

Foundational Environmental Performance (FEP) Module How to Higg Guide

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Foundational Environmental Performance (FEP) How to Higg Guide

Before Getting Started:

- The Higg FEM How to Higg guide is available online
- You may review the Higg FEM training materials on https://howtohigg.cascale.org/recorded-training-sessions/facility-tools/ and https://howtohigg.cascale.org/verification/fem-verification-program/

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Introduction: What is the Foundational Environmental Performance (FEP)?

The Foundational Environmental Performance (FEP) framework, which forms the basis of the FEP Module within the Higg FEM, establishes the minimum baseline of environmental management practices, legal compliance obligations, and critical environmental risk prevention controls that all facilities across the consumer goods industry are expected to meet. The FEP Module is designed to represent the essential threshold of environmental performance, one that should be in place regardless of a facility's geography, size, customer portfolio, or operational maturity.

The FEP Module is not intended to function as an advanced sustainability achievement marker, nor does it signify environmental leadership. Rather, it defines the point at which a facility can reasonably demonstrate that it has addressed the most fundamental environmental responsibilities required for responsible operation. By articulating these minimum expectations, the FEP Module's question set provides the industry with a common language, replacing historically fragmented interpretations with a shared technical understanding of what constitutes baseline environmental performance.

The Role of FEP in the Higg FEM Ecosystem

The FEP Module complements the Higg Facility Environmental Module (FEM) by enabling companies and their supply chain partners to quickly identify environmental hotspots and opportunities across their extended value chain. It also provides a structured entry point for facilities that are new to the Higg FEM ecosystem, allowing them to build familiarity with the question set and establish baseline performance before transitioning to the full Higg FEM.

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The FEP Module's questions are a defined subset of Higg FEM Level 1 questions. No new questions have been added to this subset of foundational questions. This means that the scope, intent, and verification criteria of FEP questions are fully aligned with the Higg FEM. Facilities completing the FEP Module are engaging with the same rigor and evidence standards as the Higg FEM for those questions.

Eligibility

The FEP Module is only available to new facility accounts and facilities that did not complete the Higg FEM in the previous cadence.

Facilities that have completed a Higg FEM in the immediately previous cycle, or that are in the process of completing the full Higg FEM in the current reporting year, are not eligible to complete the FEP Module.

How the FEP Module Works

The FEP Module operates similarly to the Higg FEM in its workflow:

- A self-assessment must be completed and posted before verification can begin.
- Once posted and shared, a facility's shared account will be able to view the completed module.
- A facility should complete and post only one FEP Module within the same FEM cadence year.

Unlike Higg FEM, the FEP Module does not have a fixed reporting period. It is available year-round and measures performance across the most recent 12-month window at the time of completion. For example, a facility completing the FEP Module in May 2027 would report on the period from May 2026 to April 2027.

Important note: the FEP Module is currently not scored. Facilities do not receive points for completing the FEP Module, and the Higg Index benchmarking feature does not apply to the FEP Module. Cascale will evaluate this approach to determine whether scoring should be introduced in future cadences, in line with the broader evolution of the FEP framework.

How long will it take to complete the FEP Module?

The time required to complete the FEP Module will vary depending on how much of the required data and information has already been collected prior to starting the module. Typically, it will take facilities between 1-2 weeks to complete the full module, accounting for time to have internal discussions and review. It is highly encouraged for facilities to review all the questions within the module before getting started to understand the type of information and data they will need to input into the module.

For step by step guidance on how to start and complete your module on Worldly, please review the Complete a Higg FEM Assessment guide.

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What to Know Before You Get Started

Facilities should be honest and transparent when completing assessments. The FEP Module is NOT a pass/fail assessment, rather a framework that identifies opportunities to improve baseline environmental performance.

If you are unsure about whether your answer qualifies as “Yes,” it is recommended to take a more conservative approach and answer “Partial Yes” or “No,” where applicable. The guidance for each of the questions below will help define how a question should be responded to accurately. When you have selected “Yes” or “Partial Yes” or “No” or “Not Applicable” or “Unknown” to a question, you should provide as much supporting information as possible in the document uploads to provide supporting documentation where applicable.

Please note that many questions in the guide will reference “**suggested uploads**” – these uploads are not required, but are there to give users an idea of the type of documentation that would support a response to the question. These documents will however be checked during module verification.

Verifying Your FEP Module

Verification for the FEP Module follows the same workflow and verification protocol as the Higg FEM. Because all FEP questions are a subset of Higg FEM questions, the verification criteria are identical for those questions. Facilities and verifiers should apply the same evidence standards and documentation expectations as they would for the corresponding questions in the full FEM.

Verification ensures that you accurately completed all parts of the FEP Module – giving your self-assessment the credibility and accuracy required to share it publicly. Verification of the FEP self-assessment is conducted by Cascale-approved Verification Bodies and Verifiers. Additional guidance on verifying your FEP self-assessment can be found here.

Verification is conducted in accordance with the Higg FEM Verification Protocol and the verification criteria provided in this Guide.

Cascale has also published the Verifier Field Guide which is intended to be used together with the Verification Protocol and this How to Higg Guide, to ensure Verifier Bodies and Verifiers have the necessary tools to produce accurate and reliable FEP Verification results.

Facilities are encouraged to review the resources above to obtain a clear understanding of the FEP Module Verification process.

Help

If you have any issues with the Worldly platform or are confused by a question in the assessment, you may contact the Higg Index support team by submitting a form on support.worldly.io.

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Site Information and Permits

General Introduction

The Site Information & Permits section of the FEP Module requires you to complete questions and provide detailed information relating to your facility's location, size, and operations. Your responses to these questions will be used to categorize your facility for comparative analytics.

You will also be asked for information on your facility's permits on this page. The intent of this is to determine your compliance status with relevant environmental permits. Please provide information on any rules or regulations your facility is required to follow such as permits, authorizations, licenses, registrations, certificates, or other compliance documentation your facility is required to follow. Examples of non-permit requirements to include are annual required government reports and required registration of specific chemicals.

Notes:

- The Site Information & Permits section of the FEP Module should be completed first before moving on to any other sections of the module.

Facility Scope

The FEP Module is a facility level assessment that is designed to be completed by a single business entity or manufacturing unit. It is understood that there may be complexities in defining this globally therefore, the following definitions and exceptions apply when determining the facility scope for the completion of a single FEP Module.

- The FEP Module shall cover the entire facility which is defined as all onsite business activities of a legal business entity as defined by the scope of the applicable business license/operating permit in the facility's country of operation. This includes all owned and operated onsite processes, equipment, and areas (e.g., facilities cannot exclude specific operations or facility areas from the FEP Module).

- One (1) FEP Module is required for each legal business entity as defined by the applicable business license/operating permit except in the following circumstance:

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- Where multiple manufacturing units (facilities) are located at the same premises with different business licenses, however the facilities are fully owned and operated by a single legal business entity, one (1) FEP Module can be completed.
    - **Note:** If the separate facilities are not legally owned/operated by a single parent business entity with a valid operating license, which includes ownership of all facilities, separate FEP Modules must be completed for each facility.
- Where a material or component supplier of the facility with a separate business license is located at the same premises and supplies 100% of its materials/services to the facility, its operations can be included in the facility's FEP Module.
    - **Note:** If the material or component supplier provides materials or services to other facilities, it must not be included in the facility's FEP Module scope and would require a separate FEP Module.

- Facilities located at two separate physical locations (i.e., different legal addresses) must complete one (1) FEP Module per location regardless of ownership (e.g., if two facilities are located at different physical locations, but their operations are covered under one (1) parent business license, separate FEP Modules are still required.)

Site Information

Facility Profile Questions Pathway (by Facility Type)
The Site Information section contains questions on facility type, product and material categories, facility processes and industry sector. Your facility's responses to these questions will lead you through a series of predefined selections where you can select the applicable responses.

Note: It is possible for multiple profile pathways to apply if more than one facility type is selected. This means that the facility would need to input information about the product and material category, and facility processes for each selected facility type.

- For example, a vertical integrated facility will select two facility types ("Finished Product Assembler" and "Material Production (Raw and intermediate materials are transformed into their final state before assembly)") and will need to provide information on the products, materials and processes for each facility type.

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Country or Region *(Ref ID - sitecountry)*

Facilities will select the country or region that the facility is located in.

Facility Type *(Ref ID - sipfacilitytype)*

Facilities will first select their facility type(s) from the list of options below. Based on the selected facility type(s) and then additional questions on applicable product categories, materials used, facility processes, and industry sector will apply.

Note: If applicable, more than one facility type should be selected, for example:

- If you are a vertically integrated facility with cut and sew operations as well as wet processing (e.g., dyeing) you would select both “Final Product Assembler” **and** “Finished Product Processing”. OR
- If you are a hardgoods facility that assembles final product and manufactures hard components on site, you would select both “Final Product Assembler” **and** “Component / Sub-Assembly Manufacturing (including Packaging)”

Facility Type Option	Examples
Finished Product Assembler	Finished goods production/ final product assembly (e.g., shirts, pants, footwear) Final product knitting (e.g.,socks, scarfs, caps)
Finished Product Processing (Product Printing, Product Painting, Embroidery & Embellishments, Buffing & Polishing, Moulding etc.)	Printing and painting of products Home Furnishing : Buffing & Polishing, Moulding etc.
Finished Product Processing (Product Dyeing, Product Laundering and Product Finishing)	Dyeing of products, including wet processing, and laundering
Component / Sub-Assembly Manufacturing (including Packaging)	Label, zipper, snap, button, elastic bungee, cardboard, moulds Home Furnishing : Metal Handle Footwear : Uppers, Soles, Laces etc.
Material Production (Raw and intermediate materials are transformed into their final state before assembly)	Fabric dye-house, fabric manufacturer, yarn dyeing, PCB manufacturer, fabric printing Hardgoods: Metal pieces, wooden laminates, metal plating

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Raw Material Processing (Raw Materials are processed into intermediate material products)	Yarn spinning Hardgoods: foundry, metal processing, plastic injection,Wood Planks
Raw Material Collection & Bulk Refining (Materials are collected/extracted/farmed and refined to bulk commodity state)	Cotton farming and ginning, processing of bottles, fabric scrap, etc. into new recycled materials, forestry, mining, crude oil refinery Home Furnishing : Wooden Logs , Metal Sheet rolls.

Product Category *(Ref ID - sipproductcategories)*

This question will be only applicable to facilities that selected the following as their facility type(s):

- Finished Product Assembler, **and/or**
- Finished Product Processing (Product Printing, Product Painting, Embroidery & Embellishments, Buffing & Polishing, Moulding etc.), **and/or**
- Finished Product Processing (Product Dyeing, Product Laundering and Product Finishing)

Facilities will select all of the applicable product categories that they manufacture or process from the list below (e.g., If your facility performs printing or embroidery on apparel products, you should select "Apparel" as a product category).

The “Other” option should **ONLY** be selected if your facility is not manufacturing or processing products that would fall into one of the categories listed below.

Note: For each selected product category, a detailed product list will be available for the facility to select which specific products they manufacture for each selected product category.

- Apparel
- Footwear
- Home Textiles (includes bed linens, tablecloths, towels, cloth napkins, and similar products)
- Accessories (includes handbags, jewellery, belts, and similar products)
- Home Furnishings
- Electronics
- Toys
- Outdoor Sporting Goods - Soft goods (includes tents, backpacks, luggage, harnesses, slings etc. with a textile component)

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- Outdoor Sporting Goods - Hard Goods (includes bikes, coolers, climbing gear, watercraft, and other equipment made of metal, plastic, or wood)
- Packaging
- Other
    - **Note:** If Other is selected, facilities should only input the “other” product categories/products in the applicable sub-questions that are not already listed in the predefined categories above **OR** if specific product types are not available in the pre defined product categories, then add the predefined product category as well as the new/unavailable product type in the sub question.

Material Category *(Ref ID - sipmaterialtype)*

Facilities will select all the applicable type(s) of material categories from the list below based on their facility type.

Note: For specific facility types, a detailed list of materials will be available for the facility to select which materials they use for each selected material category.

- Barriers
- Foams
- Insulation Materials
- Leather
- Metals
- Plastics
- Rubbers
- Synthetic Leathers
- Textiles
- Wood-Biomass Based
- MMCF
- Electronic related material
- Packaging related material
- Fiber (natural and man-made)
- Chemicals
- Metals
- Other

Industry Sector *(Ref ID - sipindustrysector)*

Facilities will select all the applicable industry sectors that the facility makes products or materials for, from the list below.

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Notes:

- Industry sector refers to the industry which the facility manufactures for (e.g., If your facility manufactures or dyes fabric that is used to make apparel, then “Apparel” would be selected for Industry Sector).
- Packaging manufacturers that supply packaging materials to any of the other sectors indicated below, should only select “Packaging” as their industry sector.

