State of Oregon
DEQ Department of Environmental Quality

Life Cycle Evaluations for Top 25 Large Producers

Report Submission Guidance

Updated Jan. 15, 2026 with additional content on determining the top 1% of SKUs and to add Appendix 2 (list of hazardous substances)

The Plastic Pollution and Recycling Modernization Act established requirements for the top 25 largest producers in the state to fulfill an obligation to evaluate and disclose environmental impacts of 1% of their covered products on a biennial basis. These requirements can be found in ORS 459A.944(2) shown below.

ORS 459A.944 Life cycle evaluation; rules. *The Environmental Quality Commission shall establish by rule standards for the evaluation and disclosure of the environmental impacts of covered products through the life cycle of the products. Rules adopted under this section must:*

(1) Establish procedures and requirements to be used by producers when evaluating the life cycle impacts of covered products to obtain an incentive under ORS 459A.884 or when required to do so under subsection (2) of this section.

(2) Require large producers to:

(a) Once every two years, perform an evaluation of the life cycle impacts of at least one percent of covered products that the large producer sells or distributes in or into this state;

(b) Provide the results of the evaluation to the Department of Environmental Quality; and

(c) Make the evaluation available on the website of the producer responsibility organization of which the large producer is a member. [2021 c.681 §33]

This guidance document provides details to assist large producers with the process to evaluate and disclose Life Cycle Evaluations of their covered product packaging.

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Background

Mandatory LCA evaluations and disclosures for top 25 producers

Life cycle evaluations conducted by producers of packaging, printing and writing paper, and food serviceware in accordance with the rules at OAR 340-090-0900 – OAR 340-090-0940 will be used by the top 25 largest producers in the state to fulfill an obligation to evaluate and disclose impacts of 1% of their products to the department on a biennial basis. The evaluations must also be made publicly available on the website of the Producer Responsibility Organization of which the producer is a member.

This guidance document lays out the process by which producers are to fulfill this obligation.

Note: In addition to the mandatory reporting of life cycle evaluations from large producers, the focus of this document, life cycle evaluations can also be used by all producers to pursue ecomodulation fee discounts from their PRO. PROs in Oregon are required, pursuant to OAR 340-090-0910(3), to make fee discounts available to producers that voluntarily evaluate and disclose the impacts of their products. For information on how Oregon's only currently-approved PRO is implementing these bonuses, refer to Circular Action Alliance's program plan, posted to DEQ's main Recycling Modernization Act web page, and to Circular Action Alliance's Oregon guidance page.

Summary of large producers required to perform life cycle evaluations and disclosures

Based on interim market share data for the year 2024 (i.e., weight of covered products supplied in or into Oregon by each producer in aggregate across material categories) reported by Circular Action Alliance to the department pursuant to OAR 340-090-0700(3) on August 1, 2025, DEQ has issued the following preliminary* list of large producers in alphabetical order:

1. Albertsons Companies, Inc.
2. Amazon.com Services, LLC
3. Berry Global, Inc.
4. Conagra Brands, Inc.
5. Conopco Inc.
6. Constellation Brands,
7. Costco Wholesale Corporation
8. E&J Gallo Winery
9. General Mills, Inc.
10. McDonald's USA, LLC
11. NESTLÉ USA, INC.
12. North Pacific Paper Company LLC
13. Pactiv Evergreen, Inc.
14. PepsiCo, Inc.

15. Staples, Inc.
16. Sysco Corporation
17. Target Corporation
18. The Campbell's Company
19. The Coca-Cola Company
20. The Procter & Gamble Company
21. Trader Joe's Company
22. US Foods, Inc.
23. Walmart Inc.
24. WestRock Company
25. WinCo Foods, LLC

*The list will be finalized on or before March 31, 2026, and is subject to change resulting from PRO validation of producer reporting and producers submitting corrections to their supply reporting to CAA. Disclosures from producers that appear on both the preliminary and final lists are due to the department on Dec. 31, 2026. Disclosures from any producers who did not appear on the preliminary list but are subsequently added to the final list are due six months later, on June 30, 2027.

Mandatory reporting guidance for top 25 producers

Large producer obligation and timing

Every two years starting in December 2026, the Top 25 Large Producers (identified in the summer preceding the reporting year and finalized in March of the reporting year) are required to conduct and disclose life cycle evaluations for the top 1% of their covered product SKUs by Dec. 31 of the reporting year.

For example, the initial list of the Top 25 Large Producers was published on Aug. 1, 2025, and life cycle evaluation and disclosure reporting by these obligated large producers is due by Dec. 31, 2026.

Because the preliminary list of the Top 25 Large Producers is not finalized until March of the reporting year, as producers submit revised/updated/corrected data and their PRO validates this information, any producers that were not on the preliminary list but are on the final list are granted an additional 6 months to fulfill their reporting and disclosure requirements. So, for example, if a producer not on the initial list (published on Aug. 1, 2025) is added to the final list (to be published on March 31, 2026), their reporting deadline is extended an additional 6 months, from Dec. 31, 2026 to June 30, 2027.

Two years later, the next reporting cycle will commence with the updated Top 25 list of large producers published in Summer 2027 and reporting due by Dec. 31, 2028.

Covered material eligibility

In Oregon, CAA developed and DEQ approved in the program plan a product specification list of **60 material categories for 2025-2026 producer fees**, grouped by eight material classes. This list, shown below, includes both USCL and PRO accepted materials, as well as non-accepted materials.

As part of an LCA project report covering a SKU or batch of SKUs, the producer must **identify the material(s) and their quantities in lbs.** which are associated with the covered packaging used for the product SKU(s) in the report.

Oregon covered material categories

Printing and writing paper

Reporting Category – Revised	Accepted: USCL or LG Depot	Accepted: PRO RAL
Newspapers	Y	N
Newsprint (inserts and circulars)	Y	N
Magazines, Catalogs and Directories	Y	N
Paper for General Use	Y	N
Other Printed Materials	Y	N

Glass and ceramics

Reporting Category – Revised	Accepted: USCL or LG Depot	Accepted: PRO RAL
Glass Bottles and Jars & Other Containers	N	Y
Ceramic - All Forms	N	N

Metal

Reporting Category – Revised	Accepted: USCL or LG Depot	Accepted: PRO RAL
Aluminum Containers	Y	N
Aluminum Foil and Molded Containers	N	Y
Aluminum Aerosol Containers	N	Y
Aluminum - Other Forms	N	N
Steel Containers	Y	N
Steel Aerosol Containers	N	Y
Steel - Other Forms	N	N
Metal - Small Format	Y	Y
Pressurized cylinders	N	Y

Paper/fiber

Reporting Category – Revised	Accepted: USCL or LG Depot	Accepted: PRO RAL
Aseptic and Gable-top Cartons	Y	N
Kraft Paper	Y	N
Corrugated Cardboard	Y	N
Corrugated Cardboard (Tertiary/transport) non-consumer	Y	N
Paperboard	Y	N
Polycoated Paperboard	N	N
Other Paper Laminates	N	N
Other Paper Packaging	Y	N
Paper - Small Format	Y	N

Plastic – rigid

Reporting Category – Revised	Accepted: USCL or LG Depot	Accepted: PRO RAL
PET (#1) - Bottles, Jugs, and Jars (Clear/Natural)	Y	N
PET (#1) - Bottles, Jugs, and Jars (Pigmented/Color)	N	N
PET (#1) – Tubs	Y	N
PET (#1) - Thermoformed Containers, Cups, Plates, Trays	N	N
PET (#1) – Lids	N	N
PET (#1) - Other Rigid Items	N	N
HDPE (#2) - Bottles, Jugs and Jars (Clear/Natural)	Y	N
HDPE (#2) - Bottles, Jugs and Jars (Pigmented/Color)	Y	N
HDPE (#2) - Pails & Buckets	Y	Y
HDPE (#2) - Tubs, Nursery (plant) pots & trays	Y	N
HDPE (#2) - Package Handles, Lids	N	Y
HDPE (#2) - Other Rigid Items	N	N
PVC (#3) - Rigid Items	N	N
LDPE (#4) - Bottles, Jugs and Jars	N	N
LDPE (#4) – Lids	N	Y
LDPE (#4) - Other Rigid Items	N	N
PP (#5) - Bottles, Jugs and Jars	Y	N
PP (#5) - Tubs, Pails and Buckets, Nursery (plant) pots & trays	Y	Y
PP (#5) – Lids	N	Y
PP (#5) - Other Rigid Containers, Cups, Plates, Trays (non-nursery (plant))	N	N
PP (#5) - Other Rigid Items	N	N
PS (#6) Expanded/Foamed Hinged Containers, Plates, Cups, Tubs, Trays, and Other Foamed Containers	N	N

Reporting Category – Revised	Accepted: USCL or LG Depot	Accepted: PRO RAL
PS (#6) White Expanded/Foamed Cushioning	N	Y
PS (#6) Colored Expanded/Foamed Cushioning	N	N
PS (#6) Rigid Non-Expanded	N	N
PLA, PHA, PHB - Rigid Items	N	N
Other/Mixed Rigid Plastic	N	N

Plastic – flexible

Reporting Category – Revised	Accepted: USCL or LG Depot	Accepted: PRO RAL
HDPE (#2)/LDPE (#4) Flexible and Film Items	N	Y
HDPE (#2)/LDPE (#4) (Pallet Wrap) non-consumer	N	Y
PP (#5) Flexible and Film Items	N	N
PLA, PHA, PHB - Flexible and Film Items	N	N
Plastic Laminates and Other Flexible Plastic Packaging	N	N

Plastic – other

Reporting Category – Revised	Accepted: USCL or LG Depot	Accepted: PRO RAL
Plastic - Small Format	N	Y
Plastic containers for motor oil, antifreeze, or other automotive fluids, pesticides or herbicides, or other hazardous materials (flammable, corrosive, reactive, toxic)	N	N

Wood and other organic materials

Reporting Category – Revised	Accepted: USCL or LG Depot	Accepted: PRO RAL
Wood and Other Organic Materials	N	N

SKU eligibility

LCA reports should be completed on a SKU or batch of SKUs. Covered products under evaluation must be supplied in Oregon and must have been on the market for at least one year prior to report submission.

In rule, "SKU" and "SKU Batching" are defined as:

Rule definition – SKU

OAR 340-090-0900 (45) Stock keeping unit (SKU) means a unique identifier, typically an eight-digit code or a scannable bar code, that is assigned by a producer to each product in the producer's inventory.

Rule definition – SKU batching

Phase 2 rules allow a Large Producer to group like SKUs, for the purpose of mandatory LCA evaluations and disclosures. Additionally, the batching of SKUs is allowed for LCA bonus reports.

Here is the exact rule language:

From OAR 340-090-0910 (2)(b)(D) - *"Batch evaluations may be performed covering multiple Stock Keeping Units if the Stock Keeping Units are part of the same product line or family, such as paperboard cereal boxes of different sizes."*

And further from OAR 340-090-0910 (2)(b)(D) – *"If multiple Stock Keeping Units are included in a single batch evaluation, all Stock Keeping Units in the batch evaluation are counted toward fulfillment of the requirement for evaluation of one percent of covered products and can be submitted in a single project report."*

The number of SKUs allowed in a batch is not capped, however the SKUs in the batch must conform to the primary requirements in rule that they are "part of the same product line or family." In practice, "part of the same product line or family" means that the different SKUs must be comprised of the same primary material, are of the same form factor (e.g. boxes or pouches or tubs), and fulfill the same function.

Determining Top 1% of SKUs for mandatory disclosure

Large producers shall evaluate and disclose LCA results for the top 1% (at a minimum) of SKUs supplied into the State of Oregon.

To determine the top 1% of SKUs supplied into the state a large producer should assemble Oregon-specific sales data using particularly data from the supply reporting year that has qualified the producer as a large producer in the reporting cycle in question (e.g. 2024 sales data should be used for reports due on Dec. 31, 2026). The producer must then order, by Oregon sales volumes (i.e. ,the number of sold units), all individual Stock Keeping Units that the producer sold in or distributed into the state that year that are covered products or that have associated packaging which is a covered product, (e.g. not eligible for exemption under ORS 459A.863(6)(b)(A)-(Q), ORS 459A.869(13), or OAR 340-090-0840(2). The top 1% of SKUs is identified as follows:

$$1\% = \frac{x}{total\ number\ of\ SKUs\ sold\ in\ Oregon}$$

For example, if a producer sold 1,000 SKUs into Oregon in 2024, x=10, and therefore the producer should evaluate and disclose impacts for SKUs 1-10 for the Dec 31, 2026, deadline.

As mentioned above, producers may use SKU batching to reduce the number of project reports required to fulfill the 1% requirement. For example, if we take the producer with 1,000 SKUs and SKU #9 can be batched with SKU #200 into a single assessment, then the producer may fulfill

their reporting obligation with nine project reports instead of ten (reports for SKUs 1-8 and then a batched report for SKUs #9 and #200).

