions to hazardous chemicals.

Supporting documentation: provide public link to your company's definition of "safer alternative" and how it integrates criteria for safer alternatives into business processes. Note: if you also select "yes" for Question D2, this link will be included in your publicly available responses.

Option F5.2g

Supporting documentation: For responders whose manufacturing operations do not have CoHCs on the CFP CoHCs Reference List, provide public link to how your company evaluates chemical safety using a hazard-based approach and describe how your company ensures that the safest chemicals are used in manufacturing operations.

Disclosure & Verification Pillar (22 points)

The Public Disclosure and Verification (D) Pillar measures whether a company publicly releases information on the chemicals in its manufacturing operations, whether it discloses its answers to the Survey questions and score, and whether its answers have been independently verified by a third party. The four Disclosure & Verification questions and maximum points for each question are:

- Question D1: Chemical Ingredients = 8 points
- Question D2: CFP Responses = 5 points
- Question D3: CFP Score = 5 points
- Question D4: Verification = 4 points

See below for details on each question, including response options, how to earn points, examples, and documentation requirements.

Question D1: Disclosure of Chemical Ingredients (8 points)

Increasingly, stakeholders want to know the chemical ingredients in manufacturing operations. Question D1 inquires about public disclosure of process chemicals used in your manufacturing operations.

D1.1 What information does your company publicly disclose about the process chemicals used in manufacturing operations? (select one)?

- a. We publicly disclose information about process chemicals used in our manufacturing operations beyond legal requirements. If you selected this option, proceed to Question D1.2.
- b. We do not publicly disclose information about process chemicals used in our manufacturing operations beyond legal requirements. If you selected this option, proceed to Question D2.

D1.2 Our company publicly discloses the following information about process chemicals used in our manufacturing operations (select one option):

- a. Publicly discloses process chemicals used in manufacturing operations that reflects the strictest regulation in all of the countries or markets in which the company has manufacturing operations.
- b. Meets D1.2a and publicly discloses process chemicals used in manufacturing operations that reflects the strictest regulations globally for similar manufacturing processes.
- c. Meets D1.2b and publicly discloses process chemicals used in manufacturing operations that are on the CFP CoHCs Reference List or the CFP Solar CoHCs Reference List.

Supporting documentation requirements

Provide information on what is publicly disclosed, how this disclosure goes beyond regulatory requirements, and provide relevant links. If you also select "yes" for Question D2, these links will be included in your public responses.

Question D2: Disclosure of CFP Responses (5 points)

Question D2 promotes greater transparency of where responders are on the journey to reduce their chemical footprint and use inherently safer alternatives. Investors and customers are increasingly demanding greater transparency on all aspects of sustainability work, including safer chemicals.

D2 Does your company agree to publicly disclose its responses to the CFP Solar Survey on the CFP website?

Select "a" or "b", then proceed to Question D3.

- a. Yes
- b. No

Explanation

If you select "yes," your multiple-choice response options and any web links in response to Questions M1, I2, F1, F5, and D1 will be available on the CFP website (see <https://www.chemicalfootprint.org/results/companies>).

Question D3: Disclosure of CFP Score (5 points)

Question D3, similar to Question D2, promotes greater transparency of where responders are on the journey to reduce their chemical footprint and use inherently safer alternatives.

D3 Does your company agree to publicly disclose its score on the CFP website?

Select "a" or "b", then proceed to Question D4.

- a. Yes
- b. No

Explanation

If you select "yes," your score will be posted on the CFP website (see <https://www.chemicalfootprint.org/results/companies>).

Question D4: Verification of CFP Responses (4 points)

D4.1 Have any of your company's responses to the Questions in the Survey been verified by an independent third party?

- a. Yes, proceed to Question D4.2.
- b. No, you are finished with the Survey.

D4.2 Our company's response options have been verified by an independent third party for (select one):

- a. One of our response options.
- b. Two to four of our response options.
- c. At least eight of our response options.
- d. At least twelve of our response options.
- e. All response options except D2, D3, and D4.

How to earn points and supporting documentation requirements

CFP performs quality assurance and quality control reviews of responses based on information provided by companies as well as publicly available information. An additional level of verification of answers to the CFP Solar Survey is provided by a third party reviewing the answers.

To earn points for D4, you must attach an assurance statement from an independent third party verifying the authenticity of each response option for which you claim the credit. The verification must clearly relate to each response option in the CFP Solar Survey. For a list of approved CFP Verifiers see <https://www.chemicalfootprint.org/assess/cfp-verifier-program>. Other organizations will be considered for verifying answers on a case-by-case basis. Contact moreinfo@cleanproduction.org for more information.

CFP will not disclose the documentation or the verification results without permission from responders. Choose one response option, D4.2a – e.

Supporting documentation: provide document with third party verification statement.



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