    - Apparel
    - Footwear
    - Home Textiles (includes bed linens, tablecloths, towels, cloth napkins, and similar products)
    - Accessories (includes handbags, jewellery, belts, and similar products)
    - Home Furnishings (Non-Textile)
    - Electronics
    - Toys
    - Outdoor Sporting Goods - Soft goods (includes tents, backpacks, luggage, harnesses, slings etc. with a textile component)
    - Outdoor Sporting Goods - Hard Goods (includes bikes, coolers, climbing gear, watercraft, and other equipment made of metal, plastic, or wood)
    - Packaging
    - Other

1. **How many days did your facility operate in this reporting year?** *(Ref ID - sipoperatingdays)*

Enter a total number (not a range) of days that the facility operated in the reporting year. Operating days are considered days when production and/or production related activities (e.g. product/raw material loading/shipment) were conducted at the facility. Any operating day where the number of hours in operation OR the number of workers is less than 50%, then count the day as 0.5 day. Where the number of hours in operation OR the number of workers is greater than 50%, then count the day as 1 day.

For FEP Module Verification, it is recommended that summaries of operating data be available in a format that is easy to review [e.g., spreadsheet (e.g., Microsoft Excel) or similar data analytics program that allows export of data in a human readable format (e.g., Excel, csv)] and any relevant supporting evidence be readily available for review.

2. **Total Number of Employees:** *(Ref ID - siptotalnumemployees)*

Enter the average number (*not* a range) of full-time and temporary employees that worked at the facility in this reporting year. The calculation guidance below applies for both full-time and temporary employees.

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How To Track Facility Data:

Facilities should establish a process to track the number of workers in each pay period (e.g. weekly, bi-weekly, monthly). The average number of employees (full-time or temporary) can then be determined using the following guidance:

1. Add the total number of employees your facility paid in all pay periods during the year.
2. Count the number of pay periods your facility had during the year.
3. Divide the number of employees by the number of pay periods.
4. Round the answer to the next highest whole number to get the annual average number of employees

For example:

- Pay period 1: 520 employees
- Pay period 2: 525 employees
- Pay period 3: 545 employees
- **Average number of employees: 530** [(520+525+545)/3]

Note: The same calculation methodology should be applied for full-time and temporary employees.

For FEP Module Verification, it is recommended that summaries of this data be available in a format that is easy to review [e.g., spreadsheet (e.g., Microsoft Excel) or similar data analytics program that allows export of data in a human readable format (e.g., Excel, csv)] and any relevant supporting evidence be readily available for review.

How This Will Be Verified:

Documentation Required:

- Payroll/accounting records that show the number of each worker category (full-time and temporary) in each pay period.
- Payroll/accounting records that show the number of pay periods in the reporting year.

4. Does your facility operate within an industry zone/park? *(Ref ID - sipfacilityindustrialzone)*

Answer Yes if: Your facility is located inside a designated industry zone/park.

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5. **Does your facility have onsite water treatment (i.e., Incoming water pre-treatment and/or Wastewater treatment)?** *(Ref ID - sipfreshwaterpretreatused)*

Answer Yes if: Your facility performs onsite pre-treatment of incoming water (for domestic or production use) and/or your facility performs onsite treatment of wastewater.

If you answer Yes to this question, you will be asked to select the type of pre-treatment and/or wastewater treatment that your facility performs onsite from the list of treatment options below:

Note: After selecting the applicable treatment options, facilities will also need to select the specific treatment methods/technologies used from a predefined list for each treatment option.

- Select the type of treatment.
    - Incoming Water Pre-Treatment
        - **Note**: If the treatment process is only applied at the point of use (i.e., drinking water fountains), then it should not be considered as incoming water pre-treatment in the FEP Module.
    - Primary/Pre-Treatment
    - Secondary Treatment
    - Tertiary Treatment
    - Advanced treatment / Zero Liquid Discharge (ZLD) / Salt recovery
    - Sludge Treatment

Suggested Uploads:

- Facility's water treatment process flow and/or hydraulic diagrams.

How This Will Be Verified:

Documentation Required:

- Facility's water treatment flow chart and hydraulic diagrams.

Inspection - Things to Physically Look For:

- Observations onsite are consistent with the facility's reported water/wastewater treatment processes.

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Permits

1. **Does your factory site have a current and valid operating license, if required by law?** *(Ref ID - sipvalidoperatinglicense)*

Answer Yes if: Your facility has a current and valid operating license **or** if an operating license is not required by local law.

Answer No if: Your facility's operating license is expired even if your facility is in the process of updating your operating license.

Suggested Uploads:

- A copy of the valid operating license.
- If applicable, evidence that demonstrates an operating license is not required by local law.

What is the intent of the question?

The intent of this question is for facilities to demonstrate that they have the required legal authorization (e.g., license) to operate as a business and are legally authorized to operate all onsite manufacturing processes and business activities.

How This Will Be Verified:

Documentation Required:

- Copy of current and valid operating license, if applicable and any other relevant licenses.

Interview Questions to Ask:

- Who in the facility is responsible for ensuring the operating license is kept up to date?
- What is the procedure for updating the operating license, when required?

Inspection - Things to Physically Look For:

- Name on Operating License matches the business name of the facility.
- Validity of the License that indicates it is not expired, if applicable.

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2. **Does your facility have any unresolved or outstanding government-issued environmental violation records?** *(Ref ID - sipgovenvviolation2018)*

Answer Yes if: Your facility has any unresolved or outstanding government-issued environmental violation records.

Suggested Uploads:

- Copy of the government issues violation notice

What is the intent of the question?

The intent of this question is for facilities to disclose any government-issued environmental violation received in the reporting year.

How This Will Be Verified:

Documentation Required:

- Copy of government-issued violation notice.

Interview Questions to Ask:

- Staff responsible for environmental management can explain why the violation was received.

Inspection - Things to Physically Look For:

- Observations of the noted issues listed on the violation, or any actions completed to correct the violation.
- Online search of available government database(s)/records to identify any violations.

3. **Does your facility currently have any records in the Institute of Public & Environmental Affairs (IPE) database?** *(Ref ID - sipiperecords)*

Notes:

- This question is only applicable to facilities located in China.
- If your facility has not taken sufficient action to have the record removed from the IPE database, it will continue to be identified as having a current record.

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Answer Yes if: Your facility currently has any records on the IPE database.

If you answer Yes to this question, you will be asked the following sub questions:

- If yes, what violation is it? (Select all that apply)
  - Wastewater
  - Air
  - Waste
  - Other
- If yes, has your facility registered on the IPE database?
- If yes, has your facility supplied enterprise feedback to the database and/or taken steps to remove the record(s) from the database?

Suggested Uploads:

- A copy of the IPE database record.
- If applicable, documents of the facility's action and/or enterprise feedback to the database to remove the record.

What is the intent of the question?

The intent of this question is for facilities to disclose any records on the IPE database if applicable, and provide information on actions taken to have the record removed from the database.

Technical Guidance:

The following reference links are provided to assist users in accessing the IPE website, records, and additional information on using the IPE platform.

If your facility is new to the IPE, it is recommended that you visit these informational pages to learn more:

- IPE homepage: https://www.ipe.org.cn/index.html
- Introduction to Data: http://wwwen.ipe.org.cn/InfoDetail/Show.aspx?id=18638&jid=18637&bid=18644&isnb=1
- User Guide: http://wwwen.ipe.org.cn/InfoDetail/Show.aspx?id=18636&jid=18635&bid=18646&isnb=1
- Link to register for a corporate user account (required to search a list of suppliers/save information for export): http://wwwen.ipe.org.cn/User/UserRegister.aspx

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Viewing records database on IPE website and guidance on record removal:

- IPE Records Database (Chinese): http://www.ipe.org.cn/IndustryRecord/Regulatory.aspx
- Record removal guidance document (Chinese) click “监管记录处理方式”: http://www.ipe.org.cn/GreenSupplyChain/SupplyGCA.aspx
- IPE Records Database (English): http://wwwen.ipe.org.cn/IndustryRecord/Regulatory.aspx
- Record removal guidance document (English) click "Approaches to Record Removal": http://wwwen.ipe.org.cn/GreenSupplyChain/SupplyGCA.aspx

Note: If your site has a violation record and would like to supply enterprise feedback to IPE and/or take steps to remove the record from the database, please contact ipe@ipe.org.cn

How This Will Be Verified:

Documentation Required:

- A copy of the IPE database record.
- If applicable, documents of the facility’s action and/or enterprise feedback to the database to remove the record.

Interview Questions to Ask:

- Staff responsible for environmental management can explain why the IPE record(s) were created and the facility’s plans or actions taken to have the record removed.

Inspection - Things to Physically Look For:

- Observations of the noted issues listed in the IPE record, or any actions completed to have the record removed.

4. Please complete the following questions to provide details on your facility’s environmental permits requirements and compliance status. *(Ref ID - sippermits)*

For this question, facilities will be asked to complete a table to provide the following information on all applicable environmental permits.

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- Type of Permit (This list will be pre-populated with a list of environmental aspects which may require permits)
- Is a permit required?
    - If yes, what is your status for this permit?
    - Name of the regulatory agency issuing the permit
    - Is there an expiration date?
    - Please enter expiration date (Month / Year)
    - Please specify the reason why this permit is invalid.
        - Required if "Available but Invalid" or "Not available due to authorization in progress" is selected for permit status.
    - If "Available and valid" is selected, Do you have any outstanding legal notice documenting a non-compliance issue?

Note: The following Guidance should be used to answer the question “Is a Permit Required?”:

- **Yes**: Means, the facility has that environmental impact and a permit is required within that country or jurisdiction
- **No**: Means, the facility has that environmental impact,but a permit is not required within that country or jurisdiction
- **Not Applicable**: Means, the facility does not have that environmental impact as such there is no requirement to obtain a permit
- **Unknown**: Means, the facility has that environmental impact but does not know whether a permit is required within that country or jurisdiction

Suggested Uploads:

- Copies of all up-to-date environmental permits/registrations which are applicable to the facility.
- If applicable, supporting evidence of applications for renewal for any expired permits.

What is the intent of the question?

The intent of this question is for facilities to demonstrate that they have obtained all applicable legally required environmental permits.

Technical Guidance:

Maintenance of all legally required environmental permits is a foundational compliance requirement. Please provide information on any rules or regulations your facility is required to follow such as permits, authorizations, licenses, registrations, certificates, or

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other compliance documentation your facility is required to follow for the following aspects:

- Water use
- Wastewater discharge (Direct/Onsite)
- Wastewater discharge (Indirect/Offsite)
- Wastewater treatment (Direct/Onsite)
- Wastewater treatment (Indirect/Offsite)
- Chemical use and management
- Air emissions for supply unit (point source)
- Air emissions for process (Fugitive source)
- Solid waste discharge
- Integrated Environmental permits (e.g., general environmental discharge permit)
- Other environmental permits
    - **Note**: Environmental Impact Assessments (EIA) conducted during the commissioning of the facility should not be reported in the permits table.
    - Examples of other environmental permits may include:
        - Onsite waste generation, management or storage.
        - Required registration/permits for specific chemicals used. For example: Potassium Permanganate is controlled for purchasing and registration with the police office is required in some jurisdictions. This is not a permit, but registration required by law - therefore it must be included here.

How This Will Be Verified:

Documentation Required:

- Copies of all up-to-date environmental permits/registrations which are applicable to the facility as at the date/year when the verification takes place, as well as any applicable permits/registrations for the reporting year.
- If applicable, supporting evidence of applications for renewal for any expired permits.

Interview Questions to Ask:

- Staff members responsible for environmental compliance and permitting can describe the facility's procedures to ensure all required permits have been obtained and are being maintained and/or updated as required.

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Inspection - Things to Physically Look For:

- Name and address on permits match the facility's business name.
- Observations indicate that the facility is operating in compliance with any permit requirements.

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Environmental Management System (EMS)

General Introduction

An Environmental Management System (EMS) is a holistic strategy and process to identify, track and manage the environmental impacts of your facility over time. While it's possible to make incremental environmental improvements at your facility without a comprehensive plan, your facility can only maximize environmental performance by setting a long-term strategy that will inform decision-making on environmental management.

The Environmental Management System (EMS) section encourages you to:

- Ensure there are dedicated staff responsible for coordinating environmental management activities that have sufficient qualifications and technical knowledge.
- Develop a system to ensure compliance with all laws, regulations, standards, and other requirements.
- Ensure all levels of staff are aware of the facility's environmental strategy and programs and how they can support the program.

Additional details on the intent and criteria for each FEP Module EMS question is provided in the guidance below along with useful technical guidance and resources to support your facility in setting up and implementing an effective environmental management system.

EMS

1. **Are one or more employees at your facility responsible for coordinating your facility's environmental management activities?**
   (Ref ID - emsmgmt)

Answer Yes if: Your facility has any full-time, part-time, seasonal or contract employees that have dedicated responsibilities for coordinating environmental management activities in your facility.

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Suggested Uploads:

- Documentation that supports the environmental management staffing structure at your facility (e.g., organization chart, job descriptions for environmental team members, etc.)

What is the intent of the question?

The intent of this question is for facilities to demonstrate that they have staff dedicated to managing environmental activities at the facility.