See the next section of this document, "SKU Definitions" for information on what products may be batched together.

Producers may use national data pro-rated to Oregon's population or other approximations for the purpose of identifying the one percent of Stock Keeping Units for evaluation, if they conform with best available estimation methods.

If a covered product is not associated with a Stock Keeping Unit, the producer shall instead represent the product using an alternative code that is associated with data on the amount of covered product sold or distributed in or into Oregon.

If a producer is a large producer in multiple biennia (2-year periods) the producer must re-order its Stock Keeping Units, in the subsequent periods and assess the impacts of covered products for the next, not previously assessed 1% of Stock Keeping Units. Stock Keeping Units that have already been assessed may be repeated after five biennia (e.g. 10 years), or earlier if all Stock Keeping Units have been assessed.

Note: Stock Keeping Units produced by multiple associated producers as defined in OAR 340-090-0860(5) must be grouped together for the purpose of ordering the Stock Keeping Units by sales volumes.

Note: Pursuant to OAR 340-090-0910(3)(a) and (b), large producers may apply for ecomodulated fee discounts from the PRO for life cycle evaluation and disclosure, but there are some restrictions on the use of mandated evaluations for bonus purposes. Large producers may not apply for bonuses for simple evaluation and disclosure (e.g. Bonus A in Circular Action Alliance's program plan) using SKUs that are evaluated as part of their top 1% mandatory disclosures, since life cycle evaluations are required to be conducted on these SKUs. However, SKUs evaluated by large producers as part of their mandatory top 1% disclosures can be evaluated for bonuses for substantial impact reduction demonstrated through life cycle evaluation (e.g. Bonuses B and C in Circular Action Alliance's program plan).

SKU definitions

For additional clarity, the following definitions elaborate on eligibility of SKU and SKU batches for large producer submissions. This includes:

- A SKU (Stock Keeping Unit) or UPC (Universal Product Code)[1] or other product and packaging unique identifier is needed for the LCA report to allow for tracking of product details and LCAs.

[1] SKU and UPC are used as synonyms due to their similar use for product identification; both qualify as unique identifiers for the purposes of reporting.

- **SKU batches**[2] are multiple SKUs that are the same product or product category with the same material composition and come from a similar or the same supply chain. All packaging with payable base fees and that are associated with the SKUs are included.
- For SKUs within the same SKU batch, it can be reasonably assumed LCAs would be identical or proportionate to the sizes of the packaging format.
- SKU batches should utilize appropriate averaging during LCA calculations.[3], [4]

Note: If any SKU would reasonably be thought to have a different LCA to other SKUs within a SKU batch, it should be removed and a unique LCA be completed for that SKU (e.g., different material used, different location of suppliers or customers, different properties that render its end-of-life processing to be different, etc.)

Examples of SKU batching include:

Acceptable SKU Batching: Three Liquid Bottles[5] of Same Material Composition

Not Acceptable SKU Batching: Detergent Pods[6] vs Liquid Detergent[7]

Report submission timelines and process

[2] Guidance on how SKU Batch averaging should be handled is forthcoming from DEQ

[3] UNEP, 2011. GLOBAL GUIDANCE PRINCIPLES FOR LIFE CYCLE ASSESSMENT DATABASES.

[4] Kuszenski, 2017. Privacy-preserving aggregation in life cycle assessment

[5] Specialty PET Bottle Example

[6] Detergent Pods Example

[7] Liquid Detergent Bottle Example

Starting with the 2026 program year, DEQ will require large producer LCA project reports to be submitted by December 31, 2026. Large producer submissions for subsequent biennia will likely follow this same timeline, with large producer determinations published in the summer preceding the program year where reporting must occur, as follows:

- 2026 Program Year
  - Summer 2025 - Large Producer determinations preliminarily published
  - March 31, 2026 – Large Producer determinations finalized
  - Dec. 31, 2026 - LCA project reports submitted (with six-month extension for producers listed on final but not preliminary list)

- 2028 Program Year
  - Summer 2027 - Large Producer determinations published
  - March 31, 2028 – Large Producer determinations finalized
  - Dec. 31, 2028 - LCA project reports submitted (with six-month extension for producers listed on final but not preliminary list)

- 2030 Program Year
  - Summer 2029 - Large Producer determinations published
  - March 31, 2030 – Large Producer determinations finalized
  - Dec. 31, 2030 - LCA project reports submitted (with six-month extension for producers listed on final but not preliminary list)

- And so on for future biennia

Details of the **submission and reporting requirements** can be found in the reporting section(s) below.

Large producer mandatory reporting and review process

The following steps outline in more detail the report submission and review process and timelines for large producers.

Step	Action	Timing
Step 1	Producer reports and submits 2024 supply data into CAA portal. Reported data must be complete and accurate.	Due March 31, 2025
Step 2	DEQ publishes announces preliminary large producer top 25 List	Aug. 1, 2025
Step 3	DEQ publishes final Large Producer top 25 List	By March 31, 2026
Step 4	Obligated Large Producer completes LCA evaluation and obtains independent verification and certification of the LCA results.	By Dec. 31, 2026

Step	Action	Timing
Step 5	Producer submits to the department and to the PRO two versions of the **LCA project report** and the computer-readable Excel summary that, cumulatively, meet LCE rules requirements, along with a **critical review report certified by the verifier (four documents total)**. Producer shall identify any information it believes is exempt from disclosure pursuant to ORS 192.311 to 192.478 or otherwise confidential under applicable law.	Extended deadline of Jun 30, 2027, for producers that appeared only on the final but not the preliminary list
Step 6	DEQ audits project reports for completeness and conformance to third party verification and DEQ LCE requirements.	By March 1, 2027
Step 7	Public versions of eligible LCA project reports will be posted on the CAA website.	By March 31, 2027

Note: If a producer subsequently requests changes to their supply reports in a given year, it may affect their obligation and/or designation as a large producer.

In future years, the large producer mandatory reporting and review process and timelines may be updated.

Please note that this timeline is for Mandatory Large Producer eligible reports.

Large producer report requirements

Requirements checklist

- An LCA project report submitted to DEQ and to the PRO must include a detailed identification of the SKUs or batch of SKUs covered by the report, such as SKU alphanumeric designation, Universal Product Code associated with the SKU, word description of the SKU, and an image of product and/or product label.
- Weight for each material category that is represented by the SKU(s) in the report; the weight reported in each report must also be included in each producer's annual supply reporting to the PRO.
- Completed and verified LCA project reports in accordance with the standards and methods in the LCE rules (see "LCA Reporting Requirements" section).
- Completed and signed critical review report as part of the LCA Report.
- Excel file for "Mandatory Impact Assessment," for impact assessments.

Other specifications regarding Large Producer reports include:

- The "public" version of the report must be available on the PRO's website.
- LCAs need to be completed and submitted to the Oregon Department of Environmental Quality and to the PRO for posting on its website.
- Producers will be required to submit LCA project reports in PDF (public and confidential reports, critical review) and Excel (summary template) formats by December 31, 2026.

Submission

Once the life cycle evaluation is complete and verified, the project report(s), supplemental Excel files, and critical reviews will be submitted as upload files through Your DEQ Online platform. Details on the submission process will be communicated to producers and updated in this guidance upon completion (by Spring 2026, for this initial round of submissions). In the meantime, Producers can register and familiarize themselves with the YDO platform through the link below.

LCA reporting requirements

Project report

Large Producers need to prepare their LCA evaluations under the LCE rules and disclose the analysis and results in a project report in accordance with OAR 340-090-0920 Project Report (See Appendix 1). This report must conform to the general requirements in ISO 14044:2006 § 5.1 and 14044:2006 § 5.2.

A summary file in Excel containing specific information from the project report will also be requested at the time of report uploading. The required information and format will be based on a template provided by DEQ.

Confidentiality of data within LCA reports

Two versions of the LCA report must be created. The first version should be clearly marked "Exempt from Disclosure; Confidential" and contain all the contents described in this rule, including confidential data as described in section (2) of OAR 340-090-0920. The second version should be clearly marked "Public Report" as a public version with confidential data removed.

Both versions of the project reports will be submitted to both DEQ and the PRO; the public version of the project report will be posted on CAA' s website. DEQ will make no determination of whether a "Public Report" contains confidential information, and it is solely the responsibility of producers to ensure all confidential information is removed.

CAA will simply receive and post the Public Reports on its website.

If a producer believes that any information within the LCA is a trade secret and should be exempt from disclosure pursuant to ORS 192.311 to 192.478 or otherwise confidential under applicable law, such information should be identified and only included in the "Exempt from Disclosure; Confidential" project report.

Should producers consider information to be a trade secret, exempt from disclosure or otherwise confidential under applicable law, and thus wish for it to be redacted, producers must specify which information they believe is exempt from disclosure when submitting through the producer portal. It is the producer's responsibility to ensure that any information a producer believes is exempt from disclosure is not included in the "Public Report" version submitted. DEQ may request substantiation as to why information in the confidential report is claimed confidential.

Methodology framework for life cycle assessments

Functional unit

DEQ's rules define the **functional unit to be amount of covered product used to contain one cubic meter of product**. For covered products that cover or wrap, the **functional unit shall be set as 1 square meter of coverage**. Thus, per DEQ rules for covered product packaging that contains or holds product the functional unit shall be defined as 1 cubic meter of product capacity. For covered product packaging that covers or wraps product, the functional unit shall be set as 1 square meter of product coverage.

Should producers find that one of these proposed functional units not be suitable for their SKU/SKU batch, they may propose an alternative functional unit to DEQ via email to RethinkRecycling@deq.oregon.gov.

This functional unit creates a clearly defined and measurable reference unit for life cycle assessment that correlates with a fixed amount of material used to fulfill a particular function for a particular quantity, quality, and duration. All input and output data of the life cycle assessment, generated pursuant to OAR 340-090-0930 and 0940 must be expressed in terms of the functional unit.

LCA practitioner

The LCA report may be completed by what DEQ rules state as the "Commissioner of the life cycle evaluation," which may be an internal or external practitioner of the LCA. The third-party verification of the LCA must be completed by a qualified, independent reviewer.

This individual shall prove their qualifications as in having knowledge of and proficiency in LCA methodology, practice, and standards (ISO 14040:2006 and ISO 14044:2006), as well as the appropriate scientific and technical proficiencies relevant to covered products evaluated.

LCA boundaries

The LCA is inclusive of covered product packaging across primary, secondary and tertiary forms. The LCA does not include the product within the packaging, unless the product itself is a covered material.

The system boundary for LCA of covered products shall be based on a **cradle-to-grave system boundary**. This generally includes the life cycle stages of (1) Raw material extraction, processing, and production, (2) Transportation and fuel usage to obtain raw materials at the factory, (3) Finished manufacturing of covered products, (4) Transportation and fuel usage to distribute covered products, including customer transport to place of purchase; (5) Local route transport and distribution for collection materials at end of life; and (6) Waste recovery and processing (at production and end of life) including disposal, incineration, or recycling.

Life cycle evaluations shall be divided into **information modules A, B, C and D**, based on the modularity principle introduced in ISO14025:2006 § 5.4 and consistent with the structure described in ISO21930:2017 § 7.1.7. Information modules pertain to the materials, parts and processes associated with the life cycle of a covered product and represent, individually or when combined, the whole life cycle of a covered product.

Modules of the life cycle assessment

Module A

A1	Raw material extraction and processing, secondary material inputs, energy generation (electricity or thermal), and any waste management for any production scrap or materials
A2	Transport of raw materials to the production facility along with any internal transport at the production facility itself
A3	Manufacturing, including the production of ancillaries and co-products; energy generation (electricity or thermal) needed for manufacturing, combustion emissions associated with fuels used in the manufacturing process, manufacturing of any packaging (additional to the covered products themselves) associated with secondary or tertiary packaging needs, transport associated with ancillaries, transport associated with secondary or tertiary packaging, and any waste management for any production scrap or materials.
A4	Customer transport to place of purchase

Module B

Only required for reusable covered products

B1	Transportation for return, including mode of transportation and distance transported
B2	Washing and sterilization process including any energy, water, or ancillary inputs
B3	Transportation for redistribution, including mode of transportation and distance transported

Module C

C2	Transport of waste to end of life processing (recovery, recycling, or disposal)
C3	Waste processing of covered products in preparation for recycling or recovery, including, sortation, beneficiation, or other processing performed at a MRF or transfer station
C4	Disposal or recovery activities

Module D

Note: not a lifecycle stage

D	Any impacts (either benefits or loads) that occur outside of the system boundary for the covered product. Any benefits specifically associated with reuse, recycling, or energy recovery are quantified and reported in Module D, as described in ISO21930:2017 § 7.1.7.6.
D	Incineration. If materials are incinerated with associated energy recovery, the unit processes and activities for incineration must account for waste composition and heating value, as well as for regional efficiencies and heat-to-power output ratios. Any credits (e.g., environmental benefits), in the form of energy generation from incineration processes, should substitute for an appropriate regional electricity grid mix and thermal energy inventory. These credits should be reported in Module D, as described in OAR 340-090-0930(1)(c)(D).
D	Landfilling. If materials are sent to landfills, specific unit processes and activities shall be used that account for waste composition, regional leakage rates (due to technology and climate zone), landfill gas capture and utilization. Any recovery of landfill gas output that substitutes for primary production of natural gas shall be granted as a credit. These credits should be reported in Module D, as described in OAR 340-090-0930(1)(c)(D).
D	Composting. If materials are sent to composting facilities, the unit processes and activities for composting must account for waste composition, composting methodology and crediting (via substitution) for the outputs (e.g., finished compost) of the composting process that substitute for primary production of other materials (e.g., synthetic fertilizers). These credits should be reported in Module D, as described in OAR 340-090-0930(1)(c)(D).
D	Material Substitution Credits. A credit described in this subsection is granted to the system for the outputs of end-of-life treatments when the material is recycled. The outputs from recycling (e.g., recycled materials) that substitute for primary production of like materials shall be granted as a credit. These credits should be reported in Module D, as described in OAR 340-090-0930(1)(c)(D).

End-of-life processing and contributions outside of the system boundary (Module D)

Since covered products reaching the end-of-life stage can be managed in different ways, a representative average scenario, based on a regional or national mix of recovery and disposal for typical end-of-life shall be calculated within LCAs. If an end-of-life process results in secondary

materials through recycling, energy recovery or other methods, any benefits associated with the secondary materials shall be reported in information module D.

Cut-off criteria

All material flows relevant to the covered product(s) should be included in each LCA, inclusive of separable, non-separable and relevant secondary and tertiary covered products. Components and/or material flows that contribute less than 1% by weight can be excluded, with the exception of flows that meet the mass cut-off criteria, but which contribute more than 1% of the total environmental impact of an impact category (these flows cannot be excluded). The sum of excluded material flows CANNOT exceed 5% of mass, energy or environmental relevance.

Cut-off criteria for evaluation of covered products shall follow the guidelines of ISO 21930:2017 § 7.1.8 and ISO14044:2006 § 4.2.3.3.3. Any specific criteria used for the inclusion or exclusion of inputs and outputs must be justified and documented with the project report. All available energy and material flows associated with the covered product in the underlying life cycle inventory must be included. In cases where no matching life cycle inventories are available to represent a flow, proxy data may be applied using conservative assumptions regarding environmental impacts. All other specifics around mass and energy cut-off criteria are available OAR 340-090-0930.

Life cycle inventory analysis

Life cycle inventory analysis will need to be shown for the covered products within the LCA report. This analysis must account for all relevant inputs and outputs (material, energy, and emissions) for a covered product throughout its life cycle, including (but not limited to) the following specific flows:

- Biogenic carbon flows (inputs and outputs) of covered products across required information modules consistent with ISO21930:2017 §7.2.7
- Hazardous waste, as defined in ORS 466.005(7) that is disposed of within any life cycle stage of the covered product
- Non-hazardous waste that is disposed of in the covered product life cycle
- Plastic leakage inventory (based on the methodologies of the Plastic Footprint Network (PFN) V1 Nov. 2023[8]) – **inclusive of modules for (1) Macroplastics from plastic packaging, and (2) Microplastics from tires; optionally producers may include any additional modules relevant to the SKU or SKUs in study.**
- Methane leakage (including methane leakage that happens at wellhead, pipeline, transport, refinery, and production facilities) – **available via multiple databases[9] such as Sphera and Ecoinvent databases.**

[8] US national average data is permissible. DEQ to provide further guidance documentation on calculations.

[9] Renewable Carbon News

Life cycle impact assessment results

Impact category means a class of environmental issues of concern, such as climate change or particulate matter, to which life cycle inventory analysis results may be assigned. Life cycle impact assessments shall, unless otherwise provided in this rule, follow the guidelines for classification and characterization of emissions described in ISO 14044:2006 § 4.4 and follow the specific methods of the **Product Environmental Footprint method,** as described in Section 5 of Annex I of EU 2021/2279, European Commission Recommendation of 15 Dec. 2021 on the use of Environmental Footprint methods to measure and communicate the life cycle environmental performance of products and organizations.

Large producers must calculate and disclose **life cycle impact assessment indicators** provided below (A-P) to comply with ORS 459A.944(2) for disclosure.

Note: This the same set of indicators required for Bonus A disclosure.

Life cycle impact indicators within the LCE rules are defined as:

A. Climate Change (PEFCR EF 3.1, kg CO2 eq.)
B. Ozone depletion (PEFCR EF 3.1, kg CFC-11 eq.)
C. Human toxicity, cancer (PEFCR EF 3.1, CTUh)
D. Human toxicity, non-cancer (PEFCR EF 3.1, CTUh)
E. Particulate matter (PEFCR EF 3.1, disease incidences)
F. Ionizing radiation, human health (PEFCR EF 3.1, kBq U-235 eq.)
G. Photochemical ozone formation, human health (PEFCR EF 3.1, kg NMVOC eq.)
H. Acidification (PEFCR EF 3.1, mol H+ eq.)
I. Eutrophication, terrestrial (PEFCR EF 3.1, mol N eq.)
J. Eutrophication, freshwater (PEFCR EF 3.1, kg P eq.)
K. Eutrophication, marine (PEFCR EF 3.1, kg N eq.)
L. Ecotoxicity, freshwater (PEFCR EF 3.1, CTUe)
M. Land use (PEFCR EF 3.1, pt)
N. Water use (PEFCR EF 3.1, m3 water eq)
O. Resource use, minerals and metals (PEFCR EF 3.1, kg Sb eq)
P. Resource use, fossils (PEFCR EF 3.1, MJ)

Additional reporting requirements

In addition to the information required by the core product category rules under OAR 340-090-0930, a life cycle evaluation under the LCE rules must include the additional information on environmental and human health impacts of a covered product required by this rule.

Hazardous substance assessment

An evaluation of hazardous substances in evaluated covered product packaging SKUs **must be included** within the project report. This evaluation must include:

- A list of the material content of the covered product that, at a minimum, states any **intentionally-added hazardous substances** in the covered product that are at or above

practical quantification limits. See the list of "hazardous substances" to which this requirement is applicable in Appendix 2 of this document.

- Any **contaminant hazardous substances** in the covered product at concentrations above 100 parts per million. See the list of "hazardous substances" to which this requirement is applicable in Appendix 2 of this document.
    - If a practical quantification limit has not been designated for a hazardous substance that has been intentionally added to a covered product, its addition to the product must still be disclosed.
- A description of **any known releases of hazardous substances** from the covered product to a consumer or to the environment
    - If a producer has undertaken an exposure assessment, pursuant to OAR 333-016-3050 or other similar methodology of the covered product within the five years prior to the evaluation, and the exposure assessment indicated transferal of a substance to a consumer above the applicable practical quantification limit, the producer must provide the exposure assessment in its original format.

If a producer has a manufacturing control program in place proven effective at minimizing the concentration of a particular contaminant in the product below 100 parts per million, **the producer is exempt from the requirement to report on the contaminant's presence, as long as it provides a description of the program and details corroborating its effectiveness.** If a producer has replaced a hazardous substance with a substitute chemical within the five years prior to the evaluation and based the decision to do so on a hazard or alternatives assessment, **the producer must provide the hazard or alternatives assessment in its original format.**

Human health impact statement

The evaluation must include a **human health impact statement**, that includes the following:

- Disclosure of any non-compliance of the covered product with customer health and safety regulations or voluntary codes in any jurisdiction in the past five years
- If a producer is required to submit the evaluation pursuant to ORS 459A.944(2) and the producer is also subject to required sustainability reporting in the European Union under 2013/34/EU and 2023/2772/EU or similar requirements, the producer must disclose any material health impacts of the covered product on affected communities in accordance with the European Sustainability Reporting Standards 2023/2772/EU (ESRS) Disclosure Requirement (DR)-IRO 1.

If the producer considers health impacts of the covered product to be **non-material**, the producer must provide a written justification. If material health impacts have been identified, the producer must disclose the following additional information, in accordance with 2023/2772/EU ESRS DR S3-1 through S3-5:

- Policies adopted to manage material health impacts of the covered product on affected communities, as well as associated material risks and opportunities

- Processes for engaging with affected communities about actual and potential material health impacts of the covered product
- Processes to remediate negative material health impacts of the covered products and channels for affected communities to raise concerns
- Actions taken to address material health impacts of the covered product, and approaches to mitigating material risks and pursuing material opportunities related to affected communities, and the effectiveness of those actions and approaches
- Time-bound and outcome-oriented targets that have been set for reduction of negative impacts of the covered product on affected communities, advancing positive impacts on affected communities, or managing material risk and opportunities related to affected communities

LCA software and databases

Calculation procedures employed for the life cycle evaluation of a covered material shall follow the guidance in ISO 14044:2006 § 4.3.3. The calculation shall be applied consistently and documented in the final report, including disclosure of any assumptions. Producers can use in-house or consultant LCA experts to prepare their LCAs. DEQ is not prescriptive of the type of software utilized. Software tools utilized should comply with **ISO 14044** and **ISO 14040** standards for Life Cycle Assessment (LCA). These standards outline principles, framework, requirements, and guidelines for conducting LCA.

Some widely used LCA software compliant with these standards include:

- **SimaPro** – Developed by PRé Sustainability
- **LCA for Experts (formerly GaBi)** – Developed by Sphera
- **Open LCA** – An open-source LCA software
- **Umberto LCA+** – Used for material flow analysis and LCA
- **One Click LCA** – A tool mainly used in the construction sector for environmental impact assessment
- **Brightway** – A Python-based open-source LCA framework

Databases for emission and impact calculations

Emissions and other impact-related data that feed LCA software can vary dependent on values pulled from various databases. ISO 14044 and 14040 standards do not mandate the use of particular databases, but do underline the importance of high quality, reliable data to ensure LCA results are as credible and accurate as possible.

DEQ remains agnostic as to the database and software utilized within LCA reports. Different databases and software may be utilized, but must be disclosed within the LCA report, so that validation of reporting is possible. Given the particularly novel approaches requested (e.g., methane leakage), use of databases such as Ecoinvent and Sphera are recommended as options to meet requirements.

Reports should thus use the most up-to-date and highest quality data available, ideally from databases that are updated regularly (e.g., yearly). Data for emissions and other impact calculations extracted from databases or obtained by other means (e.g., via literature, etc.) must be cited and sourced within the project report and verified as appropriate during the independent verification process.

Third-party certification and verification

DEQ's rules require an independent review and verification of the LCA by a qualified verifier. A **critical review report** from the verifier of their findings must be submitted with the LCA project report. Producers should allow for additional budget and review time for these independent reviews to be completed and meet CAA's submission deadlines and DEQ's timeline requirements.

LCA independent verifier

The LCA independent verifier shall have knowledge of and proficiency in life cycle assessment methodology, practice, and standards (ISO 14040:2006 and ISO 14044:2006) as well as the appropriate scientific and technical proficiencies relevant to covered products evaluated. Qualifications for reviewers are described in OAR (340-090-0920(4)(a)-(b)).

As stipulated in OAR 340-090-0920(b), the review/verification shall conform to ISO/TS 14071:2014, itself a technical specification for ISO 14044:2006. Verifier independence shall be determined through a "self-declaration of reviewer independence and competencies," an example of which can be found in Annex B of ISO/TS 14071:2014. Independence means that the reviewer:

- Is not an employee of the commissioner or practitioner of the life cycle evaluation
- Has not been involved in any of the work to scope or conduct the life cycle evaluation
- Does not have any financial, political or other interests in the outcome of the evaluation

Qualifications shall be determined using the criteria and scoring system described in section *8.3.1 of Annex I of EU 2021/2279*. The assessment of the competencies of the verifier or verification team is based on a scoring system that considers:

- Verification and validation experience
- EF/LCA methodology and practice
- Knowledge of relevant technologies, processes or other activities included in the product(s)/organization(s) in scope of the study

The table below presents the scoring system for each relevant competence and experience topic. Unless otherwise specified, the **verifier's self-declaration** on the scoring system constitutes the minimum requirement.

Scoring system for competence and experience of LCA verifiers[10]

[10] Per the EU PEF Methodology cited in DEQ Rules

			Score (points)				
	Topic	**Criteria**	**0**	**1**	**2**	**3**	**4**
Mandatory criteria	Verification and validation practice	Years of experience (1)	<2	2 ≤ x < 4	4 ≤ x < 8	8≤ x < 14	≥14
		Number of verifications (2)	≤5	5 < x ≤ 10	11 ≤ x ≤ 20	21 ≤ x ≤ 30	>30
	LCA method-logy and practice	Years of experience (3)	<2	2 ≤ x < 4	4 ≤ x < 8	8≤ x < 14	≥14
		Number of LCA studies or reviews (4)	≤5	5 < x ≤ 10	11 ≤ x ≤ 20	21 ≤ x ≤ 30	>30
	Knowledge of the specific sector	Years of experience (5)	<1	1 ≤ x < 3	3 ≤ x < 6	6≤ x < 10	≥10
Additional criteria	Review, verification/ validation practice	Optional scores relating to verification/ validation	— 2 points: Accreditation as third party verifier for EMAS — 1 point: Accreditation as third party reviewer for at least one EPD scheme, EN ISO 14001:2015, or other EMS				

(1) Years of experience in the field of environmental verifications and/or review of LCA/OEF/EPD studies.