Technical Guidance:

Facilities should have clearly defined roles and responsibilities for any staff responsible for coordinating environmental management activities at the facility. These employees must deal directly with environmental management and have defined roles for that purpose. The roles could be either required in their job description or accountabilities or designated by relevant management system documentation. Maintaining an up-to-date environmental management team organizational chart and clear job descriptions can help with defining clear responsibilities and accountabilities.

Resources:

Additional information on internationally recognized environmental management schemes are provided at the links below.

- ISO 14001:2026 Environmental management systems — Requirements with guidance for use https://www.iso.org/standard/14001
- EU Eco-Management and Audit Scheme (EMAS) https://green-business.ec.europa.eu/eco-management-and-audit-scheme-emas_en

How This Will Be Verified:

Documentation Required:

- Documentation that shows the environmental management staffing structure at the facility. This may include:
    - Environmental management team organization chart.
    - Documented job descriptions or accountabilities for environmental staff.
    - Other environmental management system documentation.

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Interview Questions to Ask:

- Staff responsible for environmental management at the facility can explain the facility's environmental management and accountability structure.
- Key staff responsible for coordinating environmental management activities understand and can explain their roles and responsibilities.

Inspection – Things to Physically Look For:

- Observations onsite indicate that the environment management activities reported by the facility are being implemented and managed in accordance with the facilities procedures and team structure.

3. Does your facility have a company environmental policy? *(Ref ID - emsenvpolicy)*

Answer Yes if: Your facility has a documented environmental policy that is aligned with your organization's long-term environmental management strategy and is approved by top management.

Suggested Uploads:

- A copy of the facility's environmental policy.
- Other relevant supporting documentation that demonstrates the policy is integrated with the company's environmental strategy (e.g., environmental objects and targets, employee and stakeholder communications related to the policy etc.)

What is the intent of the question?

The intent of this question is for facilities to demonstrate that they have clear environmental policy that outlines commitment to reducing its environmental impacts.

Technical Guidance:

An environmental policy demonstrates an organization's commitment to reducing its environmental impacts. Establishing a clear environmental policy provides a framework for a facility to establish and monitor its environmental programs and communicate its commitments to all internal and external stakeholders.

An environmental policy, as defined by ISO 14001 an Environmental Management Systems certification scheme, is a policy that should:

- Be appropriate to the organisation.

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- Include a commitment for continual improvement.
- Include a commitment to comply with relevant legal and other requirements.
- Provide the framework for setting and reviewing environmental objectives and targets.

In general, there is no required format or content for an environmental policy, however it is important to consider key aspects that address environmental problems and outline your organization's culture around these. The following list provides some examples of aspects that may be included in the policy:

- Describing the importance of environmental issues to the company.
- Your organisation’s environmental objectives and goals (e.g., reduction of resource and material consumption, climate protection, reducing waste, etc).
    - It is important that all objectives and goals be supported by performance indicators that allow your organization to demonstrate commitments to the policy, continual improvement, and environmental performance.
- How your organization raises environmental awareness, encourages participation, and trains staff on environmental matters.
- How your organization assesses the environmental impact of operations and supply chains.
- How your organization applies similar environmental expectations for suppliers and contractors.
- How your organization communicates environmental goals and objectives to internal and external stakeholders.

Resources:

- ZDHC Supplier's Roadmap to Zero: https://programme.roadmaptozero.com/suppliers

How This Will Be Verified:

Documentation Required:

- A documented environmental policy that is approved (signed) by top management.
- Other supporting documentation that demonstrates the policy aligns with the facility’s environmental management strategy and goals. This may include:
    - Details on the facility’s environmental objectives, targets, KPIs and how these are monitored in relation to the policy.
    - Records or evidence of stakeholder communications and/or training on the policy

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Interview Questions to Ask:

- Staff responsible for environmental management at the facility, including top management, and employees are aware of the facilities policy and can describe the facility's efforts to meet its stated objectives.

Inspection - Things to Physically Look For:

- Observations onsite are consistent with the facility's environmental policy (i.e., the policy is relevant to the facility operations and environmental impacts)
- Posting of the environmental policy at the site or other forms of communication to staff.

5. Does your facility have a mechanism in place to regularly review and monitor environmental permit status and renewal (where appropriate) and ensure compliance? *(Ref ID - emspermitstatus)*

Answer Yes if: Your facility has established procedures and defined responsibilities to regularly review environmental permitting requirements, monitor current permit requirements, and renew environmental permits to ensure compliance.

Suggested Uploads:

- Documentation that supports the facility's procedures to review and monitor environmental permit status, and renew permits to ensure you are meeting the legal requirement (e.g., documented permit monitoring procedure, related job descriptions or duties, list of required permits, calendar of permit activities/renewal requirements, etc.)

What is the intent of the question?

The intent of this question is to ensure facilities have established procedures to monitor and maintain compliance with environmental permits.

Technical Guidance:

Maintaining compliance with applicable environmental laws and regulations is a fundamental business practice. Facilities should have established procedures and defined responsibilities to ensure permit requirements are well understood and that compliance is maintained.

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Environmental permits often require facilities to take action to ensure the facility is operating in compliance with permit requirements which may include:

- Environmental testing or reporting
- Renewing permits that have expirations dates.
- Updating/re-applying for permits based on changes in facility operations or changes to relevant laws and regulations.

For this question in the FEP Module, having a mechanism in place means that the facility has processes in place to ensure staff are responsible for, and following established practices to review, monitor and renew environmental permits on a defined schedule. This schedule should be defined based on the organizational structure of the facility's environmental team and the applicable environmental permitting requirements.

Resources:

- Example permit inventory and tracking template: https://howtohigg.org/resources/resources-library/#templates

How This Will Be Verified:

Documentation Required:

- Supporting documentation that shows the facility has procedures to review and monitor environmental permit status and renew permits to ensure you are meeting the legal requirement. This may include:
    - Copies of all applicable environmental permits with applicable compliance requirements
    - Documented permit monitoring procedures
    - Job descriptions or list of responsibilities for relevant staff
    - List of required permits with calendar of permit activities/renewal requirements (e.g., a permit tracking document with defined actions to maintain compliance)
    - Corrective Action plans (if applicable)

Note: The supporting documentation noted above may be included in various documents, however collectively they must demonstrate that the facility has a mechanism to review, monitor, and renew environmental permits to ensure compliance.

Interview Questions to Ask:

- Staff responsible for environmental management are able to describe the facility's processes for ensuring permit requirements are being complied with.

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- Key staff involved in permit monitoring and renewal processes are able to describe their role and responsibilities for ensuring compliance with all environmental permits.

Inspection - Things to Physically Look For:

- Observations onsite confirm the applicable environmental permitting requirements are being complied with (e.g., scope of facility operations, environmental impacts or discharges that require permits, etc.)

7. Does your facility provide training to employees on environmental awareness and company environmental management strategy? *(Ref ID - emstraining)*

Answer Yes if: Your facility has provided training on environmental awareness and the facility's environmental strategy to all employees.

Notes:

- The intent of this question is that all employees at minimum have received training on environmental awareness and company environmental management strategy. Training does not need to be provided annually for each individual employee, however facilities are encouraged to provide refresher training at regular intervals as part of their on-going environmental training program (e.g., every 2-3 years) or if there are any significant changes in the facility's environmental strategy.
- Different levels of training may be provided based on employees' position and/or responsibilities, however training must have been provided to all employees to answer Yes to this question.

Suggested Uploads:

- Documentation that demonstrates the facility has conducted training for all employees (e.g., Training plan, training records, training material used for environmental training, post-training evaluation procedures and/or records)

What is the intent of the question?

The intent of this question is for facilities to demonstrate that environmental training has been provided to all employees.

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Technical Guidance:

It is important that all levels of employees are aware of the facility's environmental programs and strategy and general environmental impacts and protection (e.g. environmental laws, energy and water conservation, waste and chemicals management, impacts of wastewater, air emissions, and climate change, etc.).

Facilities should have formal documented training processes to ensure awareness and knowledge is shared with all employees. An environmental training program can provide employees with information about the specific actions they can take to reduce the facility's environmental impacts and help to promote a culture of environmental responsibility, leading to greater employee engagement and commitment to sustainability goals.

Employees may require different levels of trainings that are appropriate for their position or responsibilities. For example, general workers may only require awareness training on existing company environmental practices and goals, while management personnel may require more detailed training on environmental management systems or strategy as it relates to their responsibilities.

Having procedures to collect information to evaluate the effectiveness of training programs (e.g. trainee feedback questionnaires or test, observation or reviews of trainer performance, etc) will help facilities ensure the effectiveness of environmental trainings and knowledge retention.

How This Will Be Verified:

Documentation Required:

- Documentation that shows the facility has provided environmental training for all employees. This may include:
    - Training plan that identifies training schedule(s) and type of training for all levels of employees.
- Training attendance records
- Training material used for environmental training
- Training evaluation procedures and/or records

Interview Questions to Ask:

- Staff responsible for the facility's environmental training program can explain how trainings are provided and if applicable, how the effectiveness of training is evaluated.

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- Employees who have received the trainings are aware of the content of the training and the facility's environmental programs and their roles in supporting the program.

Inspection - Things to Physically Look For:

- Supporting evidence of the facility's environmental training program (e.g., awareness posters, informational postings related to the facility's environmental programs and strategy, if available)

8. Does your facility have documented procedures to enable employees to report on environmental incidents? *(Ref ID - emsreportretaliation)*

Answer Yes if: Your facility has a documented procedure that enables workers to report environmental incidents or issues and all employees have been trained on the procedures to report.

Note: If your facility has a general grievance/worker feedback procedure, but it does not specifically outline procedures to report on environmental incidents/issues, **or** employees have not been trained on the environmental reporting procedure you should select No for this question.

Suggested Uploads:

- Documentation of procedures in place to enable workers to report environmental incidents or issues (e.g., reporting procedure, employee training, examples of reporting templates or previous reports submitted by employees, etc.)

What is the intent of the question?

The intent of this question is to demonstrate that facilities have established a proper channel for workers to report for environmental incidents or issues and that employees have been trained on the reporting procedure.

Technical Guidance:

As part of an effective environmental management program, it should be every employees' obligation to report suspected or actual violations of regulation or environmental incidents. Facilities should establish clear reporting channels and procedures to facilitate and encourage employees to report environmental incidents or issues. This is critical to prevent facilities from not reporting any violations and/or delaying the necessary actions to reduce environmental contamination.

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Procedures should include:

- A clear description of the steps for reporting environmental incidents or issues based on the nature of the incident or issue to both internal and external parties (e.g., the facility's environmental management, local environmental bureau)
- Identify the responsible contacts or departments (internally and externally) who the report should be submitted to.
- Include details on how reports will be managed or escalated by the facility's environmental management team)
- Include guarantees that there will be no punished or retaliated against for reporting truthful information to law enforcement.

How This Will Be Verified:

Documentation Required:

- Documentation that shows the facility has procedures in place to enable workers to report environmental incidents or issues. This may include:
  - Environmental incident or issues reporting procedure.
  - Employee training attendance records and/or training material.
  - List of contacts (internally and externally) who incidents should be reported to.
  - Examples of reporting templates or previous reports submitted by employees.

Interview Questions to Ask:

- Staff responsible for environmental management are able to describe the facility's reporting procedures and how employees are trained on the procedures.
- Employees are aware of the procedures and how they can report environmental incidents or issues.

Inspection - Things to Physically Look For:

- Onsite observations confirm procedures to report environmental incidents or issues are available to workers (e.g., posting of reporting procedures and/or contacts, etc.)

10. Can you please confirm there is no soil and/or groundwater contamination in your facility? *(Ref ID - emscontamination)*

Answer Yes if: Your facility has confirmed there has been no soil/ groundwater contamination at your facility. This means that there have not been any spills or leaks of

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hazardous materials at the facility that resulted in soil and/or groundwater contamination.

Answer Partial Yes if: If there has been one (1) or more spill that caused contamination of soil and/or groundwater at the facility, but you have fully remediated, or the facility is in the process of remediating the contamination and has an established remediation plan that includes details of the specific actions, responsibilities, investment, and timeline for remediation activities.

Notes:

- If your facility currently has soil and/or groundwater contamination onsite and have not begun remediation, you should answer No to this question.
- Hazardous Material is defined as any material that could cause harm to public health and/or the environment because of its chemical, physical, or biological characteristics (e.g., it is flammable, explosive, toxic, radioactive, infectious, etc.). Hazardous material can be liquids, solids, gases, or sludge, and it could be a waste, resource or a raw material.

Suggested Uploads:

- Documentation that demonstrates your facility has not caused soil and/or groundwater contamination at your facility site (e.g., soil and/or groundwater investigation reports, current environmental impact assessment, etc.).
- Where applicable, documentation of remediation activities to address any soil and/or groundwater contamination (e.g., records of spills response/clean-up activities or procedures, remediation action plans, post clean up investigations that show contamination soil and/or groundwater was remediated, etc.).

What is the intent of the question?

The intent of this question is for facilities to demonstrate that their operations have not resulted in contamination of soil and/or groundwater, or if contamination has occurred, that this has been remediated.

Technical Guidance:

Soil or groundwater contamination refers to the presence of hazardous substances in the soil or groundwater at levels that can have negative impacts on human health and/or the surrounding environment.