(2) Number of verifications for EMAS, EN ISO 14001:2015, international EPD scheme or other EMS.

(3) Years of experience in the field of LCA modelling. Work done during master and bachelor degrees shall be excluded. Work done during a relevant Ph.D./Doctorate course shall be accounted for. Experience in LCA modelling includes, among others:

- LCA modelling in commercial and non-commercial software
- Datasets and database development

(4) Studies compliant with one of the following standards/methods: EN ISO 14040:2006-44, EN ISO 14067:2018, ISO 14025:2010.

(5) Years of experience in a sector related to the studied product(s). The experience in the sector may be gained through LCA studies or through other types of activities. The LCA studies shall be done on behalf of and with access to primary data of the producing/operating industry. The qualification of knowledge about technologies or other activities is assigned according to the classification of NACE codes (*Regulation (EC) No 1893/2006 of the European Parliament and of the Council of 20 December 2006 establishing the statistical classification of economic activities - NACE Revision 2*). Equivalent classifications of other international organisations may also be used. Experience gained with technologies or processes in a whole sector are considered valid for any of its sub-sectors.

Verifier(s) shall provide a self-declaration of their qualifications (e.g., written statement of their university degree(s), working experience, certifications), stating how many points they achieved for each criterion and the total points achieved. This self-declaration shall form part of the critical review report. A verification of the LCA shall be conducted as per the requirements of the intended application. Unless otherwise specified, the minimum score necessary to qualify as a verifier or a verification team is six points, including at least one point for each of the three mandatory criteria (i.e., verification and validation practice, LCA methodology and practice, and knowledge of technologies or other activities relevant to the LCA study).

LCA third-party verification – "Critical Review Report"

The review and verification shall be conducted pursuant to and in accordance with the critical review process described in ISO/TS 14071:2014[11]. The critical review process shall ensure that[12]:

[11] ISO 14071:2024 - Environmental management — Life cycle assessment — Critical review processes and reviewer competencies

[12] Curran & Young, 2014. Critical Review: A summary of the current state-of-practice.

- The methods used to carry out the LCA are consistent with this international standards ISO 14040/14044[13]
- The methods used to carry out the LCA are scientifically and technically valid
- The data used are appropriate and reasonable in relation to the goal of the study
- The interpretations reflect the limitations identified and the goal of the study
- The study report is transparent and consistent.

Additionally, the third-party review and verification shall adhere to section 8.4.1 of Annex I of EU 2021/2279. A draft of CAA's guidance on the LCA report verification is included on page 14 of the sample template report. This guidance is undergoing review with DEQ and may be subject to updates.

After review and verification, a **critical review report** including a critical review statement shall be produced by the third-party and submitted along with the project report. Confidential information may be necessary for the third party during the verification process, but need not appear in the critical review report, as it will be made publicly available by the PRO along with the public version of the project report.

Key standards and reference methodologies

Within OAR 340-090-0900 – OAR 340-090-0940 rules, there are several standards and methodologies referenced for utilization during the LCA process. Those are included below for your reference during Mandatory Large Producer LCA preparations.

ISO Standards:

- ISO 14044:2006
- ISO 14040: 2006
- ISO 14025:2006
- ISO 21930:2017
- ISO 14071:2024

EU PEF Methodology:

- Office Journal of the European Union, Commission Recommendation EU 2021/2279

Plastic Leakage Methodology:

- Plastic Footprint Network Assessment Methodology (page 17 for Calculation Routes, using U.S. national average data is permissible)
- Macroplastic: Packaging Module & Spreadsheet
- Microplastic: Tires Module

Hazardous Substance and Human Health Impact Methodologies:

- Directive 2013/34/EU

[13] View an example checklist.

- Commission Regulation EU 2023/2772

OR-specific waste and material recovery statistics:

- OR Waste Characterization Study
- OR DEQ Material Recovery and Waste Generation Survey

Relevant rules adopted by the Environmental Quality Commission:

- DEQ 20-2024 - Plastic Pollution and Recycling Modernization Act (p. 51 – 69); See Appendix 1

Non-discrimination statement

DEQ does not discriminate on the basis of race, color, national origin, disability, age, sex, religion, sexual orientation, gender identity, or marital status in the administration of its programs and activities. Visit DEQ's Civil Rights and Environmental Justice page.

Appendix 1 –Life Cycle Evaluation rules

OAR 340-090-0900 Life Cycle Evaluation Definitions

Terms used in OAR 340-090-0910 to 0940 have the meanings provided by this rule.

(1) Allocation has the meaning provided by ISO 14044:2016: partitioning the input or output flows of a process or a product system between the product system under study and one or more other product systems.

(2) Attributional Life Cycle Assessment means an approach to life cycle assessment that attempts to provide information about the portion of global environmental, human health, and natural resource use impacts that can be associated with a particular product and its life cycle.

(3) Biogenic Carbon means carbon dioxide (CO2) that is removed from the atmosphere by plants, through photosynthesis. This is distinct from fossil carbon, which comes from the combustion of fossil fuels and is not part of the natural carbon cycle.

(4) Break-even point means the number of reuses required for the environmental impact of a reusable or refillable packaging product to equal the environmental impact of an alternative single use covered product. Any additional reuse cycles of a reusable or refillable packaging product beyond the break-even point would result in environmental savings.

(5) Characterization factor means a numeric value derived from environmental modeling that is used to convert a particular life cycle inventory analysis result expressed in distinct units to the common unit used for all inventory analysis results that feed into a particular category indicator.

(6) Contaminant means trace amounts of chemicals that are incidental to manufacturing and that serve no intended function in the product component, including but not limited to:

(a) Unintended by-products of chemical reactions during the manufacture of the product component;

(b) Trace impurities in feedstock;

(c) Incompletely reacted chemical mixtures; and

(d) Degradation products.

(7) Cradle-to-grave means a product's life-cycle that includes all relevant inputs and outputs of raw material extraction, processing, distribution, storage, use, and disposal or recycling stages.

(8) Cut-off criteria means thresholds for exclusion of particular flows or unit processes from a study on the basis of their amounts or the level of their environmental significance for the

product system.

(9) Double-Counting means an error in life cycle assessment whereby a flow, unit process, or other function is represented in a duplicative manner.

(10) Durable means designed to accomplish as many use cycles as possible in normally predictable conditions of use.

(11) Environmental relevance means, the connection to and contribution of, an input or output within the life cycle inventory to an overall environmental impact (e.g. global warming potential).

(12) Flow means a quantified input to or output from a product system. Specific flow definitions are provided by ISO 14044 § 3.12, 3.13, 3.22, 3.27 and 3.29 apply.

(13) Functional unit means a clearly defined and measurable reference unit for life cycle assessment that describes a fixed amount of material used to fulfill a particular function for a particular quantity, quality, and duration. All input and output data of the life cycle assessment, generated pursuant to OAR 340-090-0930 and 0940 must be expressed in terms of the functional unit in order to maximize potential for comparability.

(14) Greenhouse global warming potential (GWP) means a characterization factor describing the radiative forcing impact of one mass-based unit of a given greenhouse gas relative to that of carbon dioxide over a given period of time.

(15) Hazardous substance means chemicals that are considered potentially hazardous in consumer products in Oregon through their designation as a high priority chemical of concern to children pursuant to OAR 333-016-2020, or as a chemical pursuant to ORS 431A.345(1)-(2) or OAR 333-016-2020.

(16) Highest and best reuse means use pathways that ensure reuse of a covered product in a similar or more environmentally preferential way, as opposed to reuse that leads to environmentally worse outcomes.

(17) Information module means a compilation of data that describes a particular portion of the covered product's life cycle.

(18) Impact category means a class of environmental issues of concern, such as climate change or particulate matter, to which life cycle inventory analysis results may be assigned.

(19) Impact category indicator means a quantifiable representation of an impact category.

(20) Input means a product, material or energy flow that enters a unit process.

(21) Intentionally-added means a substance that serves an intended function in the final covered

product or in the manufacturing of the covered product or part of the covered product.

(a) The use of a hazardous substance as a processing agent, mold release agent or intermediate is considered intentional introduction where the hazardous substance is present at a concentration above the practical quantification limit in the finished product. Producers may rebut this presumption by providing credible evidence to demonstrate that the product was not intentionally-added.

(b) The use of PFAS is presumed intentional if any total fluorine is present in the finished covered product. Producers may rebut this presumption by providing credible evidence to demonstrate that PFAS were not intentionally added.

(c) The use of flame retardants is presumed intentional if a hazardous substance that belongs to this chemical class is present in the finished product at a concentration above 1,000 parts per million. Producers may rebut this presumption by providing credible evidence to demonstrate that the flame retardant was not intentionally added.

(d) The use of post-consumer recycled materials as feedstock for the manufacture of new covered products, where the covered product may contain amounts of the regulated chemicals but is neither desired nor deliberate, is not considered intentional addition for the purposes of this Act.

(22) Internal normalization means that impact indicator results for the impact reduction scenario are divided by the same category of impact indicator results for the baseline scenario prior to impact reduction.

(23) International Organization for Standardization (ISO) is a non-governmental organization that develops consensus- based standards for businesses and consumers. Many ISO standards are cross-referenced in these rules and can be obtained at https://www.iso.org/standards.html.

(24) Life cycle impact assessment means a phase of a life cycle assessment aimed at understanding and evaluating the magnitude and significance of the potential environmental impacts for a product system throughout the life cycle of the product.

(25) Life cycle inventory analysis means a phase of a life cycle assessment involving the compilation and quantification of inputs and outputs for a product throughout its life cycle.

(26) Impact category means a class of environmental issues of concern, such as climate change or particulate matter, to which life cycle inventory analysis results may be assigned.

(27) Impact category indicator means a quantifiable representation of an impact category.

(28) Midpoint indicator means an environmental impact assessment method that focuses on singular environmental problems and measures impact at an intermediate stage of the cause-effect change, before the final endpoint is reached.

(29) Output means a product, material, or energy flow that leaves a unit process.

(30) PFAS means perfluoroalkyl and polyfluoroalkyl substances, a class of fluorinated organic chemicals containing at least one fully fluorinated carbon atom.

(31) Plastic leakage means plastic leaving the technosphere and accumulating in the natural environment, be it soil, air, or rivers and ocean.

(32) Practical quantification limit means the lowest concentration of a chemical that can be reliably measured within specified limits of precision, accuracy, representativeness, completeness and comparability during routine laboratory operating conditions.

(a) The chemical-specific Practical Quantification Limits and methods of detection in OAR 333-016-2035, Exhibit A, apply.

(b) The Practical Quantification Limit for Perfluorooctanoic acid and related substances (PFOA), a member of the PFAS class of chemicals for which no Practical Quantification Limit has yet been set in Oregon, is .001 parts per million, in alignment with Washington's Children's Safe Products Act.

(c) The Practical Quantification Limit for lead, for which no Practical Quantification Limit has yet been set in Oregon, is one part per million, in alignment with Washington's Toxic Free Cosmetics Act.

(33) Process means a set of interrelated or interacting activities that transforms inputs into outputs.

(34) Product category rule (PCR) means a set of specific rules, requirements, and guidelines for performing life cycle assessment for a particular product category.

(35) Product System means the collection of unit processes with elementary and product flows, performing one or more defined functions, and which models the life cycle of a product.

(36) Project report means a report detailing results of a life cycle evaluation of a covered product performed in accordance with OAR 340-090-0930 to 0940, containing all contents listed in OAR 340-090-0920.

(37) Refill cycle means the processes and conditions associated with use of a refillable packaging product. A refill cycle is considered complete when a consumer has emptied the packaging,

obtained a new supply of the product intended to be used, and refilled the packaging with said supply.

(38) Refillable packaging product means a packaging product that is:

(a) Designed to be refilled by consumers multiple times for the same or similar purposes in its original format;

(b) Refilled without the support of any commercial or publicly-owned infrastructure and without return of the packaging to the producer or a third-party after each use; and

(c) Actually refilled by consumers.

(39) Return rate factor means a numeric value generated by dividing the total amount of a covered packaging product returned to the system by the total amount of a covered packaging product placed into commerce.

(40) Reuse cycle means the processes and conditions associated with use of a reusable packaging product. A reuse cycle is considered complete when a package or product has been emptied by the consumer, returned to a producer or third- party system, reused for its original intended purpose in its original format, and returned to the market.

(41) Reusable packaging product means a packaging product that is:

(a) Designed to be recirculated multiple times for the same or similar purpose in its original format;

(b) Supported with adequate commercial or publicly-owned infrastructure to enable the highest and best reuse;

(c) Returned to a producer or third party after each use; and

(d) Actually reused.

(42) Scenario means a collection of assumptions and information relevant to possible future events.

(43) Scenario analysis means a type of sensitivity analysis that evaluates impacts of a possible future situation and is based on specific assumptions about the future, and (when relevant) also includes the presentation of the development from the present to the future.

(44) Sensitivity analysis means a systematic procedure for estimating the effects of the choices made regarding methods and data on the outcome of a life cycle assessment.

(45) Stock keeping unit means a unique identifier, typically an eight-digit code or a scannable bar code, that is assigned by a producer to each product in the producer's inventory.

(46) Substantial impact reduction means a 10% or more reduction of impacts resulting from an impact reduction action undertaken by a producer and measured through comparison of two

scenarios, before the producer action (e.g. the baseline scenario) and after the producer action, following the rules outlined in OAR 340-090-0930(3)(c).

(47) Substitution credits means credits granted to the product system for outputs of end-of-life treatments, such as recycling.

(48) System Boundary means a set of criteria specifying which unit processes are part of a product system.

(49) Technosphere means the part of the environment made or modified by humans, pertaining to energy and material consumption.

(50) Unit Process means the smallest element considered in life cycle inventory analysis for which input and output data are quantified.

STATUTORY/OTHER AUTHORITY: ORS 459A.944, 459A.884 STATUTES/OTHER IMPLEMENTED: ORS 459A.944, 459A.884

OAR 340-090-0910 Scope and Applicability

ADOPT: 340-090-0910

RULE TITLE: Scope and Applicability NOTICE FILED DATE: 05/29/2024

RULE SUMMARY: New Scope and Applicability rule.

RULE TEXT:

(1) OAR 340-090-0900 to 0940 are collectively referred to as the life cycle evaluation or LCE rules. The LCE rules implement ORS 459A.944 and provide standards for the evaluation and disclosure of the environmental impacts of covered products through the life cycle of the products. The LCE rules shall be used by large producers to meet the requirements of ORS 459A.944(2), as provided by Section 2 of this rule, and by producer responsibility organizations to meet the requirements of ORS 459A.884(4), as provided by Section 3 of this rule.

(2) **Large producers shall do the following:**

(a) Perform an evaluation, using the standards and methods of the LCE rules, of the life cycle impacts of at least one percent of the covered products that the large producer sells or distributes in or into this state.

(b) Identify the one percent of the covered products for evaluation and disclosure as follows as provided by this Subsection.

(A) A Large producer must order by annual Oregon sales volumes, measured by the number of units, all individual Stock Keeping Units that the producer sold in or distributed into the state that are covered products or that have associated packaging which is a covered product. Producers may use national data pro-rated to Oregon's population or other approximations for the purpose of identifying the one percent of Stock Keeping Units for evaluation, as long as they conform with best available estimation methods.

(i) If a covered product is not associated with a Stock Keeping Unit, the producer shall instead represent the product using an alternative code that is associated with data on the amount of covered product sold or distributed in or into Oregon.

(ii) Stock Keeping Units produced by multiple associated producers as defined in OAR 340-090-0860(5) must be grouped together for the purpose of ordering the Stock Keeping Units by sales volumes.

(B) The evaluation required by Subsection (a) shall be performed on each of the Stock Keeping Units that make up the one percent of Stock Keeping Units with the highest sales

volume from the list described in paragraph (b)(A). The evaluation must include any primary, secondary, and tertiary packaging associated with a Stock Keeping Unit, as well as the product contained or protected by the packaging if it is a covered product. Stock Keeping Units may be batched together in an evaluation, as provided by Paragraph (D).

(C) Except as described in Paragraph (D), large producers must submit individual project reports for each evaluation conducted according to the LCE rules for the covered products represented by or used to package each Stock Keeping Unit.

(D) Batch evaluations may be performed covering multiple Stock Keeping Units if the Stock Keeping Units are part of the same product line or family, such as paperboard cereal boxes of different sizes. If multiple Stock Keeping Units are included in a single batch evaluation, all Stock Keeping Units in the batch evaluation are counted toward fulfillment of the requirement for evaluation of one percent of covered products and can be submitted in a single project report.

(c) Submit complete life cycle evaluations to the department and to the producer responsibility organization of which it is a member at the end of every other program year beginning with 2026.

(A) A producer may submit its life cycle evaluation 6 months after the time provided by Subsection (c) if the producer was not a large producer based on interim market share but becomes a large producer based on preliminary market share.

(B) If a producer is a large producer in multiple 2 year periods the producer must re-order its Stock Keeping Units, as provided by Subsection (b) and assess impacts of covered products for the next, not previously assessed one percent of Stock Keeping Units. Stock Keeping Units that have already been assessed may be repeated after 10 years, or earlier if all Stock Keeping Units have been assessed.

(3) Producer responsibility organizations must apply fee adjustments pursuant to ORS 459A.884(4) as provided by this Section.

(a) Producer responsibility organizations will provide a fee reduction to producers that perform a voluntary evaluation and disclosure of the life cycle impacts of covered products conducted according to the standards and methods in the LCE rules.

(A) Evaluation results must be made available on a producer responsibility organization website and submitted to the department.

(B) Within a given program year, producers may claim bonuses for up to 100 Stock Keeping Units for which a life cycle evaluation is performed and disclosed. DEQ may approve a temporary variance to this limit should the producer responsibility organization propose, through the program plan, a lower limit.

(C) An evaluation used to qualify for this bonus must be completed on or after July 1, 2025, and no earlier than one year prior to submission to the producer responsibility organization.

(b) Producer responsibility organizations will provide a fee reduction to producers that perform a voluntary or statutorily required, per ORS 459A.944(2), evaluation and disclosure of the life cycle impacts of covered products according to the standards and methods in the LCE rules and that include proof of substantial impact reduction as defined according to OAR 340-090-0900(42) and calculated according to OAR 340-090-0930(3)(c).

(A) The magnitude of the fee reduction pursuant to Subsection (b) must be larger than the magnitude of the fee reduction pursuant to Subsection (a), both in terms of the proportion of base fee adjustments and any cap placed on each available fee reduction.

(B) Evaluation results must be made available on a producer responsibility organization website and submitted to the department.

(C) A producer may claim the fee reduction pursuant to Subsection (b) only if the change resulting in reduction of life cycle impacts has been undertaken directly by the producer or its suppliers.

(D) The substantial impact reduction action examined in the evaluation must have been undertaken on or after December 1, 2024, and no earlier than two years prior to submission of the evaluation to the producer responsibility organization.

(E) A producer responsibility organization must offer larger fee reductions for larger impact reductions, by delineating up to five impact reduction tiers, each representing progressively greater impact reduction and receiving progressively larger fee reductions.

(F) An evaluation used to qualify for the fee reduction pursuant to Subsection (b) must be completed on or after July 1, 2025, and no earlier than one year prior to submission of the evaluation to the producer responsibility organization.

(c) The fee reductions described in Subsection (a) and (b) of this Section do not preclude the producer responsibility organization offering other fee adjustments to its member producers.

Any fee adjustments must be included in a program plan or plan amendment reviewed and approved by the department and incentivize the reduction of environmental and human health impacts.

(d) With respect to the fee reductions described in Subsection (a) and (b) of this Section, the producer responsibility organization may set limits in the program plan regarding the timing, submission and re-submission of both fee reductions, including limits related to the frequency of the submission of life cycle evaluations for the same Stock Keeping Units. Any limits must be included in a program plan or plan amendment reviewed and approved by the department.

STATUTORY/OTHER AUTHORITY: ORS 459A.944, 459A.884 STATUTES/OTHER IMPLEMENTED: ORS 459A.944, 459A.884

OAR 340-090-0920 Project Report

ADOPT: 340-090-0920

RULE TITLE: Project Report NOTICE FILED DATE: 05/29/2024

RULE SUMMARY: New Project Report rule.

RULE TEXT:

All life cycle evaluations under the LCE rules must be documented in a project report in accordance with this rule. This report must include the contents specified in Section 1 and conform to the general requirements in ISO 14044:2006 §

5.1 and 14044:2006 § 5.2. Two versions of the project report shall be created, one that contains all the contents described in this rule including confidential data as described in section (2) of this rule and a second public version with confidential data removed. The non-redacted project report shall be provided to DEQ and the producer responsibility organization and the public version with confidential data removed shall be made available to the public.

(1) Contents of the project report. ISO 21930:2017 § 10 shall apply to the project report. The project report shall include the following elements, taken from ISO 21930:2017 § 10.2, and as modified by this Section:

(a) General aspects, including:

(A) Commissioner of the life cycle evaluation, and internal or external practitioner of the Life cycle evaluation study;

(B) Date of report; and

(C) Statement that the study has been conducted in accordance with the requirements of the LCE rules.

(b) Goal of the study, including the reasons for carrying out the study, including its intended application and whether that includes a fee reduction pursuant to ORS 459A.884(4) and OAR 340-090-0910(3)(a) or (b).

(c) Scope of the study, including:

(A) The functional unit, as described in OAR 340-090-0930(1)(a), including:

(i) The definition and relevant technical specifications; and

(ii) The calculation approach for averaging data, including when the functional unit is defined for a batch of covered products as described in OAR 340-090-0930(1)(a), or for a group of the same products produced by different suppliers or at different production sites.

(B) The system boundary according to the modular approach, as described in OAR 340-090-0930(1)(c), including:

(i) Omissions of life cycle stages, processes or data needs;

(ii) Quantification of energy and material inputs and outputs, taking into account how plant-level data is allocated to the declared products; and

(iii) Assumptions about electricity production and other relevant background data.

(C) cut-off criteria for initial inclusion of inputs and outputs, as described in OAR 340-090-0930(1)(d), including:

(i) A description of the application of cut-off criteria and assumptions; and

(ii) A list of excluded processes.

(d) A life cycle inventory analysis, as described in OAR 340-090-0930(2), including:

(A) A qualitative and quantitative description of unit processes necessary to model the life cycle stages of the functional unit;

(B) The sources of generic or proxy data or literature used to conduct the analysis;

(C) Validation of data and discussion of data quality, as described in OAR 340-090-0930(1)(e), including:

(i) Data quality assessment; and

(ii) Treatment of missing data.

(D) Allocation principles and procedures, as described in OAR 340-090-0930(2)(c), including:(i) Documentation and justification of allocation procedures; and

(ii) uniform application of allocation procedures.

(e) A Life cycle impact assessment, as described in OAR 340-090-0930(3), including:

(A) The life cycle impact assessment procedures, calculations and results of the assessment;

(B) The relationship of the life cycle impact assessment results to the life cycle inventory analysis results;

(C) A reference to all characterization models, characterization factors and methods used, as described in OAR 340- 090-0930(3)(a);

(D) A statement that the life cycle impact assessment results are relative expressions and do not predict impacts on category endpoints, the exceedance of thresholds, safety margins or risks.

(f) Life cycle interpretation, as described in OAR 340-090-0930(4) including:

(A) The results of the interpretation;

(B) The assumptions and limitations associated with the interpretation of results, both methodology and data related;

(C) The data quality assessment; and

(D) Full transparency in terms of value-choices and expert judgements.

(g) Summary section containing specific information from the project report. The required

information and format will be based on a template provided by DEQ. The summary section must be computer readable.

(h) The third-party verification.

(2) Confidential Data. A producer shall identify any information in the project report the producer believes is exempt from disclosure pursuant to ORS 192.311 to 192.478 or otherwise confidential under applicable law. Such information is not required to be included in the public report and shall not be disclosed to the extent allowed or required by ORS

192.311 to 192.478 or other applicable law. Such information may be necessary for the third-party during the verification process described in Section (4). A producer may require an appropriate nondisclosure agreement before providing such information to a third-party reviewer. To qualify for a fee reduction pursuant to ORS 459A.884(4) and OAR 340-090-0910(3) the following project report information must be publicly available:

(a) Life cycle inventory analysis results,

(b) Impact assessment results,

(c) normalized and weighted impact scores generated for the purpose of claiming the substantial impact reduction bonus, and

(d) the presence of intentionally-added or contaminant hazardous substances.

(3) Documentation on additional environmental information. Any mandatory reporting of additional environmental information, as described in OAR 340-090-0940, shall be included in the project report. Such documentation may include:

(a) Laboratory results or tests related to material or chemical composition of covered products;

(b) Laboratory results or tests related to emissions (to air, soil or water) from covered products that occur during their use stage;

(c) Certifications or third-party environmental labels; and

(d) Sourcing practices.

(4) Third-Party verification and validity of Life Cycle Evaluation. A qualified independent verifier shall review and certify all life cycle evaluations of covered products for compliance with the LCE rules.