Contamination can occur as a result of various activities associated with manufacturing operations including spills of hazardous materials, leaks from hazardous materials storage tanks or areas, improper waste disposal or storage. When hazardous substances enter the soil or groundwater, they can persist for years, potentially leach

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into nearby waterways which can pose health risks to humans and the environment. Having procedures to prevent and remediate contamination will help facilities reduce potential environmental impacts and compliance risks.

Additionally, facilities should have procedures to monitor risk of contamination through internal audits / walkthroughs to check for indications of soil/groundwater contamination from its operations.

If contamination is identified, the facility should establish appropriate action plans to remediate the contamination. This may include:

- Initial containment activities to prevent or reduce the spread of contamination.
- Soil/groundwater investigation to determine the extent and severity of the contamination.
- Specific actions required to remove and/or clean up contaminated soil and/or groundwater.
- Post remediation investigation to confirm the contamination was remediated.

How This Will Be Verified:

Documentation Required:

- Documentation that demonstrates the facility has not caused soil and/or groundwater contamination at the facility site. This may include:
    - Soil and/or groundwater investigation reports.
    - Environmental impact assessment indicating that the facility's operations did not contaminate groundwater / soil.
    - Document procedures or records of internal audits, walkthroughs to monitor risks of contamination.
- Where applicable, documentation of remediation activities taken to remediate soil and/or groundwater contamination. This may include:
    - Records of spills response/clean-up activities or procedures.
    - Remediation action plan that includes details on the specific actions and timeline for remediation activities.
    - Post clean up investigations/reports that show contamination soil and/or groundwater has been remediated.

Interview Questions to Ask:

- Staff responsible for environmental management at the facility are able to explain the facility's procedures and action taken to confirm no soil and/or groundwater contamination has occurred and how this is monitored.
- Staff responsible for any soil/groundwater remediation are able to explain the actions taken by the facility to remediate the contamination.

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Inspection - Things to Physically Look For:

- Onsite observations indicate that there is no contamination of soil and/or groundwater occurring (e.g., no observed spills or leaks of hazardous materials or direct discharge of wastewater to the environment, no evidence of improper waste disposal, etc.)
- Indication that any contamination has been appropriately remediated.

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Energy & GHG

General Introduction

Energy production and energy use are the largest man-made sources of air pollution and greenhouse-gas (GHG) emissions. The operational, environmental, and financial impacts of energy are key issues for facility operations. Driving energy efficiency and use of renewable energy throughout facility operations is an important area of focus for all factories.

As climate change emerges as the most severe human, environmental, and economic risk in the world, more stringent requirements and regulations may be imposed by governments. If your facility reduces your energy consumption and greenhouse gas emissions, it will help to reduce your exposure to regulatory risks or new requirements from brands. This may also create an economic advantage for your company by mitigating risk of fossil fuel and energy cost increase.

In general, the FEP Energy and GHG section encourages you to:

- Identify and understand the types of energy used at your facility.
- Understand what operations and processes at your facility use the most energy.

Additional details on the intent and criteria for each FEP Module Energy and GHG question is provided in the guidance below along with useful technical guidance and resources to support your facility in the management of energy and GHG.

Energy Use in Your Factory

Energy is used throughout manufacturing facilities for various operational and production activities. The FEP Module requires that facilities track energy use data for the energy sources listed below, which are grouped into three categories (Purchased, Renewable, and Non-Renewable Energy).

Purchased Energy	Renewable Energy	Non-Renewable Energy
• Purchased Electricity • Purchased Steam	• Biodiesel • Biogas • Geothermal • Hydro	• CNG - Compressed Natural Gas • Coal - commercial mix (1) • Coal Water Slurry (2)

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● Purchased Chilled Water ● Purchased Heating (District Heating)	● Mini or Micro-Hydro (onsite) ● Purchased Renewables ● Solar Photovoltaic (electricity)(onsite) ● Solar Thermal (onsite) ● Wind (onsite)	● Diesel ● Fabric Waste ● Fuel Oil - Blended (3) ● LNG - Liquid Natural Gas ● LPG - Liquid Petroleum Gas ● Natural Gas ● Petrol/ Gasoline ● Liquid Propane
Biomass		
● Biomass – Sustainably sourced with certification. (4) ● Biomass - Without sustainably sourced biomass certification. (5)		

Notes:

(1) Coal - commercial mix includes all types of traditional coal (e.g., anthracite, bituminous, etc.)
- Petroleum coke should be reported under coal in the FEP. This is because, on an energy basis (e.g., MJ or mmBTU), pet coke and coal are very similar, with pet coke having a slightly higher emission factor.

(2) Coal Water Slurry is a combustible mixture of fine coal particles suspended in water used as fuel source.

(3) Fuel Oil - Blended includes all types of fuel oils (e.g., furnace oil, bunker fuel, kerosene etc.)

(4) Biomass – Sustainably sourced with certification is any biomass that has supporting certification documentation from a sustainably sourced biomass program (e.g., Forest Stewardship Council (FSC), Programme for the Endorsement of Forest Certification (PEFC), ISCC Biomass Certification, Sustainable Biomass Program (SBP) Certification, Better Biomass Certification, Country Specific Certification, etc.)

(5) Biomass - Without sustainably sourced biomass certification is any biomass that is not certified through a sustainably sourced biomass program.

Domestic and Production Energy Use

The FEP Module energy use is categorized as domestic or production energy use which are defined as follows:

Domestic Energy Use - Energy that is consumed in non-production related areas and/or buildings such as employee washrooms, domestic only wastewater treatment plant, or office areas separated from production, canteen and kitchen, security posts, external lighting (e.g. roadway or landscape lighting), medical center, etc.

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Production Energy Use - Energy that is directly or indirectly consumed in production related activities or production areas such as production equipment operations, onsite energy generations for production (e.g. steam or electricity), industrial wastewater treatment plant, production area lighting, heating, ventilation and cooling, etc.

Note: If industrial and domestic wastewater are treated together, energy use of the combined wastewater treatment plant should be included in production energy use.

Greenhouse Gas (GHG) Emissions in the FEP Module

Greenhouse gases (GHGs) are gases in the Earth's atmosphere that absorb/trap some of the Earth's outgoing radiation, maintaining the earth's temperature (called the 'greenhouse effect'). Anthropogenic GHGs, or GHGs emitted due to human activity, are causing the planet to warm faster than natural climatic variations, and this is called global warming or climate change. Energy generation and use, transportation, use of refrigeration gases, and other activities produce greenhouse gas emissions that harm the environment. Reference IPCC: www.ipcc.ch

GHG emissions are categorized into 3 different scopes:

- **Scope 1 Emissions:** Direct emissions from owned or controlled sources.
- **Scope 2 Emissions:** Indirect emissions from the generation of purchased energy consumed.
- **Scope 3 Emissions:** All other indirect emissions that occur in a company's value chain.

Applicability Questions

The following applicability question will only apply to facilities that have selected "Finished Product Assembler" AND "Finished Product Processing" as the only two facility types in the Site Info Section of the FEP Module.

1. Is your facility able to separately report energy consumption by each facility type?

- Yes
- No

Answer Yes If: Your facility tracks energy consumption separately for each different facility type selected in the Site Info Section of the FEP Module.

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Energy & GHG

1. **Select all sources of energy for your facility (exclude sources used for company owned and controlled vehicles). Select all that apply:**
   (Ref ID - ensourcefacility)

Purchased Energy

- Purchased Electricity
- Purchased Steam
- Purchased Chilled Water
- Purchased Heating (District Heating)

Renewable Energy

- Biodiesel
- Biogas
- Mini or Micro-Hydro (onsite)
- Purchased Renewables
- Solar Photovoltaic (electricity) (onsite)
- Solar Thermal (onsite)
- Wind (onsite)

Note: If the facility does not own the solar/renewable electricity generating system that is within the facility boundary, and purchases this renewable energy directly from the owner/operator of the system, this must be classified as Purchased Renewables.

Non-Renewable Energy

- CNG - Compressed Natural Gas
- Coal - commercial mix
- Coal Water Slurry
- Diesel
- Fabric Waste (e.g. Scrap or unused fabric from the facility or an external source that is suitable for energy generation (e.g. incineration))
- Fuel Oil - Blended
- LNG - Liquid Natural Gas
- LPG - Liquid Petroleum Gas
- Natural Gas
- Petrol/Gasoline
- Liquid Propane

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Biomass

- Biomass - Sustainably Sourced with certification.
- Biomass - Without sustainably sourced biomass certification.

Notes:

- Facilities with on-site boilers, regardless of third-party management, must report them as on-site boilers in the FEP Module. The fuel used in the onsite boiler must be selected as an energy source and the fuel consumption (if tracked) should be reported in the applicable questions.
- If your facility is using an energy source that is not listed in the FEP Module (e.g. compressed air from an external source), you should select and report the type and quantity of energy used to generate this source of energy.
    - Note that this will likely require the supplier of the energy to provide you with supporting documentation that demonstrates how this energy is being generated.
    - For example, if the facility is purchasing compressed air from an external source that is generated using purchased electricity, the facility should include this electricity in their reported purchased electricity total.
    - If the energy used to generate this undefined energy source is Mini or Micro-Hydro, Solar Photovoltaic (electricity), Solar Thermal or Wind then report it only under purchased renewables.

After selecting your energy sources, you will be asked the following sub question to provide additional details on your energy sources:

- **Does your facility know the energy source (energy mix) used to generate your purchased steam?** *(Ref ID - ensteammix)*

  Note: If you do not know the specific energy source (energy mix) used to generate your purchased steam, you should select "No" to this question.
    - If Yes, please select the energy sources.

What is the intent of the question?

The intent of this question is to ensure facilities have identified and understand important characteristics of all energy sources used at the facility.

Technical Guidance:

Understanding all of your facility's energy sources is an important first step in energy management that will support identifying and tracking what energy is being used, where it is being used, and how much is being used.

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In the FEP Module for this question, facilities are required to select all energy sources used within the site's physical boundary and operations under your business control (owned, operated, or directly leased).

How This Will Be Verified:

Documentation Required:

- List of all energy sources used at the facility and any supporting documentation that may include:
    - Energy purchasing and/or use records (e.g., invoices, metering records)
    - Documentation that supports responses to the sub question on energy source characteristics. This may include:
        - Purchased steam temperature and pressure data.

Interview Questions to Ask:

- Staff responsible for managing energy understand the facility's energy sources and any supporting energy source characteristics reported in the sub question (e.g., purchased steam temperature and pressure, etc.)

Inspection - Things to Physically Look For:

- Observations onsite are consistent with the facility's reported energy sources (i.e., the reported sources are observed to be in use at the facility)

5. Does your facility track any of its energy use? (excluding energy used for company owned and controlled vehicles) *(Ref ID - ensourcetrackopt)*

Answer Yes if: Your facility tracks the quantity of energy used for one (1) or more of your energy sources (excluding energy used for company owned and controlled vehicles).

Answer No if: Your facility did not track energy use from one (1) or more of your energy sources in the reporting year.

If you answer Yes to this question, you will be asked the following question.

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6. **Does your facility track energy use from each energy source your facility utilizes?** *(Ref ID - ensourcetrackopteach)*

Answer Yes if: Your facility tracks the quantity of energy used from all sources at your facility**.**

Answer Partial Yes if: Your facility tracks the quantity of energy used from least one (1) but not all sources at your facility**.**

Suggested Uploads:

- Documentation that demonstrates the facility has identified and is tracking energy consumption for all applicable energy sources. (e.g., an inventory and/or tracking records for energy sources, samples of energy purchase invoices or metering records etc.)

  Note: Uploading of all utility bills is not required, however they should be available for review at the time of verification.

What is the intent of the question?

The intent of this question is for facilities to demonstrate that they have identified and track energy use from all energy sources.

Technical Guidance:

Measurement of energy use from all sources is the foundation of energy management and the overall sustainability program for a company. Measurement of all energy sources allows you to identify areas of significant energy use, detect any abnormal consumption, establish energy reduction targets, and calculate GHG emissions.

When establishing your energy tracking and reporting program, start by doing the following:

- Map out business and operational processes to identify sources of energy use.
  - **Note:** Energy consumed by facilities or tenants on-site that are NOT owned or controlled by your facility should be excluded.
- Establish procedures to collect and track energy use data:
  - Use utility bills to determine the quantity of purchased electricity, steam, and other sources where applicable.
  - Track other fuels used for onsite energy generation such as diesel in generators and coal in boilers owned or controlled by the facility.

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    - Install sub-meters to track the amount of renewable energy generated if renewable energy is generated in-house.
    - If estimation techniques are used to determine energy use, the calculation methodology should be clearly defined and be supported by verifiable data.
- Record tracking data (e.g., daily, weekly, monthly consumption records) in a format that is easy to review [e.g., spreadsheet (e.g., Microsoft Excel) or similar data analytics program that allows export of data in a human readable format (e.g., Excel, csv)] and maintain relevant supporting evidence for review during verification.

Documentation Required:

- Documentation that supports the energy use data which may include:
    - Energy consumption records (e.g., utility bills, metering records, etc)
        - **Note:** Annual consumption records compiled in a spreadsheet (e.g., Excel) is ok if detailed consumption records are available for review.
    - Energy meter calibration records where applicable (e.g., as per manufacturer's specifications)
    - Documented estimation methodologies if applicable.

Interview Questions to Ask:

- Staff responsible for managing energy are able to explain the facility's energy tracking program (e.g., how energy sources are identified, and energy quantities are tracked).
- Key staff should understand:
    - The procedures in place for tracking energy use.
    - How data quality of the energy use tracking program is maintained.
    - Any estimation methodologies used to calculate annual energy use.

Inspection - Things to Physically Look For:

- All energy sources observed are properly identified and tracked.
- Appropriate equipment for energy use measurement (e.g., meters) if applicable.

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Water

General Introduction

There is a finite amount of water on Earth. The increase in global demand for water not only creates a risk for your business but creates a risk for your community and planet on a broader scale. The operational, environmental, and financial impacts of water use are key issues for facility operations. Driving efficient water use and reductions throughout facility operations is an important area of focus for all factories.

In general, the FEP Module Water section encourages you to:

- Identify and understand all water sources and uses at the facility.
- Understand what operations and processes at your facility use the most water.
- Track the quantity of water consumption at your facility.

Additional details on the intent and criteria for each FEP Module Water question is provided in the guidance below along with useful technical guidance and resources to support your facility in the management of water usage.

Water Use at Your Facility

In the FEP Module, water use is categorized as either used for production or domestic purposes as defined below:

- **Water used for Production:** Water used in manufacturing processes or operations used to make goods (e.g., dyeing or rinse water, steam generation, water used in mixtures applied to the product, cleaning of equipment components or tools that contact the product during the manufacturing process, etc.)

- **Water used for Domestic Purposes:** Water used for washrooms, sanitation, drinking, food preparation, landscape irrigation, non-contact cooling etc.

The FEP requires facilities to select the sources of water used at their facility. The FEP Module includes a list of predefined sources that can be selected. The table below provides a description of the available water source options in the FEP Module. These are categorized blue and grey water sources.

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Water Source	Description
<u>Blue Water Sources</u> Blue water is fresh surface and groundwater, in other words, the water in freshwater lakes, rivers and aquifers	
Surface Water	Water that is naturally occurring on the Earth's surface (ice sheets, ice caps, glaciers, icebergs, ponds, lakes, rivers / streams, wetlands, bogs, etc.) Surface water has a low concentration of dissolved solids, is of an acceptable quality, and/or requires minimal treatment to be used for domestic, municipal, or agricultural applications.
Groundwater	Water in soil beneath the soil surface, usually under conditions where the pressure in the water is greater than the atmospheric pressure, and the soil voids are substantially filled with the water. Non-renewable groundwater is generally located at deeper depths and cannot be replenished easily or is replenished over very long periods of time. They are sometimes referred to as “fossil” groundwater sources.
Municipal Blue Water	Water provided by a municipality or other public or private provider that is generated by blue water. This includes blue water provided by an industrial park or other private provider.
Municipal Water (Origin Unknown)	Water provided by a municipality or other public or private provider with unknown origin (e.g., blue, or grey water). This includes water of unknown origin provided by an industrial park or other private provider.
Brackish surface water/seawater	Water in which the concentration of salts is relatively high (over 10,000 mg/l). For comparison, seawater has a typical concentration of salts above 35,000 mg/l. Brackish water is saltier than fresh water, but not as salty as seawater. It may result from mixing of seawater with freshwater, as in estuaries, but also certain human activities can produce brackish water. Brackish water is hostile to the growth of most terrestrial plant species.
Condensate from External Steam Source	Water that is generated from the condensate of steam sources that are not located at the facility.

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Rainwater	Water in the form of precipitation (e.g., rain, snow) that is harvested within the facility either from the roof or other surfaces and stored for use.
Grey Water Sources Grey water is water that has been polluted by human activity (e.g., industrial, or domestic sources)	
Municipal Grey Water	Water provided by a municipality or other public provider that is generated by grey water.
Recycled Water	Wastewater that has been treated using physical, chemical, and/or any additional treatment processes to meet a quality which allows the water to be used again in a process or for domestic purposes. For example, wastewater that has gone through a membrane filtration process and used back in the industrial operation is considered recycled water. This does not include water cycled in operations such as cooling towers and non-contact heat exchange operations.
Reuse Water	Wastewater discharged from one process that is used directly in another process without treatment. This does not include water cycled in operations such as cooling towers and non-contact heat exchange operations.
Treated Wastewater from External Source	Wastewater that has been discharged and treated by an external source (e.g., other manufacturing facility) using physical, chemical, and/or any additional treatment processes to meet a quality which allows the water to be used again in a process.
Untreated Wastewater from External Sources (treated internally)	Wastewater that has been discharged by an external source (e.g., other manufacturing facility) and treated at your facility using physical, chemical, and/or any additional treatment processes to meet a quality which allows the water to be used again in a process.

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Water Use

1. **Select all water sources used by your facility:** *(Ref ID - watsource)*

- Water Source Category
  - Blue Water
    - Surface Water
    - Groundwater
    - Municipal Blue Water
    - Municipal Water (Origin Unknown)
    - Brackish surface water/seawater
    - Condensate from External Steam Source
    - Rainwater
  - Grey Water
    - Municipal Grey Water
    - Recycled Water
    - Reuse Water
    - Treated Wastewater from External Source
    - Untreated Wastewater from External Sources (treated internally)

Note: For information on the definitions of the above water sources, please refer to the Introduction Section of the water guidance.

After selection your water sources, you will be asked the following series of questions to provide additional details on your water sources and consumption tracking:

2. **Does your facility track any of its water use?** *(Ref ID - watsourcetrackopt)*

   - Yes
   - No

Answer Yes If: Your facility tracks water use from one (1) or more of its water sources.

Note: If you answer No to this question, no further questions will be asked.

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3. **Does your facility track the consumption of water from all of the sources it utilizes?** *(Ref ID - watsourcetrackoptall)*

    - Yes
    - Partial Yes
    - No

Answer Yes If: Your facility tracks water use from **all** water sources used.

Answer Partial Yes If: Your facility tracks water use from one (1) or more, but not all of its water sources.

Note: If you answer No to this question, this means that you do not track water use for any sources and the answer to the previous question should also be No. In this case, no further questions will be asked.

Suggested Uploads:

- Documentation that demonstrates the facility has identified water sources and is tracking water consumption for applicable water sources. (e.g., an inventory and/or tracking records for water sources, samples of water purchase invoices or metering records, etc.)

Note: Uploading of all utility bills and/or metering records is not required, however they should be available for review at the time of verification.

What is the intent of these questions?

The intent of these questions is to help facilities understand the sources of the water they are using, and the quantity of water used from each source.

Technical Guidance:

Identifying and measuring water use from all sources is the foundation of a water management program and the overall sustainability program for a company. Measurement of all water sources allows you to identify areas of significant water use, detect any abnormal consumption, and establish water use baselines and reduction targets. Additionally, tracking domestic and production water use separately can help facilities further identify specific areas for improvement and conservation efforts.

When establishing your water tracking and reporting program, start by doing the following:

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- Mapping out business and operational processes to identify water sources, areas/processes that consume water.
- Establish procedures to collect and track water use data:
    - Use utility bills to determine the quantity of purchased water.
    - Determine methods to track water consumption from other applicable sources, such as rainwater, recycled water, etc.
    - Install sub-meters to track the amount of water used on-site.
    - If estimation techniques are used to determine water use, the calculation methodology should be clearly defined and be supported by verifiable data.
    - Take inventory of how the site obtains water and gathers information on where the water comes from and who or what supplies the water.
- Record tracking data (e.g., daily, weekly, monthly consumption records) in a format that is easy to review [e.g., spreadsheet (e.g., Microsoft Excel) or similar data analytics program that allows export of data in a readable format (e.g., Excel, csv)] and maintain relevant supporting evidence for review during verification.

How This Will Be Verified:

When verifying a facility's water sources, Verifiers **must** review all aspects of the facility's water tracking program that could produce inaccuracies including:

- The initial data collection processes and data sources (e.g., invoices, on-site meters, metering logs, etc.); and
- The process and tools used to aggregate the data (e.g., spreadsheet calculations, unit conversions, etc.)

Documentation Required:

- Documentation that supports the water source and water use data which may include:
    - List of all water sources used at the facility.
    - Water consumption records (e.g., utility bills, metering records, etc)
        - **Note:** Annual consumption records compiled in a spreadsheet (e.g., Excel) is ok if detailed consumption records are available for review.
    - Water meter calibration records where applicable (e.g., as per manufacturer's specifications)
    - Documented estimation methodologies if applicable.

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Interview Questions to Ask:

- Staff responsible for managing water can explain the facility's water tracking program (e.g., how water sources are identified, and water use quantities are tracked).
- Key staff should understand:
    - The procedures in place for tracking water use.
    - How data quality of the water use tracking program is maintained.
    - Any estimation methodologies used to calculate annual water use.

Inspection - Things to Physically Look For:

- All water sources observed are properly identified and tracked.
- Appropriate equipment for water use measurement is present (e.g., meters) if applicable.

6. Are there any Legally Mandated Groundwater Abstraction Restrictions in your country? *(Ref ID - watgroundlegalreq)*

Answer Yes if: There are legally mandated groundwater abstraction restrictions in the facility's country or jurisdiction of operation that apply to your facility (e.g., limits on the amount of water that can be extracted).

Answer Unknown if: You cannot confirm the presence or absence of legally mandated groundwater abstraction restrictions in the facility's country and/or jurisdiction of operation that apply to your facility.

If you select Yes, you will be asked the following sub question:

- Are you abstracting within the legal limit?

Suggested Uploads:

- Copies of the applicable laws or regulations that specify groundwater abstraction restrictions in your country or jurisdiction of operation (e.g., water resource management acts, water use permits, or groundwater protection regulations, etc).
- Copy of the facility's groundwater abstraction permit showing the permissible extraction volume, restrictions, and any applicable monitoring or reporting requirements.
- Groundwater abstraction/consumption tracking records (e.g., metering logs).

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What is the intent of the question?

The intent of this question is for facilities to ensure they understand and are complying with any applicable legal requirements related to groundwater abstraction.

Technical Guidance:

Legally mandated groundwater abstraction restrictions are typically in place to prevent over-extraction, protect the environment, and maintain a balance between water supply and demand for various users, including the natural ecosystems and surrounding communities.

It is important that facilities understand any applicable legal requirements and/or restrictions related to groundwater abstraction and establish appropriate procedures and practices to ensure compliance. If your facility requires a permit or license for groundwater abstraction, facilities should review the permit and applicable regulations to ensure all requirements (e.g., permissible abstraction volumes, monitoring, and reporting requirements) are fully understood.

How This Will Be Verified:

Documentation Required:

- Documentation that demonstrates the facility is aware of and complying with any applicable legal requirements related to groundwater abstraction. This may include:
    - Copies of the applicable laws or regulations that specify groundwater abstraction restrictions in your country or jurisdiction of operation (e.g., water resource management acts, water use permits, or groundwater protection regulations, etc).
    - Copy of the facility's groundwater abstraction permit showing the permissible extraction volume, restrictions, and any applicable monitoring or reporting requirements.
    - Groundwater abstraction/consumption tracking records (e.g., metering logs).

Interview Questions to Ask:

- Staff responsible for water management and groundwater abstraction at the facility understand any applicable regulations and/or permitting requirements related to groundwater abstraction and can explain the facility's procedures for monitoring groundwater use and ensuring compliance with applicable requirements.

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Inspection - Things to Physically Look For:

- Observations on site indicate that the facility is operating its groundwater wells in compliance with any applicable requirements (e.g., all wells have applicable permits, when required, abstraction/consumption records do not exceed the permissible volume).

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Wastewater

General Introduction

Wastewater can be a significant contributor to pollution and contamination of surrounding natural systems and communities if not managed, treated, and/or disposed of appropriately. The operational, environmental, and financial impacts of wastewater are key issues for facility operations. Driving efficient water use and reducing the amount of contaminants discharged to the environment from facility operations is an important area of focus for all factories.

In general, the FEP Module wastewater section encourages you to:

- Identify and characterize wastewater sources at your facility (e.g., domestic, and industrial wastewater).
- Track the quantity of wastewater generated and discharged from your facility.
- If applicable, ensure that wastewater discharges adhere to all legal requirements for onsite or offsite treatment.
- Ensure that onsite wastewater treatment systems are designed and operated appropriately, and contingency plans are in place in case of treatment system failures.
- Identify, characterize, and track sludge generated onsite and ensure it is disposed of properly.

Additional details on the intent and criteria for each FEP Module Wastewater question is provided in the guidance below along with useful technical guidance and resources to support your facility with the management wastewater.

ZDHC Collaboration and Resources

One of Cascale's collaborating organizations, the ZDHC Foundation, has developed a variety of wastewater related standards and resources for wastewater management and discharge that are referenced throughout the FEP Module Guidance. For more information on the ZDHC, its initiatives, and resources, we encourage you to visit the links throughout this guidance and/or visit their website here: https://www.roadmaptozero.com/?locale=en.