(a) A qualified, independent verifier shall have knowledge of and proficiency in life cycle assessment methodology, practice, and standards (ISO 14040:2006 and ISO 14044:2006). As well as the appropriate scientific and technical proficiencies relevant to covered products evaluated. Qualifications shall be determined using the criteria and scoring system described in

section 8.3.1 of Annex I of EU 2021/2279.

(b) The review and verification shall be conducted pursuant to and in accordance with the critical review process described in ISO/TS 14071:2014. Additionally, the third-party review and verification shall adhere to section 8.4.1 of Annex I of EU 2021/2279.

(c) After review and verification, a critical review report and critical review statement shall be produced by the third- party and appended to the project reports, all of which must then be submitted to the department, and made publicly available by the producer responsibility organization.

(d) A project report is valid for 10 years, if the underlying data have not changed significantly such that the results of the assessment no longer represent the current impact of the covered product.

(e) Information in addition to the project report may be required by a third-party verifier to determine compliance with the LCE rules.

STATUTORY/OTHER AUTHORITY: ORS 459A.944, 459A.884 STATUTES/OTHER IMPLEMENTED: ORS 459A.944, 459A.884

OAR 340-090-0930 Core Product Category Rule

ADOPT: 340-090-0930

RULE TITLE: Core Product Category Rule NOTICE FILED DATE: 05/29/2024

RULE SUMMARY: New Core Product Category Rule.

RULE TEXT:

(1) Methodological Framework. This rule provides the general considerations and technical parameters required for the life cycle evaluation of covered products required of large producers by ORS 459A.944, and that may be undertaken voluntarily by a producer seeking a fee adjustment pursuant to OAR 340-090-0910(3). All life cycle evaluations conducted under these rules must be based on attributional life cycle assessment methods as defined in OAR 340-090- 0900(2).

(a) Functional Unit. All inputs and outputs of a life cycle inventory must be expressed in terms of a functional unit defined in a manner consistent with ISO14040:2006 §5.2.2 and ISO 14044:2006 §4.2.3.2. For covered products that contain or hold something the functional unit shall be defined as 1 cubic meter of capacity. For covered products that cover or wrap something the functional unit shall be set as 1 square meter of coverage. For covered products that perform some function other than containing or covering something or for instances where product redesign (e.g. change in concentration) influences the ratio of covered product to function, producers should seek DEQ feedback prior to finalizing the choice of functional unit.

(b) System Boundary. The system boundary for life cycle evaluations of covered products shall be based on a cradle-to- grave system boundary, as provided in paragraphs (A) to (E).

(A) Unit processes or activities that are included in the system boundary are provided in Subsection (c) and generally include the following:

(i) Raw material extraction, processing, and production;

(ii) Transportation and fuel usage to obtain raw material at the factory;

(iii) Finished manufacturing of covered products;

(iv) Transportation and fuel usage to distribute covered products, including customer transport to place of purchase;

(v) Local route transport and distribution for collection materials at end of life; and

(vi) Waste recovery and processing (at production and end of life) including disposal, incineration, or recycling.

(B) Unit processes or activities that are not included in the system boundary:

(i) Use related activities or emissions (e.g., electricity consumption, washing, sterilization, refrigeration), except as provided in Subsection (b)(C);

(ii) Maintenance of facilities and capital equipment;

(iii) Installation of facilities and capital equipment;

(iv) Manufacturing of facilities and capital equipment;

(v) Personnel transportation; and

(vi) Human labor and employee commuting.

(C) Notwithstanding Subparagraph (B)(i), if a covered product is either a reusable packaging product or a refillable packaging product the system boundary shall include the use related activities associated with recovering, washing, sterilizing, and redistributing reusable packaging products.

(D) The system boundary shall include all processes and production steps required to fulfill the defined functional unit of the covered products under evaluation consistent with the requirements of ISO 14044:2006 §4.2.3.3.

(E) If a covered products will use recovered materials, fuels, or energy then those inputs must be included in the assessment in such a way as to avoid double counting or undercounting of burdens, as described in ISO 21930:2017

§7.1.6.

(c) Information Modules. Life cycle evaluations shall be divided into information modules A, B, C and D, based on the modularity principle introduced in ISO14025:2006 § 5.4 and consistent with the structure described in ISO21930:2017

§ 7.1.7., as provided by this Section. Information modules pertain to the materials, parts, and processes associated with

the life cycle of a covered product and represent, individually or when combined, the whole of the life cycle of a covered product.

(A) Information Module A shall be included in all evaluations of covered products and includes the production stage of the life cycle for covered products, including:

(i) A1, raw material extraction and processing, secondary material inputs, energy generation (electricity or thermal), and any waste management for any production scrap or materials.

(ii) A2, transport of raw materials to the production facility along with any internal transport at the production facility itself.

(iii) A3, manufacturing, including the production of ancillaries and co-products; energy generation (electricity or thermal) needed for manufacturing, combustion emissions associated with fuels used in the manufacturing process, manufacturing of any packaging (additional to the covered products themselves) associated with secondary or tertiary packaging needs, transport associated with ancillaries, transport associated with secondary or tertiary packaging, and any waste management for any production scrap or materials.

(iv) A4, customer transport to place of purchase.

(B) Information Module B includes the use stage of the life cycle for covered products. This module is only required for reusable packaging products, as defined by OAR 340-090-0900(37) and includes evaluation of all the relevant use phase activities related to the collection, cleaning, and redistribution of reusable packaging products, as provided by Subparagraph (B)(i)-(iii) of this Subsection. Evaluation of reusable packaging products shall include, at a minimum:

(i) Transportation for return, including mode of transportation and distance transported;

(ii) Washing and sterilization process including any energy, water, or ancillary inputs;

(iii) Transportation for redistribution, including mode of transportation and distance transported;

(C) Information Module C shall be included in all life cycle assessments and includes the end-of-life state of a covered product. This stage begins when a covered products finishes its useful life and does not provide any further functionality.

(i) Stages of information module C include:

(I) C2, transport of waste to end of life processing (recovery, recycling, or disposal);

(II) C3, waste processing of covered products in preparation for recycling or recovery, including, sortation, beneficiation, or other processing performed at a MRF or transfer station; and

(III) C4, disposal or recovery activities.

(ii) Since covered products reaching the end-of-life stage can be managed in different ways, a representative average scenario based on a typical end-of-life shall be calculated. The end-of-life composition of dispositions for a given covered product shall reflect an average, based on a regional or national mix, of recovery and disposal.

(iii) If an end-of-life processes results in secondary materials through recycling, energy recovery or other methods, any benefits associated with the secondary materials shall be reported in information module D, pursuant to Subsection (d).

(D) Information Module D includes benefits or credits beyond the system boundary. Unlike

Modules A through C, Module D is not a life cycle stage. It represents any impacts (either benefits or loads) that occur outside of the system boundary for the covered product. Any benefits specifically associated with reuse, recycling, or energy recovery are quantified and reported in Module D, as described in ISO21930:2017 § 7.1.7.6.

(d) Cut off criteria. Cut-off criteria for evaluation of covered products shall follow the guidelines of ISO 21930:2017 §

7.1.8 and ISO14044:2006 § 4.2.3.3.3. Any specific criteria used for the inclusion or exclusion of inputs and outputs must be justified and documented. All available energy and material flows associated with the covered product in the underlying life cycle inventory must be included. In cases where no matching life cycle inventories are available to represent a flow, proxy data may be applied using conservative assumptions regarding environmental impacts.

(A) The cut-off criteria for including or excluding materials, energy and emissions data of the study are as follows:

(i) Mass – If a flow (input or output) is less than 1% of the cumulative mass of the model it may be excluded, providing its environmental relevance, as defined in Subsection (B) is not a concern.

Energy – If a flow (input or output) is less than 1% of the cumulative energy of the model it may be excluded, provided its environmental relevance is not a concern.

(B) For purposes of this section a flow (input or output) has environmental relevance based on its contribution to an environmental impact exceeding the cut-off criteria, defined as individually contributing more than 1% of the total environmental impact of an impact category. In such cases these flows must be included (e.g. cannot be excluded) in the life cycle inventory.

(C) The sum of the excluded material flows (inputs and outputs) must not exceed 5% of mass, energy or environmental relevance.

(e) Selection of data and data quality requirements. The data used to create the life cycle inventory shall be as precise, complete, consistent, and representative, as follows:

(A) Measured data is preferred for use, followed by calculated data, and finally data based on estimates.

(B) Measured primary data must be of the highest precision practicable, the precision of calculated and estimated data is expected to be lower than measured.

(C) Data must be complete for inputs and outputs for each unit process and the completeness of the combined unit processes that make up the life cycle inventory. Cut-off criteria apply.

(D) Modeling choices and data sources must be consistent and ensure that differences in results occur due to differences between product systems, and not because of inconsistencies in

modeling choices, data sources, emission factors, or other considerations.

(E) To be representative data must match the geographical, temporal, and technological requirements defined in the goal and scope of the project report described in OAR 340-090-0920(1)(b) and (1)(c).

(F) An evaluation of data quality in terms of these requirements in Paragraphs (A) to (E) shall be provided in the project report described in OAR 340-090-0920. Table 3 of ISO 21930:2017 provides guidance on the application of generic and specific data required by module and should be used to inform the selection of data developed for a covered product under these rules. Additional guidance regarding data quality requirements can also be found in ISO 14044:2006 § 4.2.3.6 and ISO 21930:2017 § 7.1.9.

(G) These data quality requirements apply to all data incorporated into the life cycle inventory.

(f) International System of Units measurements shall be used for all life cycle evaluation values. Results of life cycle impact assessments described in OAR 340-090-0930(3) shall use the default units associated with each impact category as described in ISO 21930:2017 § 7.1.10.

(2) Life Cycle Inventory Analysis. Life cycle inventory analysis shall be performed as provided by this rule.

(a) Data Collection. Data must be collected for all the required information modules described in OAR 340-090- 0930(1)(c) within the system boundary, described in OAR 340-090-0930(1)(b) for the covered product under study. Data collection shall follow the guidelines in ISO 14044:2006 § 4.3.2.

(b) Calculation Procedures. Calculation procedures employed for the life cycle evaluation of a covered product shall follow the guidance in ISO 14044:2006 § 4.3.3. The calculation shall be applied consistently and documented in the final report, including disclosure of any assumptions.

(c) Allocation. For purposes of this Section allocation is the partitioning of the input or output flows of a process or a product system between the product system under study and one or more other product systems.

(A) Where possible, allocation should be avoided per ISO 14044:2006 § 4.3.4.2. When required, any allocation for materials and energy carriers shall follow the steps and guidelines laid out in ISO14044:2006 § 4.3.4.2 and ISO21930:2017 § 7.2.3.

(B) When allocation is required within any stage of the life cycle for covered products, disclosure of the selected allocation method is required. No allocation may result in double-

counting of environment benefits (e.g. credits). The guidelines of ISO14044:2006 § 4.3.4.2 shall be used when allocation is performed and in the specific case of allocation for reuse or recycling, the procedures of ISO14044:2006 § 4.3.4.3.

Any recovery processes should account for losses in quality and quantity of the material throughout the process. Written justification for changes in the quality of the material factors applied when allocating benefits of recycling must also be provided, as many recycling processes can yield lower-quality materials compared with virgin materials. Such quality losses should be reflected in appropriate substitution credits for recycling.

(C) Energy recovery. If materials are incinerated with associated energy recovery, the unit processes and activities for incineration must account for waste composition and heating value, as well as for regional efficiencies and heat-to- power output ratios. Any credits (e.g. environmental benefits), in the form of energy generation from incineration processes, should substitute for an appropriate regional electricity grid mix and thermal energy inventory. These credits should be reported in Module D, as described in OAR 340-090-0930(1)(c)(D).

(D) Landfilling. If materials are sent to landfills, specific unit processes and activities shall be used that account for waste composition, regional leakage rates (due to technology and climate zone), landfill gas capture and utilization. Any recovery of landfill gas output that substitutes for primary production of natural gas shall be granted as a credit. These credits should be reported in Module D, as described in OAR 340-090-0930(1)(c)(D).

(E) Composting. If materials are sent to composting facilities, the unit processes and activities for composting must account for waste composition, composting methodology and crediting (via substitution) for the outputs (e.g. finished compost) of the composting process that substitute for primary production of other materials (e.g. synthetic fertilizers). These credits should be reported in Module D, as described in OAR 340-090-0930(1)(c)(D).

(F) Material Substitution Credits. A credit described in this subsection is granted to the system for the outputs of end- of-life treatments when the material is recycled. The outputs from recycling (e.g. recycled materials) that substitute for primary production of like materials shall be granted as a credit. These credits should be reported in Module D, as described in OAR 340-090-0930(1)(c)(D).

(d) Accounting of biogenic carbon during the life cycle.