One of the foundational aspects of the ZDHC's Roadmap to Zero Programme is the ZDHC Wastewater Guidelines which is a living document that sets a single, globally

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unified expectation across the textile, leather and footwear industry supply chain for industrial wastewater and sludge. They define the guidelines for wastewater discharge, sludge quality and disposal pathways. The ZDHC Wastewater Guidelines and other relevant supporting guidelines and references can be found here: https://programme.roadmaptozero.com/suppliers/output. Additional information can also be found in the eRoad to Zero Knowledge base here: https://knowledge-base.roadmaptozero.com/hc/en-gb/sections/25976839462941-Output

Guidance for Hardgoods facilities: Whilst the ZDHC Wastewater Guidelines are not directly applicable to hardgoods manufacturers, they are encouraged to align with the guidelines where appropriate and/or adopt equivalent industry best practices.

Wastewater at Your Facility

Wastewater can be generated from a variety of sources. In the FEP Module, wastewater is categorized as follows:

- **Domestic Wastewater:** Wastewater originating from domestic/sanitary usage such as toilets, bathing, personal laundry and kitchens**.**
- **Industrial Wastewater:** Water that has been used for manufacturing processes and no longer meets the quality standard for beneficial use (e.g., wastewater from production, lubrication, cooling, maintenance, cleaning of production machines, etc.)
- **Stormwater:** Water that originates from precipitation (e.g., rainwater) that accumulates on and runs off **roofs**, hard standing surfaces, car parks, etc. (sometimes referred to as surface water run-off)

The table below provides examples of common wastewater sources that are characterized as either domestic or industrial wastewater in the FEP Module.

Domestic Wastewater	Industrial Wastewater
• Dormitory wastewater • Canteen/kitchen wastewater • Office wastewater • Non-contact cooling water • Blowdown from compressors or boilers	• Process Wastewater • Facility maintenance wastewater • Waste gas treatment facility wastewater • Coal/waste/Sludge pile leachate • Contact cooling water

Notes:

- In the FEP Module, facilities should classify their wastewater according to the definitions in this guidance, however outside of the FEP Module, facilities are still

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expected to comply with all applicable legal requirements related to the classification and discharge of domestic and industrial wastewater.

- **Non-contact cooling water** - In the FEP Module, non-contact cooling water is considered domestic wastewater as no contamination of the water occurs during the cooling process, and as a result there is no expected deterioration of the water quality beyond the thermal difference.
- **Contact cooling water** - Is not typically encountered in Textile/Apparel/Footwear sector, but more common in Accessories, Home Furnishing and Outdoor sporting goods manufacturing of hard goods. In the FEP Module, wastewater from contact cooling processes is categorized as industrial wastewater due to the potential for contamination of the cooling water.
    - Examples of contact cooling water include: Direct Quenching of Heated metals for increasing hardness or strength, Water Curtains in Industrial Buildings for thermal regulation (for equipment, products and occupants) where the water has the potential to be contaminated by the emissions present in the premises.

Wastewater Treatment

The most appropriate or effective options to treat wastewater will depend on a number of factors, including, the composition and volume of the wastewater, applicable legal requirement, available external infrastructure (e.g., offsite treatment facilities). In the FEP Module, a facility's wastewater treatment is categorized as one of the following:

- **On-site Wastewater Treatment Only**: This is treatment that is performed onsite at a facility in a wastewater treatment plant used managed/operated by the facility. After on-site treatment, the wastewater is discharged to the environment.

- **Zero-Liquid Discharge (ZLD):** ZLD is a type of onsite treatment that is designed so no water leaves a facility in liquid form. At a facility with on-site ZLD treatment system, almost all wastewater is treated and recovered such that the only water discharged from the facility exists by evaporation or as moisture in the sludge from treatment plant operations. (Source: ZDHC Knowledgebase – Glossary: https://knowledge-base.roadmaptozero.com/hc/en-gb/sections/360002796277-Glossary).

Note: A facility is considered to have a ZLD treatment system if there is no industrial liquid discharge of Industrial wastewater, even if there is discharge of domestic wastewater. If your facility only has domestic wastewater, and does not generate industrial wastewater, your facility is not considered to have a ZLD treatment system unless your domestic wastewater is processed through a ZLD system.

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- **On-site Wastewater Treatment + Offsite Treatment**: This is treatment that is initially performed onsite at a facility then discharged to an offsite 3rd party treatment plant for additional treatment (also referred to as partial onsite treatment).

- **Off-site Wastewater Treatment Only**: This is treatment that is performed offsite by a 3rd party wastewater treatment service provider that may be government or privately owned/operated. With offsite treatment, the facility's untreated wastewater is discharged directly to the off-site treatment facility.

- **Septic System**: Septic systems are underground wastewater treatment structures that use a combination of natural/primary processes to treat wastewater. The process typically involves solids settling within the septic tank and ends with wastewater being discharged to the soil via a drainfield.

Applicability Questions

To determine which questions you will need to complete in the wastewater section, you will need to complete the applicability questions listed below.

After completing the applicability questions, facilities will be classified based on the factors below and answer applicable questions relevant to their wastewater type and treatment location(s):

- The type of wastewater generated (i.e., domestic, industrial, or both); and
- The type and location of wastewater treatment for domestic, industrial, and/or combined treatment of both). Wastewater treatment location include:
    - Treated onsite only.
    - Treated onsite with Zero Liquid Discharge (ZLD) system.
    - Treated offsite only.
    - Treated onsite and then discharged to Offsite treatment centre for further treatment.
    - Sent to a Septic system onsite (applies to domestic wastewater only)
    - Sent to an enclosed Septic Tank and then discharged to Offsite for further treatment (applies to domestic wastewater only)
    - Grey Water Treated Onsite only and direct discharged to environment after treatment, Black Water Sent to a Septic system onsite
        - **Note**: Black water is defined in the FEP as wastewater from toilets which can contain pathogens, feces, urine, and other sanitary waste from flushed toilets.
    - Not Treated

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1. Does your facility generate industrial wastewater?

- Yes
- No

Note: For the definition of industrial wastewater refer to the Introduction section of the Guidance.

2. Does your facility have Zero Liquid Discharge?

- Yes
- No

Note: For the definition of Zero Liquid Discharge (ZLD) refer to the Introduction section of the Guidance. If your facility only has domestic wastewater, and does not generate industrial wastewater, your facility is not considered to have a ZLD treatment system unless your domestic wastewater is processed through a ZLD system.

3. Do you treat industrial and domestic wastewater together?

- Yes
- No

4. Where is your industrial/domestic/combined wastewater treated?

- Treated Onsite Only and directly discharged to the environment after treatment.
- Treated Offsite Only.
- Treated Onsite and then discharged to Offsite for further treatment.
- Sent to a Septic system onsite (applies domestic wastewater only)
- Zero Liquid Discharge
- Not Treated

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Wastewater

1. **Does your facility track its wastewater volume?** *(Ref ID - wwtrackopt)*

Answer Yes If: Your facility tracked the volume of wastewater discharged from **all** sources (e.g., domestic, industrial and/or combined) in the FEP Module reporting year.

Answer Partial Yes If: Your facility tracked the volume of wastewater discharged from **one (1) or more, but not all** sources (e.g., domestic, industrial and/or combined) in the FEP Module reporting year.

Suggested Uploads:

- Documentation that demonstrates the facility tracked the volume of wastewater discharged from applicable sources. (e.g., tracking records for wastewater discharge, metering records/logs, wastewater treatment invoices, etc.)

Note: Uploading of all metering records/logs or bills is not required, however they should be available for review at the time of verification.

What is the intent of the question?

The intent of this question is for facilities to demonstrate that they are tracking the volume of wastewater discharged from the facility.

Technical Guidance:

Wastewater tracking allows visibility into daily operations and which operations impact wastewater volume. Knowing your wastewater volume is also linked to potential environmental impact and operational costs.

Wastewater tracking should include all wastewater generated from all manufacturing and/or commercial activities at the facility (domestic and industrial). Tracking should also include wastewater that is reused/recycled at the facility.

When establishing your water tracking and reporting program, start by doing the following:

- Mapping out facility areas and processes to identify where wastewater is generated and discharged.
- Establish procedures to collect and track wastewater data:
    - Install on-site meters or use metered invoices from off-site treatment facilities.

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- If estimation techniques are used to determine the amount of wastewater generated, the calculation methodology should be clearly defined and be supported by verifiable data.

- Record tracking data (e.g., daily, weekly, monthly records) in a format that is easy to review (e.g., Microsoft Excel or similar data analytics program that allows export of data in a human readable format) and maintain relevant supporting evidence for review during verification.

Tracking Wastewater Volume

The most accurate way to track wastewater volume is using a metering system. Mechanical meters and ultrasonic meters are widely used to track wastewater volume. Facilities should install meters at all wastewater discharge points before wastewater is discharged to the environment. If the facility has its own effluent treatment plant (ETP), the meter should be installed at the outlet of the wastewater treatment facility. Facilities should collect data from the meters regularly in order to track accurate wastewater discharge volumes. This method applies to both domestic and industrial wastewater.

If a facility does not have meters to track its wastewater discharge volume, an estimation method can be used which may include any of the following estimation techniques listed below.

- If the facility has accurate data (meters or invoices) on incoming water volume for production process and domestic use, the facility may estimate wastewater discharge volume using the incoming water volume. The facility may need to account for water use or loss for things like cooling tower evaporation loss or irrigation when estimating wastewater volume.
- Use of any official environmental reports that contain data on wastewater discharge volume (e.g., Environmental Impact Assessment reports, Environmental permit applications, Government's compliance report or offsite wastewater treatment invoices).
    - **Note:** In some cases, wastewater treatment invoices from offsite wastewater treatment facilities may not provide the treated wastewater volume. Instead, the invoice would indicate the total treatment fee (e.g., 100 USD) with unit treatment cost ($1 USD/$m^3$). In this case, a facility may need to manually calculate and record wastewater volume with the total treatment fee and unit cost (e.g., total treatment fee ÷ unit treatment cost = wastewater volume).
- If the facility has no documentation which indicates the amount of incoming water, then they can estimate industrial wastewater volume based on different production processes and equipment specific consumption.
    - For example, in a dyeing mill, the dyeing recipe may have water needed for each dyeing batch, or the dyeing machine may also have specifications

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on how much water is required for each batch. The facility would need to collect the production volume of each dyeing recipe and production volume of each dyeing machine. Then the facility would be able to manually calculate using production water use of each recipe per machine and water needed of each recipe/machine, multiply by respective production volume. Lastly, sum up all production water use. This estimated production water volume could be considered as the estimated amount of industrial wastewater discharged. Facilities may also need to account for any loss due to evaporation during production processes.

A tool available to help calculate water use from different sources can be found here: http://waterplanner.gemi.org/calc-waterbalance.asp.

Domestic Wastewater Tracking (including Septic Systems):

Tracking the flow rate and discharge volume of domestic wastewater with on-site meters is not a common practice but it is highly encouraged to accurately track the volume and quantity of domestic wastewater discharged.

If domestic wastewater discharge metering data or actual discharge data is not available, the facility could consider estimating wastewater discharge based on the site's total water use, the estimated amount used for domestic purposes and then minus an estimated amount due to losses (e.g., evaporation).

- For example, a site with domestic only wastewater who used 150m^3 of municipal water per month estimates that 10% of the water is lost due to evaporation and leaks would report 135m^3 of wastewater discharged (150m^3 – 10%).

Water use in a facility can also be estimated by the number of persons, number and types of facilities, taps, toilets, shower, irrigation etc. based on any available local/regional data or manufacturer's specifications (e.g., rated litres per flush for toilet fixtures).

Note: If an estimation technique is used, this should be fully documented, applied consistently and based on reasonable estimation factors that are derived from relevant sources (e.g., manufacturer's specifications, regional data on sewerage volume per person/day, etc.)

How This Will Be Verified:

When verifying a facility's wastewater data, Verifiers **must** review all aspects of the facility's wastewater tracking program that could produce inaccuracies including:

- The initial data collection processes and data sources (e.g., invoices, on-site meters, metering logs, etc.); and

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- The process and tools used to aggregate the data (e.g., spreadsheet calculations, unit conversions, etc.)

If any inconsistencies or errors are noted, the reported information must be corrected where possible and detailed comments should be included in the Verification Data field.

Documentation Required:

- Documentation that demonstrates the facility tracked the volume of wastewater discharged from applicable sources. This may include:
    - Wastewater discharge records (e.g., monthly bills and annual discharge records, metering records/logs, etc.)
        - **Note:** Annual discharge records compiled in a spreadsheet (e.g., Excel) are ok as long as detailed discharge tracking data is available for review.
- Meter calibration records where applicable (e.g., as per manufacturer's specifications).
- Estimation methodology documented where applicable.
- All wastewater sources at the facility are tracked in full.

Interview Questions to Ask:

- Staff responsible for managing wastewater can explain the facility's wastewater tracking program (e.g., how wastewater sources are identified, and discharge quantities are tracked).
- Key staff should understand:
    - The procedures in place for tracking wastewater quantity.
    - How data quality of the wastewater tracking program is maintained.
    - Any estimation methodologies used to calculate annual wastewater discharge volume.

Inspection - Things to Physically Look For:

- All wastewater sources observed are properly identified and tracked.
- Appropriate equipment for wastewater measurement is present (e.g., meters) if applicable.

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3. **Does your facility have a mechanism to prevent stormwater from being contaminated before it is discharged into the environment?**
   (Ref ID - wwstormwatermixing)

Answer Yes If: Your facility has a mechanism to ensure stormwater is not being contaminated before being discharged to the environment from the facility.

Note: For this question the term “mechanism” refers to procedures, practices and/or protections that are in place to prevent stormwater contamination.

Answer Not Applicable If: Your facility is located in a multi-storey building and stormwater runoff does not accumulate in the areas owned or controlled by your facility.

Suggested Uploads:

- Documentation that demonstrates the facility has mechanisms in place to prevent the contamination of stormwater (e.g., facility diagram showing stormwater flow/drainage network and storage, photos of any protection devices such as drain covers, berms, stormwater management or monitoring procedures, etc.)

What is the intent of the question?

The intent of this question is to ensure that mechanisms are in place to prevent the contamination of stormwater through appropriate stormwater collection and drainage and ensure that any contaminated stormwater is properly treated before being discharged to the environment.

Technical Guidance:

It is considered a good practice to separate stormwater collection and drainage systems from wastewater or other sources of potential contamination. This provides greater control over waste volume surges and pollutant loading on wastewater treatment systems as well as prevention of overflows that release sewage and/or untreated industrial wastewaters to the environment. Facilities should ensure that stormwater and industrial/domestic wastewater collection and drainage systems are separated throughout the facility, however facilities are expected to adhere to any applicable legal requirements related to stormwater management.

Good practices to prevent contamination of stormwater may include:

- Coding and labelling of all the stormwater and wastewater collection points, drains, and drainage systems to prevent unintended contamination.
- Develop a stormwater and wastewater drainage network map with the information of location, uses, code and responsible person.

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    - Post the drainage map in a location where it is accessible for most of the employees. **Note:** The facility's wastewater collection and stormwater drainage system may be included on facility structural engineering/utility drawings.
- Ensuring there is sufficient collection and storage capacity for surges in stormwater (e.g., precipitation) to avoid overflow.
- Install and maintain protections (e.g., drain covers, berms) in areas where there is a risk of contamination.
- Ensure staff are aware of the facility's stormwater protection and management practices.
- Ensure procedures are in place for the proper storage of hazardous materials and effective spills response procedures are in place to prevent contamination of stormwater drains.
- Regularly check (e.g., daily, monthly, etc) all stormwater and wastewater collection points and drainage systems to ensure there is no mixing or damage to the systems.

Note: If there are no mechanisms in place to prevent stormwater from being contaminated, procedures should be in place to ensure that if contamination occurs that the stormwater is collected and appropriately treated (to levels that comply with legal or other applicable requirements) before being discharged to the environment.

Resources:

Note: The resources below are provided for reference only and include links to external service provider websites. Cascale does not endorse the products or services offered or provided.

- Examples of stormwater protection equipment
    - https://www.newpig.com/drain-protection-stormwater-management/c/111
    - https://www.grainger.com/category/safety/sorbents-spill-control-spill-containment/drain-protection-stormwater-filtration?brandName=PIG&filters=brandName

How This Will Be Verified:

Documentation Required:

- Documentation that demonstrates the facility has mechanisms in place to prevent the contamination of stormwater. This may include:
    - Stormwater management procedures.
    - Facility diagram showing stormwater flow/drainage network and storage.
    - Stormwater drainage system inspection and maintenance records.

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- If applicable, documentation that shows contaminated stormwater is treated before being discharged to the environment.
- If applicable, any required permit or discharge requirements related to stormwater or combined stormwater/wastewater discharge.

Interview Questions to Ask:

- Staff responsible for stormwater management can explain the facility's procedures to prevent the contamination of stormwater and maintain the stormwater collection and drainage system at the facility.
- Staff responsible for inspection and maintenance of the stormwater collection and drainage system understand the facility's procedures to prevent contamination and maintain the stormwater system.

Inspection - Things to Physically Look For:

- Observations indicate that appropriate infrastructure (e.g., collection, storage, and drainage systems) and protections are in place to prevent the contamination of stormwater.
- Observations do not indicate the presence of stormwater contamination (e.g., untreated wastewater flowing to stormwater drainage).

4. Does your facility maintain a copy of the current contract, permit, agreement or invoices regarding regulatory compliance requirements for your facility's wastewater discharge to the offsite wastewater treatment plant? *(Ref Id - wwoffsitetreatplantcontract)*

Answer Yes If: Your facility has a current/valid copy of the current contract, permit, agreement, or invoices that demonstrate compliance with applicable requirements for wastewater discharge to the offsite wastewater treatment plant.

Suggested Uploads:

- A copy of the permit, contract, agreements, invoices, or other supporting documentation (e.g., payment terms, wastewater quality standards, volume / flow rate thresholds, etc.) that demonstrates compliance with applicable requirements for discharge to an offsite wastewater treatment facility.

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What is the intent of the question?

The intent of this question is for facilities to demonstrate that they maintain the required documentation to demonstrate compliance with applicable requirements for discharge to the offsite wastewater treatment plant.

Technical Guidance:

It is important that facilities understand the requirements related to discharging wastewater to an offsite treatment plant. Requirements may be outlined in contractual agreements, permits relating to the quantity and quality of wastewater that can be discharged, or established fee structures for accepting wastewater discharges.

These requirements allow facilities to establish the required procedures, monitoring, and reporting practices to ensure wastewater discharged complies with applicable requirements and does not negatively impact the operations of the offsite treatment facility.

How This Will Be Verified:

Documentation Required:

- Documentation that demonstrates the facility is in compliance with applicable requirements for discharge to the offsite wastewater treatment facility. This may include:
    - A current/valid copy of the permit, contract, agreements, invoices, or other supporting documentation (e.g., payment terms, wastewater quality standards, volume / flow rate thresholds, etc.).

Interview Questions to Ask:

- Staff responsible for wastewater management can explain any contractual or permit requirements related to wastewater discharge to the offsite plant and how the facility ensures compliance.

Inspection - Things to Physically Look For:

- Observations onsite indicate that the facility's wastewater management and discharge practices align with the applicable requirements for discharge to the offsite treatment plant.

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6. **Does your facility have a back-up plan if there is an emergency related to wastewater?** *(Ref ID - wwemergplan)*

Answer Yes If: Your facility has a back-up plan, process, and/or onsite and/or offsite facilities to respond to emergencies related to wastewater that is capable of handling the average daily volume of wastewater discharged by the facility.

If you answer Yes to this question, you will be asked the following sub question(s):

- Select all applicable strategies included in your facility's back-up plan for wastewater:
    - Emergency Production Shutdown
        - **Note**: This action must be backed up by additional emergency response actions or processes rather than stating simply that the facility will stop production.
    - Emergency Holding Tank
    - Availability of additional pumps, blowers, dosing pumps and critical equipment for the specific treatment plant, that are not used for day to day running of the plant.
    - Discharge to Offsite Water Treatment Plant
        - **Note:** Discharge of untreated wastewater that cannot be treated onsite due to an emergency must be directed to authorized offsite wastewater treatment service provider (public or private) with prior consent.
    - Other Backup Process
- Does your facility provide training to all relevant employees regarding the backup plan?

Suggested Uploads:

- Documentation that shows emergency backup processes are in place that are sufficient to treat the average daily volume of wastewater discharged by the facility site (e.g., wastewater treatment flow diagram, documented back-up plan, back-up equipment inventory, agreement with offsite treatment plant to receive wastewater in an emergency, etc.).

What is the intent of the question?

The intent of this question is to confirm that facilities have a contingency plan in the event the treatment process fails to prevent untreated effluent from being discharged.

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Technical Guidance:

It is crucial that facilities evaluate the risk of wastewater treatment system failures (e.g., failures in treatment processes or equipment, natural disasters, power outages). Facilities should establish a documented contingency plan to respond to potential emergencies. It is important to know the wastewater treatment systems handling capacity (per day) and compare this information with the quantity of wastewater generated to determine what actions or onsite facilities are required to effectively manage any treatment system failures.

It is also important that facilities ensure the relevant staff members and teams are trained and understand the facility's back-up plan to ensure that emergency response actions are effective.

Some examples of actions that can be taken in the event of an emergency include, but are not limited to:

- Emergency shutdown of production or treatment system until the situation is rectified.
    - **Note**: This action must be backed up by additional emergency response actions or processes rather than stating simply that the facility will stop production.
- Back-up holding tank capacity which temporarily stores the quantity of wastewater equal to one day's production.
    - **Note:** Holding tanks should not be considered as an exclusive backup measure.
- Maintaining a sufficient amount of back up equipment to ensure broken/damaged equipment can be timely replaced.
- Establish agreement and procedures for alternative offsite treatment with a licensed third-party wastewater treatment plant or service provider.

Resources:

Note: The resources provided below are for reference only and may contain reference to legal requirements that do not apply to your facility. It is expected that facilities comply with all applicable legal requirements related to wastewater emergency planning and procedures.

- New Hampshire Department of Environmental Services - Emergency Response Planning Guide Developed for Insertion into Wastewater Treatment Facility O&M Manuals https://www.des.nh.gov/sites/g/files/ehbemt341/files/documents/2020-01/ww-emergency-response-guide.pdf

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- ICS Effluent Treatment Plant (ETP) – Emergency response plan Fact Sheet https://ics-asso.org/wp-content/uploads/2018/04/Chap-4_Wastewater_Effluent-treatment-plant-emergency-response-plan_factsheet.pdf

How This Will Be Verified:

Documentation Required:

- Documentation that shows emergency backup processes are in place that are sufficient to treat the average daily volume of wastewater discharged by the facility site. This may include:
    - Wastewater treatment flow diagram showing additional emergency holding or treatment capacity if applicable.
    - Documented back-up plan and/or procedures (e.g., emergency shutdown procedures).
    - Back -up equipment inventory
    - Agreement with an offsite treatment plant to receive wastewater in an emergency.
    - List of emergency contacts/responsible parties (internal and external).

Interview Questions to Ask:

- Staff responsible for wastewater management can explain the facilities back-up plan and/or procedures to respond to any type of wastewater emergency.
- Responsible staff (treatment plant operators, maintenance staff) understand the facility's emergency response procedures.

Inspection - Things to Physically Look For:

- Observations indicate the appropriate equipment and facilities are in place as per the facility's back up plan.

7. Can you please confirm that wastewater generated by the facility is not discharged to the environment through leaking and/or bypassing? *(Ref ID - wwleaking)*

Answer Yes If: There are no leaks of untreated wastewater or bypassing of the wastewater treatment system AND your facility has processes in place to ensure that untreated wastewater is not discharged to the environment from leaks or bypassing of the wastewater treatment system.

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Answer Partial Yes If: There are no leaks of untreated wastewater or bypassing of the wastewater treatment system at your facility, but you do not have a formal process to regularly monitor this.

Select No If: Leaks of untreated wastewater or bypassing of the wastewater treatment system are observed to be discharged to the environment.

Suggested Uploads:

- Documentation that shows no wastewater is discharged through leaks or bypassing the facility's treatment system (e.g., wastewater flow/piping diagram, records of effluent volume monitoring against the volume of wastewater generated, leak inspection records)

What is the intent of the question?

The intent of this question is for facilities to demonstrate that untreated wastewater is not being discharged to the environment from leaks or bypassing of the wastewater treatment system.

Technical Guidance:

Ensuring that the facility's wastewater collection and treatment system network (e.g., collection and transfer piping, and storage) is properly designed and capable of appropriately directing wastewater to treatment is crucial to ensure that no untreated wastewater is able to bypass treatment. It is also important to ensure that this network is inspected and maintained to prevent unintended discharge from leaks or overflow.

Factories should have an established process to monitor the volume of wastewater generated from production or other operations in relation to the volume of water that is treated and discharged. Any significant or unknown difference should be investigated to determine the cause.

Examples of actions that can be taken to prevent this include, but are not limited to:

- Review the facility's wastewater collection and treatment system network (e.g., construction or utility drawings) to ensure all wastewater is being properly collected and directed to treatment.
- Identify and characterize all wastewater streams to ensure they are directed to treatment before being discharged to the environment.
- Install and maintain appropriately sized wastewater treatment systems that account for the expected volume of wastewater generated on site.
- Conduct regular inspections of wastewater piping systems and tanks to monitor for leaks.

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- Prepare for emergencies and implement emergency response actions in case the on-site wastewater treatment plant exceeds its capacity or if it malfunctions.