(A) The inventory shall include biogenic carbon flows (inputs and outputs) of covered products across required information modules. Reporting of biogenic carbon flows shall be consistent with the guidelines of ISO21930:2017 §

7.2.7. When calculating Global Warming Potentials (GWP) for impact assessment as described in OAR 340-090- 0930(3), biogenic carbon shall be accounted for as follows:

(i) Inputs or sequestration of biogenic carbon shall be reported as a negative inventory flow, and
(ii) Outputs or emissions of biogenic carbon shall be reported as a positive inventory flow.
(B) Producers must report GWP both excluding and including biogenic carbon. To obtain the fee reduction pursuant to OAR 340-090-0910(3)(b), a producer must use GWP excluding biogenic carbon in the single score impact profile calculation described in OAR 340-090-0930(3)(c).

(e) Reusable packaging product. When developing a life cycle inventory for evaluation of a reusable packaging product, defined in OAR 340-090-0900(41), the following shall apply.

(A) The following parameters shall be included in the life cycle inventory and disclosed under information module B pursuant to OAR 340-090-0930(1)(c)(B) in the project report:

(i) A return rate factor to account for breakage, losses, or yield across each reuse cycle; and
(ii) the expected number of reuse cycles, as defined in OAR 340-090-0900(40) to be examined through scenario analysis described in OAR 340-090-0930(4).

(B) If a producer transitions a covered product from single-use to reusable and seeks the fee adjustment pursuant to ORS 459A.884(4) and OAR 340-090-0910(3)(b), projections of the information required in Subparagraph (A)(i)-(ii) of this Subsection, rather than actual data, may be used for evaluation for the first three years. If actual data are available during the initial three year period, they must be reported alongside the projections used in inventory analysis and impact assessment. Thereafter, a producer shall use actual data to perform the evaluation. Actual data must be obtained through real-world tracking of reusable packaging assets across the entire state for each individual SKU and shall be consistent with applicable global and national standards.

(C) A producer must calculate a break-even point in an assessment focused on a reusable packaging product, and after the three-year period described in Paragraph (B) ends, the actual number of reuses must be compared with and exceed the break-even point to qualify for the fee adjustment pursuant to ORS 459A.884(4) and OAR 340-090-0910(3)(b). The break-even point shall be calculated for the normalized and weighted single score as provided by OAR 340-090-0930(3)(c).

(D) Return rate factors shall be calculated according to the methods and guidelines of the Product Environmental Footprint method in section 4.4.9 of Annex I of EU 2021/2279 (European Commission Recommendation of 15 December 2021 on the use of Environmental

Footprint methods to measure and communicate the life cycle environmental performance of products and organizations), with the following exceptions: return rates (4.4.9.3) can be based on assumptions or projections (option 'b' of 4.4.9.3) in the initial three year period described in Paragraph (B) of this section, but shall be based on supply chain specific data (option 'a' of 4.4.9.3) after the three year period.

(f) Refillable packaging product. When developing a life cycle inventory for evaluation of a refillable packaging product, defined in OAR 340-090-0900(38), the following shall apply:

(A) The following parameters shall be included in the life cycle inventory and disclosed under information module B pursuant to OAR 340-090-0930(1)(c)(B) in the project report:

(i) A refill rate factor to account for losses or yield across each reuse cycle; and
(ii) the expected number of refill cycles, as defined in OAR 340-090-0900(37) to be examined through scenario analysis described in OAR 340-090-0930(4).

(B) A producer must calculate a break-even point in an assessment focused on a refillable packaging product, The break- even point shall be calculated for the normalized and weighted single score as provided by OAR 340-090-0930(3)(c).

(C) Refill rate factors shall be calculated according to the methods and guidelines of the Product Environmental Footprint method in section 4.4.9 of Annex I of EU 2021/2279 (European Commission Recommendation of 15 December 2021 on the use of Environmental Footprint methods to measure and communicate the life cycle environmental performance of products and organizations).(g) Hazardous waste indicators. Producers shall track and report, in addition to all other required inventory data, flows of the following wastes as part of the life cycle evaluation of covered products:

(A) Hazardous waste, as defined in ORS 466.005(7) that is disposed of within any life cycle stage of the covered product, and

(B) Non-hazardous waste that is disposed of in the covered product life cycle.
(h) Plastic leakage inventory. Producers shall quantify, in addition to all other required inventory data, the flow(s) of plastic leakage across the life cycle of covered products. This plastic leakage assessment aims at measuring the plastic leaving the technosphere and accumulating in the natural environment (be it soil, air, or rivers and ocean) and shall be based on the methodologies of the Plastic Footprint Network (PFN) V1 Nov. 2023. The methodology provides details on flow nomenclature and units of measure to track plastic leakage, as well as providing regionalized averages (US national average data is permissible) when primary data

cannot be obtained by the producer. The data quality requirements of OAR 340-090-0930(1)(e) apply to this Section and specifically data related to plastic leakage shall follow the data governance guidance from the Plastic Footprint Network methodology V1 Nov. 2023.

(i) Methane leakage. Producers shall quantify methane leakage, which may occur at various points along the oil and gas supply chain, within the life cycle inventory for covered products, including methane leakage that happens at wellhead, pipeline, transport, refinery, and production facilities. Producers shall quantify methane leakage by using published sources that reflect the latest available information and understanding of the issue. The data quality requirements of OAR 340-090-0930(1)(e) shall apply to this Section.

(3) Life Cycle Impact Assessments. Upon completion of the life cycle inventory pursuant to OAR 340-090-0930(2), a life cycle impact assessment shall be conducted according to the requirements of this rule.

(a) Life cycle impact assessments shall, unless otherwise provided in this rule, follow the guidelines for classification and characterization of emissions described in ISO 14044:2006 § 4.4 and follow the specific methods of the Product Environmental Footprint method, as described in Section 5 of Annex I of EU 2021/2279, European Commission Recommendation of 15 December 2021 on the use of Environmental Footprint methods to measure and communicate the life cycle environmental performance of products and organizations.

Life cycle impact indicators. A producer must calculate and disclose life cycle impact assessment indicators provided by Paragraph (A) to (P) of this Subsection for project reports submitted to comply with ORS 459A.944(2) or for the fee reduction described in OAR 340-090-0910(3)(a), and Paragraph (A) to (R) of this Subsection for the fee reduction described in OAR 340-090-0910(3)(b). Life cycle impact indicators are:

(A) Climate Change (PEFCR EF 3.1, kg CO2 eq.)

(B) Ozone depletion (PEFCR EF 3.1, kg CFC-11 eq.)

(C) Human toxicity, cancer (PEFCR EF 3.1, CTUh)

(D) Human toxicity, non-cancer (PEFCR EF 3.1, CTUh)

(E) Particulate matter (PEFCR EF 3.1, disease incidences)

(F) Ionizing radiation, human health (PEFCR EF 3.1, kBq U-235 eq.)

(G) Photochemical ozone formation, human health (PEFCR EF 3.1, kg NMVOC eq.)

(H) Acidification (PEFCR EF 3.1, mol H+ eq.)

(I) Eutrophication, terrestrial (PEFCR EF 3.1, mol N eq.)

(J) Eutrophication, freshwater (PEFCR EF 3.1, kg P eq.)

(K) Eutrophication, marine (PEFCR EF 3.1, kg N eq.)

(L) Ecotoxicity, freshwater (PEFCR EF 3.1, CTUe)

(M) Land use (PEFCR EF 3.1, pt)

(N) Water use (PEFCR EF 3.1, m3 water eq)

(O) Resource use, minerals and metals (PEFCR EF 3.1, kg Sb eq)

(P) Resource use, fossils (PEFCR EF 3.1, MJ)

(Q) Plastic physical impacts on biota (MariLCA, PAF m3 day)

(R) Plastics leakage inventory value (DEQ, kg)

(S) The impacts for the indicators in Paragraphs (A) to (P) must be calculated and disclosed as provided by Product Environmental Footprint method, Section 3.2.3, Table 2, of Annex I of EU 2021/2279 (European Commission Recommendation of 15 December 2021 on the use of Environmental Footprint methods to measure and communicate the life cycle environmental performance of products and organizations) and characterization factors in ENVIRONMENTAL FOOTPRINT REFERENCE PACKAGE 3.1: LAST UPDATE JULY 2022 apply to each of these indicators when performing impact assessment.

(T) The impact for the indicator in Paragraph (Q) must be calculated and disclosed using the characterization factors published in BOULAY ET. AL 2023 MariLCA CHARACTERIZATION FACTORS FOR MICROPLASTIC IMPACTS IN LIFE CYCLE ASSESSMENT: PHYSICAL EFFECTS ON BIOTA FROM EMISSIONS TO AQUATIC ENVIRONMENTS. JOURNAL OF CLEANER PRODUCTION, v. 418.

(U) The impact indicator in Paragraph (R) is for impacts of plastic other than physical impacts on aquatic biota. No characterization factors will be applied to the leakage flows reported for this indicator and the producer shall directly normalize and weight the leakage amount following the approach in Subsection (c)(A) to (B) of this Section.

(b) Single score impact profile. To obtain a fee reduction pursuant to ORS 459A.884(4) and OAR 340-090-0910(3)(b), a producer's impact assessment results must be normalized, weighted, and aggregated into a single numeric value using weighting factors provided in Table A. Normalization, weighting, and aggregating impacts into a single numeric value is not required for the fee reduction described in OAR 340-090-0910(3)(a). This single score impact profile must be calculated for two scenarios – the covered product before and after an impact reduction action undertaken by the producer. These scenarios shall be based on a set of comparable conditions and comport with the requirements of ISO 14044:2006 § 4.2.3.7 related to comparison between systems.

(A) The environment impact indicators for Human Toxicity - Cancer, Human Toxicity – Non-Cancer, and Ecotoxicity - Freshwater, provided by Subsection (b) of this Section shall be

excluded from the normalization, weighting, and aggregating of impact described in this Subsection. To obtain a fee reduction pursuant to OAR 340-090-0910(3)(b), these indicators must be reported separately from the single score calculation. If a producer action results in an increase in environmental impact of 1000 times or greater for human toxicity cancer and human toxicity non-cancer or 100 time or greater for freshwater ecotoxicity then no fee reduction shall be granted.

Normalization of impact category indicator results shall be based on internal normalization. For the purposes of these rules, internal normalization means that impact indicator results for the impact reduction scenario are divided by the same category of impact indicator results for the baseline scenario prior to impact reduction. The resultant unitless value must then be multiplied by the final weighting factors provided in Table A. This process must be performed for each environmental impact category indicator result separately. Once normalized and weighted, the results shall be summed across all impact category indicators to arrive at the single score. This single score shall form the basis to evaluate substantial impact reductions and to assess any fee reductions pursuant to OAR 340-090-0910(3)(b). A score of 90 or lower represents 10% or more impact reduction, and as such qualifies as substantial impact reduction.

Guidance on the process of normalization found in ISO 14044:2006 § 4.4.3.2 shall apply.

(c) Evaluation of impact reduction, as described above in OAR 340-090-0910(3)(c)(B), shall be based on a set of comparable scope and boundary conditions consistent with the guidelines provided in Section 4.2.3.7 of ISO 14044:2006 related to comparisons between systems.

(4) Interpretation. A producer must interpret the results of a life cycle evaluation under OAR 340-090-0930(1)-(3) as described in ISO 14044:2006 § 4.5 and this rule.

(a) Interpretation of the results of an evaluation under the LCE rules shall establish confidence in the accuracy and precision of the outputs. Interpretation includes checks on the overall completeness of the life cycle inventory and impact assessment, evaluation of the consistency of the project report with the requirements of the LCE rules and testing of the sensitivity of key elements of the evaluation.

[Note: See ISO 14044:2006, Annex B for examples of life cycle interpretation.]

(b) Producers shall perform a sensitivity analysis on the underlying electricity grid mixture and the recycling allocation methodology. A producer may perform a sensitivity analysis on other variables. The purpose of a sensitivity analysis is to check for key data, parameters, or methodological choices in the life cycle evaluation of covered products. This requirement provides additional quantitative information about the potential variability of the evaluation

results. Sensitivity analysis shall disclose the range, minimum and maximum, and variance across all required impact categories and indictors in the project report.

(c) For modelling the electricity grid a producer must use the guidance and methodologies provided by the Product Environmental Footprint method in Section 4.4.2 of Annex I of EU 2021/2279 (European Commission Recommendation of 15 December 2021 on the use of Environmental Footprint methods to measure and communicate the life cycle environmental performance of products and organizations).

(d) A producer may use opportunities for impact reduction identified by the sensitivity analysis to apply for the substantial impact reduction bonus pursuant to OAR 340-090-0910(3)(b).

(e) If a producer applies for the substantial impact reduction bonus pursuant to OAR 340-090-0910(3)(b) specifically for a reusable packaging product, additional sensitivity analysis must be performed. Based on the parameters described in OAR 340-090-930(2)(e)(A), a scenario analysis, which means a form of sensitivity analysis wherein multiple parameters are varied at once, shall be performed for three scenarios. A best, expected, and worst-case scenario shall be evaluated and disclosed, wherein the return rate factor and number of reuse cycles are varied accordingly.

STATUTORY/OTHER AUTHORITY: ORS 459A.944, 459A.884

STATUTES/OTHER IMPLEMENTED: ORS 459A.944, 459A.8

Table A - Table of weighting factors

Values in the Final Weighting column of this Table shall be applied to the normalized impact assessment results for each of the fifteen impact categories included in derivation of the single- score impact profile as described in OAR 340-090-0930(3)(c)(B).

IMPACT CATEGORY INDICATOR	SERIOUSNESS WEIGHTING	ROBUSTNESS FACTORS	INTERMEDIATE COEFFICIENTS	FINAL WEIGHTING
	(A)	(B)	C=A*B	C Scaled to 100
Climate change	14.41	0.87	12.54	21.07
Water use	10.88	0.47	5.11	8.60
Land use	10.16	0.47	4.78	8.03
Resources use, fossils	8.36	0.6	5.02	8.43
Resource use, minerals and metals	7.58	0.6	4.55	7.64
Ionizing radiation, human health	6.47	0.47	3.04	5.11
Ozone depletion	6.33	0.6	3.80	6.38
Particulate matter	6.2	0.87	5.39	9.07
Plastic physical impact on aquatic biota	5.88	0.25	1.47	2.47
Acidification	5.61	0.67	3.76	6.32
Photochemical ozone formation, HH	5.38	0.53	2.85	4.79
Eutrophication, freshwater	3.55	0.47	1.67	2.80
Eutrophication, terrestrial	3.3	0.67	2.21	3.72
Eutrophication, marine	3.29	0.53	1.74	2.93
Plastic – other impacts	2.61	0.60	1.57	2.63

OAR 340-090-0940 Additional environmental and human health information

ADOPT: 340-090-0940

RULE TITLE: Additional Environmental and Human Health Information NOTICE FILED DATE:

05/29/2024

RULE SUMMARY: New Additional Environmental and Human Health Information rule.

RULE TEXT:

In addition to the information required by OAR 340-090-0930, a life cycle evaluation under the LCE rules must include the additional information on environmental and human health impacts of a covered product required by this rule.

(1) The evaluation must include a list of the material content of the covered product that, at a minimum, states any intentionally-added hazardous substances in the covered product that are at or above practical quantification limits, as well as any contaminant hazardous substances in the covered product at concentrations above 100 parts per million.

(a) If a practical quantification limit has not been designated for a hazardous substance that has been intentionally added to a covered product, its addition to the product must still be disclosed.

(b) If a producer has a manufacturing control program in place proven effective at minimizing the concentration of a particular contaminant in the product below 100 parts per million, the producer is exempt from the requirement to report on the contaminant's presence, as long as it provides a description of the program and details corroborating its effectiveness.

(2) The evaluation must include a description of any known releases of substances described in Section 1 of this rule from the covered product to a consumer or to the environment.

(3) If a producer has undertaken an exposure assessment, pursuant to OAR 333-016-3050 or other similar methodology, of the covered product within the five years prior to the evaluation, and the exposure assessment indicated transferal of a substance described in Section 1 of this rule to a consumer above the applicable practical quantification limit, the producer must provide the exposure assessment in its original format.

(4) If a producer has replaced a hazardous substance with a substitute chemical within the five years prior to the evaluation and based the decision to do so on a hazard or alternatives assessment, the producer must provide the hazard or alternatives assessment in its original

format.

(5) The evaluation must include a human health impact statement, that includes the following:
(a) Disclosure of any non-compliance of the covered product with customer health and safety regulations or voluntary codes in any jurisdiction in the past five years.

(b) If a producer is required to submit the evaluation pursuant to ORS 459A.944(2) and the producer is also subject to required sustainability reporting in the European Union under 2013/34/EU and 2023/2772/EU or similar requirements, the producer must disclose any material health impacts of the covered product on affected communities in accordance with the European Sustainability Reporting Standards 2023/2772/EU (ESRS) Disclosure Requirement (DR)-IRO 1.

(A) If the producer considers health impacts of the covered product to be non-material, the producer must provide a written justification.

(B) If material health impacts have been identified, the producer must disclose the following additional information, in accordance with 2023/2772/EU ESRS DR S3-1 through S3-5:

(i) Policies adopted to manage material health impacts of the covered product on affected communities, as well as associated material risks and opportunities; and

(ii) Processes for engaging with affected communities about actual and potential material health impacts of the covered product;

(iii) Processes to remediate negative material health impacts of the covered products and channels for affected communities to raise concerns;

(iv) Actions taken to address material health impacts of the covered product, and approaches to mitigating material risks and pursuing material opportunities related to affected communities, and the effectiveness of those actions and approaches.

(v) Time-bound and outcome-oriented targets that have been set for reduction of negative impacts of the covered product on affected communities, advancing positive impacts on affected communities, or managing material risk and opportunities related to affected communities.

(6) If a producer incorrectly reports the information required by Section 1 or Section 5(a) of this rule, the producer must pay the full fee amount for any period it received a reduced fee pursuant to OAR 340-090-0910(3). The producer responsibility organization must document the misreporting incident and make correct information available on its website.

Appendix 2 – Hazardous Substances List for Oregon Life Cycle Evaluations

Producers may use the following checklist to make disclosures of hazardous substances, either intentionally-added above Oregon's Practical Quantification Limit, or present as a contaminant above 100 ppm, mandated under OAR 340-090-0940(1). See Hazardous Substance Assessment section of this document, pg 17-18, for additional requirements pertaining to hazardous substances that should be included in the evaluation.

No.	Hazardous Substance	CAS Registry Number	PQL (ppm)	Check All That Apply: Intentionally-Added Above PQL	Check All That Apply: Contaminant Present Above 100 ppm
1	Formaldehyde	50-00-0	5.0		
2	Aniline	62-53-3	1.0		
3	N-Nitrosodimethylamine	62-75-9	1.0		
4	Benzene	71-43-2	1.0		
5	Vinyl chloride	75-01-4	0.5		
6	Acetaldehyde	75-07-0	1.0		
7	Methylene chloride	75-09-2	1.0		
8	Carbon disulfide	75-15-0	1.0		
9	Methyl ethyl ketone	78-93-3	1.0		
10	1,1,2,2-Tetrachloroethane	79-34-5	1.0		
11	Tetrabromobisphenol A (TBBPA)	79-94-7	50.0		
12	Bisphenol A (BPA)	80-05-7	1.0		
13	Bisphenol S (BPS)	80-09-1	1.0		
14	Dicyclohexyl phthalate (DCHP)	84-61-7	25.0		
15	Diethyl phthalate (DEP)	84-66-2	25.0		
16	Diisobutyl phthalate (DIBP)	84-69-5	25.0		
17	Di-n-butyl phthalate (DBP)	84-74-2	25.0		
18	Di-n-hexyl phthalate (DnHP)	84-75-3	25.0		
19	Butyl benzyl phthalate (BBP)	85-68-7	25.0		
20	N-Nitrosodiphenylamine	86-30-6	1.0		
21	Hexachlorobutadiene (HCDB)	87-68-3	5.0		

No.	Hazardous Substance	CAS Registry Number	PQL (ppm)	Check All That Apply: Intentionally-Added Above PQL	Check All That Apply: Contaminant Present Above 100 ppm
22	Propyl paraben	94-13-3	5.0		
23	Butyl paraben	94-26-8	5.0		
24	2-Aminotoluene	95-53-4	1.0		
25	2,4-Diaminotoluene	95-80-7	1.0		
26	Methyl paraben	99-76-3	5.0		
27	4-Hydroxybenzoic acid	99-96-7	5.0		
28	Ethylbenzene	100-41-4	1.0		
29	Styrene	100-42-5	1.0		
30	4-Nonylphenol and its isomer mixtures	104-40-5	1.0		
31	4-Chloroaniline	106-47-8	1.0		
32	Acrylonitrile	107-13-1	1.0		
33	Ethylene glycol	107-21-1	40.0		
34	Toluene	108-88-3	0.5		
35	Phenol	108-95-2	1.0		
36	2-Methoxyethanol	109-86-4	10.0		
37	Ethylene glycol monoethyl ether	110-80-5	10.0		
38	Triphenyl phosphate (TPP)	115-86-6	50.0		
39	Tris(2-chloroethyl) phosphate (TCEP)	115-96-8	50.0		
40	Di-2-ethylhexyl phthalate (DEHP)	117-81-7	25.0		
41	Di-(2-methoxyethyl) phthalate (DMEP)	117-82-8	25.0		
42	Di-n-octyl phthalate (DnOP)	117-84-0	25.0		
43	Hexachlorobenzene	118-74-1	1.0		
44	3,3’-Dimethylbenzidine and Dyes Metabolized to 3,3’-Dimethylbenzidine	119-93-7	1.0		
45	Ethyl paraben	120-47-8	5.0		
46	1,4-Dioxane	123-91-1	20.0		

No.	Hazardous Substance	CAS Registry Number	PQL (ppm)	Check All That Apply: Intentionally-Added Above PQL	Check All That Apply: Contaminant Present Above 100 ppm
47	Tris (2,3-dibromopropyl) phosphate (TDBPP)	126-73-8	50.0		
48	Tri-n-butyl phosphate (TNBP)	127-18-4	50.0		
49	Tetrachloroethene	127-18-4	0.5		
50	Dipentyl phthalate (DPP)	131-18-0	50.0		
51	Benzophenone-2 (Bp-2)	131-55-5	5.0		
52	4-tert-Octylphenol	140-66-9	10.0		
53	Estragole	140-67-0	10.0		
54	2-Ethylhexanoic acid	149-57-5	5.0		
55	Perfluorooctanoic acid and related substances (PFOA)	335-67-1	0.001		
56	Pentachlorobenzene	608-93-5	1.0		
57	Bisphenol F (BPF)	620-92-8	1.0		
58	C.I. Solvent yellow 14	842-07-9	1.0		
59	N-Methylpyrrolidone	872-50-4	1.0		
60	Tricresyl phosphate (TCP)	1330-78-5	50.0		
61	Decabromodiphenyl ether (BDE-209)	1163-19-5	10.0		
62	Ethylhexyl diphenyl phosphate (EHDPP)	1241-94-7	50.0		
63	Perfluorooctane sulfonic acid and its salts (PFOS)	1763-23-1	0.001		
64	4-Octylphenol	1806-26-4	10.0		
65	2-Ethyl-hexyl-4-methoxycinnamate	5466-77-3	5.0		
66	Mercury and mercury compounds	7439-97-6	0.5		
67	Antimony and Antimony compounds	7440-36-0	1.0		
68	Arsenic and Arsenic compounds, including arsenic trioxide (1327-53-3) and dimethyl arsenic (75-60-5).	7440-38-2	1.0		
69	Cadmium and cadmium compounds	7440-43-9	1.0		
70	Cobalt and cobalt compounds	7440-48-4	1.0		
71	Tris(1-chloro-2-propyl) phosphate (TCPP)	13674-84-5	50.0		

No.	Hazardous Substance	CAS Registry Number	PQL (ppm)	Check All That Apply: Intentionally-Added Above PQL	Check All That Apply: Contaminant Present Above 100 ppm
72	Tris(1,3-dichloro-2-propyl) phosphate (TDCPP)	13674-87-8	50.0		
73	Butylated hydroxyanisole (BHA)	25013-16-5	10.0		
74	Hexabromocyclododecane (HBCD)	25637-99-4	50.0		
75	Bis (2-ethylhexyl) tetrabromophthalate (TBPH)	26040-51-7	50.0		
76	Diisodecyl phthalate (DIDP)	26761-40-0	25.0		
77	Diisononyl phthalate (unbranched) (DINP)	28553-12-0	25.0		
78	Bis(chloromethyl)propane-1,3-diyltetrakis- (2- chloroethyl) bis(phosphate) (V6)	38051-10-4	50.0		
79	Isopropylated triphenyl phosphate (IPTPP)	68937-41-7	50.0		
80	Decabromodiphenyl ethane (DBDPE)	84852-53-9	50.0		
81	Short-chain chlorinated paraffins (SCCP)	85535-84-8	50.0		
82	Chlorinated paraffins	108171-26-2	50.0		
83	2-ethylhexyl-2,3,4,5-tetrabromobenzoate (TBB)	183658-27-7	50.0		
84	Ortho-phthalates	multiple	n/a[14]		
85	Perfluoroalkyl and polyfluoroalkyl substances (PFAS)	multiple	n/a		
86	Formaldehye and formaldehyde releasing agents	50-00-0	n/a		
87	Methylene glycol	463-57-0	n/a		
88	Mercury and mercury compounds	7439-97-6	n/a		
89	Triclosan	3380-34-5	n/a		
90	Lead or lead compounds	7439-92-1	1.0		

[14] Pursuant to OAR 340-090-0940(1)(a), if a practical quantification limit has not been designated for a hazardous substance that has been intentionally added to a covered product, its addition to the product must still be disclosed.