How This Will Be Verified:

Documentation Required:

- Documentation that demonstrates the facility has processes in place to ensure that untreated wastewater is not discharged to the environment from leaks or bypassing of the wastewater treatment system. This may include:
    - Wastewater flow/piping diagram.
    - Wastewater volume monitoring records that show the difference between volume of wastewater generated and discharged is acceptable.
    - Records of inspections for of wastewater piping systems and tanks that the facility uses to monitor for leaks (e.g., inspection schedule, and completed checklists)

Interview Questions to Ask:

- Staff responsible for wastewater management can describe how the facility ensures that all wastewater is directed to appropriate treatment and the system is monitored for leaks.
- Staff responsible for inspecting and monitoring the system for leaks understand the facility's inspection procedures and how to effectively identify leaks.

Inspection – Things to Physically Look For:

- Observations indicate that all wastewater is appropriately directed to treatment (e.g., no observed bypassing of wastewater collection or treatment) and the wastewater piping network and tanks are maintained in good condition (e.g., there are no observed leaks).

8. How many separate and distinct sources of wastewater sludge are managed and disposed of? *(Ref ID - wwsludgesources)*

Note:

- Sludge reports from within the previous three (3) years may be used, provided there have been no changes to the sludge processing technology at the facility or there are no applicable legal requirements for testing sludge moisture more frequently.

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Suggested Uploads:

- Documentation that shows your facility has identified all sources of sludge (e.g., a list/inventory of the types of sludge, internal or external sludge analysis results/reports).

What is the intent of the question?

The intent of this question is for facilities to identify the different sources of sludge generated at the facility.

Technical Guidance:

It is important for facilities to know the different sources (e.g., types) of sludge to ensure the most effective treatment and disposal options are used. In general, sludge contains water, organic and inorganic materials, and solids.

In general, reducing sludge moisture content (e.g., drying, dewatering) as much as possible can help reduce sludge volume and the associated transportation/disposal costs.

Resources:

- ZDHC Supplier's Roadmap to Zero Output Section https://programme.roadmaptozero.com/suppliers/output
    - Wastewater & Sludge Guidelines

How This Will Be Verified:

Documentation Required:

- Documentation that shows your facility has identified all sources of sludge. This may include:
    - A list/inventory of the types of sludge.
    - Internal or external sludge analysis results/reports.

Interview Questions to Ask:

- Staff responsible for wastewater and sludge management can explain how the facility identified its sludge sources.

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Inspection - Things to Physically Look For:

- Observations indicate that sources of sludge reported are consistent with sludge generation at the facility.

9. Does your facility track its industrial wastewater sludge generated in the reporting year? *(Ref Id - wwsludgereporting)*

Answer Yes if: Your facility tracked the annual quantity of industrial wastewater sludge generated at the facility in the FEP Module reporting year.

Suggested Uploads:

- Sludge quantity/disposal tracking records that show the quantity of sludge generated of in the reporting year (e.g., waste manifests, internal tracking records)

What is the intent of the question?

The intent of this question is for facilities to demonstrate the annual quantity of industrial wastewater sludge was tracked in the reporting year.

Technical Guidance:

Tracking the quantity of sludge provides important information that can be used to identify opportunities to reduce sludge and quantify these reductions.

Procedures to track the annual quantity of sludge generated generally align with the practices used to track the quantity any waste stream and include the following:

- Determine what types of waste are generated.
- Determine where (location and processes) where sludge is being generated.
- Establish procedures to collect and track waste data:
    - Examples include on-site scales, waste invoices/manifests.
    - If estimation techniques are used to calculate the quantity of sludge, the methodology should be clearly defined and be supported by verifiable data.
- Record the data (e.g., daily, weekly, monthly sludge quantities) in a format that is easy to use and review such as Microsoft Excel or another data analytics program.

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Estimating Sludge Quantity Data

In some cases, calculating annual sludge quantities may require estimation. Any estimation methodology used should include documented and verifiable processes that include details on the calculation methodology and any data or assumptions used.

Note: If an estimation technique is used, the methodology should be applied consistently and based on reasonable estimation factors that are derived from relevant data (e.g., actual weights of a representative sample of the sludge).

An example of how waste quantity data can be estimated is provided below:

- A facility generates a specific quantity of sludge every time the filter press is unloaded. Weighing the sludge every time is not practical. Therefore, the average weight of each filter press load can be determined by weighing a representative sample of sludge from multiple loads and then multiplying this average weight by the number of filter press loads each week or month as shown below:
    - Average weight of a load = 50kg (based on representative weights of loads from different days, months, production scenarios, etc.)
    - Number of loads in 1 month = 45
    - Total estimated sludge quantity for the month = 2,250kg (50kg x 45 loads)

Resources:

- ZDHC Supplier's Roadmap to Zero Output Section https://programme.roadmaptozero.com/suppliers/output
    - Wastewater & Sludge Guidelines

How This Will Be Verified:

Documentation Required:

- Documentation that supports the reported sludge quantity. This may include:
    - Tracking records for annual sludge quantities (e.g., invoices from waste contractors, weighing records, etc.).
    - Scale calibration records if applicable (e.g., as per manufacturer’s specifications)
    - Documented estimation methodologies if applicable.

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Interview Questions to Ask:

- Staff responsible for managing sludge and/or wastes can explain how sludge quantity is tracked.
- Key staff should understand:
    - How data quality of the sludge tracking program is maintained.
    - Any estimation methodologies used to calculate annual sludge quantity.

Inspection - Things to Physically Look For:

- Observations are consistent with the facility reported procedures to track and measure sludge quantity (e.g., appropriate equipment is available for sludge quantity measurement if applicable).

11. Does your facility have well-marked, designated wastewater sludge storage areas? *(Ref Id - wwsludgestorage)*

Answer Yes if: Your facility has designated wastewater sludge storage areas.

If you answer Yes to this question, you will be asked a set of sub questions to indicate which of the following practices your facility has in place for sludge storage areas:

- Does your facility have the following practices in place in the wastewater sludge storage area?
    - The surface of the wastewater sludge storage area prevents permeability into the ground and is inert in nature.
    - The wastewater sludge storage area is protected from exposure to precipitation and stormwater runoff.
    - The industrial and domestic wastewater sludge are kept and stored separately.
        - If only Domestic wastewater sludge is generated or if Industrial and Domestic wastewater are treated together and the sludge is combined, Not Applicable should be selected for this question.
    - The industrial wastewater sludge storage area is protected from unauthorized employees.

Suggested Upload:

- Photos of sludge storage areas.

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What is the intent of the question?

The intent of this question is to ensure that sludge is stored in a way that is safe for employees, the environment, and the local community.

Technical Guidance:

The proper storage of sludge is important to prevent unintended contamination of other wastes, the surrounding environment and to reduce exposure risks to employees. Facilities should have dedicated storage areas for sludge and implement appropriate controls practices based on the hazardous characteristics of the sludge such as those listed in the sub questions.

Information on the hazardous characteristics of sludge should be evaluated using analysis data from sludge samples or in the Safety Data Sheets (SDS) of the hazardous raw materials used in the processes that generate the sludge. For example, if heavy metals are used in any process chemistry, these contaminants will likely be present in sludge generated.

Sludge storage areas should also be inspected regularly to ensure good storage and housekeeping practices are continuously implemented.

Resources:

- ZDHC Supplier's Roadmap to Zero Output Section https://programme.roadmaptozero.com/suppliers/output
    - Wastewater & Sludge Guidelines

How This Will Be Verified:

Documentation Required:

- Documentation to support the facilities procedures to ensure that sludge is stored appropriately. This may include:
    - Procedures or work instructions for sludge/waste storage areas
    - Hazardous waste area inspection records

Interview Questions to Ask:

- Staff responsible for sludge/waste management handling and storage understand risks associated with sludge stored and how to properly store sludge (e.g., which containers to use, required segregation, etc.)

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Inspection - Things to Physically Look For:

- Observations indicate that sludge is being stored in designated areas with appropriate controls.

12. Is industrial wastewater sludge disposed of properly? *(Ref ID - wwhsludgedisposal)*

Answer Yes if: Your facility is disposing of industrial wastewater sludge in accordance with all legal requirements based on the hazardous characteristic of the sludge.

Note: This question refers to the final treatment/disposal method of the sludge. This can be onsite or offsite depending on the final treatment/disposal location.

If you answer Yes to this question, you will be asked the following sub question(s):

- Which disposal pathway(s) does your facility dispose of your industrial wastewater sludge?
  - Hazardous Waste Treatment (Other)
  - Open burning
    - **Note**: The use of open burning of sludge is strongly discouraged unless specific regulatory approval is obtained and complied with.
  - Onsite Incineration at ≥1000 °C
  - Onsite Incineration at <1000 °C
  - Offsite Incineration at ≥1000 °C
  - Landfill with Significant Control Measures
  - Building Products Processed at ≥1000 °C
    - **Note**: This includes co-processing of waste for cement manufacturing at ≥1000°C
  - Landfill with Limited Control Measures
  - Offsite Incineration and Building Products Processed at <1000 °C
  - Landfills with No Control Measures
  - Land Application
    - E.g., Compost, fertilizer.
  - Non-disclose method by authorized third party (final disposal method not disclosed)

Notes:

- Hazardous Waste Treatment (Other) would refer to waste treatment methods that are typically used to treat hazardous wastes not including high-temperature incineration but including chemical stabilization/neutralization, and bioremediation techniques used to reduce toxicity of the waste.
- In the FEP, the definition of landfills (e.g., with significant, limited, or no control measures) and disposal pathways aligns with the ZDHC Disposal Pathway

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definitions listed in the ZDHC Sludge Management resource available at the link below. FEP users should reference this resource to ensure proper selection of their sludge disposal pathway.
https://programme.roadmaptozero.com/suppliers/output/wastewater-sludge-guidelines-v1/document-sludge-disposal

Suggested Uploads:

- Documentation that demonstrates industrial wastewater sludge is being disposed of properly (sludge analysis/test showing hazardous properties, sludge disposal manifests, permit/license of waste vendor accepting and treating the sludge, evidence of the final treatment/disposal method being used, etc.)

What is the intent of the question?

The intent of this question is for facilities to demonstrate that industrial wastewater sludge is being disposed of responsibly to minimize environmental impacts.

Technical Guidance:

The hazardous properties and proper disposal method of sludge depend on the specific hazardous properties of the sludge (e.g., the type and concentration of hazardous chemicals). Facilities should ensure that sludge is properly characterized (e.g., via laboratory testing) to identify its hazardous properties and any specific disposal requirements or limitations.

At minimum, sludge should be disposed of in accordance with all applicable legal requirements related to sludge and waste disposal. This includes the use of qualified waste disposal vendors who are licensed/permitted to treat the sludge based on its hazardous characteristics as required.

As part of a facilities waste management program, it is important for facilities to understand how wastes (including sludge) are treated and/or disposed of after leaving the facility. Facilities should have processes in place to communicate with waste vendors and verify the final treatment disposal methods for sludge.

If sludge is treated and/or disposed of onsite, this should be done with proper permission (e.g., approvals/permits) from government authorities when required.

Resources:

- ZDHC Supplier's Roadmap to Zero Output Section
  https://programme.roadmaptozero.com/suppliers/output
  - Wastewater & Sludge Guidelines

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How This Will Be Verified:

Documentation Required:

- Documentation that demonstrates industrial wastewater sludge is being disposed of in accordance with all legal requirements based on the hazardous characteristic of the sludge. This may include:
    - Sludge analysis/test showing hazardous properties.
    - Sludge disposal manifests
    - Where applicable, permit/license of waste vendor accepting and treating the sludge.
    - Evidence of the final treatment/disposal method being used by the waste vendor.
    - Legal approvals/permits for any onsite treatment/disposal of sludge if applicable.

Interview Questions to Ask:

- Staff responsible for wastewater/waste management understand the hazardous composition of the facility's sludge and the final disposal method used to treat/dispose of the sludge.

Inspection - Things to Physically Look For:

- Observations indicate that sludge is being collected and treated per the methods reported by the facility (e.g., onsite treatment/disposal conditions, sludge storage conditions, etc.)

13. Does your facility maintain manifests or similar documentation of the handling, transportation, processing, and disposal of sludge, accounting for all industrial wastewater sludge generated at the facility? *(Ref ID - wwsludge)*

Answer Yes if: Your facility has a process to obtain and retain waste manifests or similar documentation related to the handling, transportation, processing, and disposal of industrial wastewater sludge and **all** of the following conditions are met:

- Documentation has been obtained that accounts for **all** sludge disposals.
- The documentation contains all of the information noted below:
    - Shipper (the facility generating the sludge).
    - Mass or volume of the shipment.
    - Transporter's company name.
    - Shipment/Receiving dates

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- Name of the disposal or processing facility that the sludge was shipped to.

Answer Partial Yes if: Your facility has a process to obtain and retain waste manifests or similar documentation related to the handling, transportation, processing, and disposal of industrial wastewater sludge, **and** documentation has been obtained for all sludge disposals; **however**

- The documentation does not contain one or more of the pieces of information noted below:
  - Shipper (the facility generating the sludge).
  - Mass or volume of the shipment.
  - Transporter's company name.
  - Shipment/Receiving dates
  - Name of the disposal or processing facility that the sludge was shipped to.

If you answer Yes or Partial Yes to this question, you will be asked the following sub question(s):

- Does your facility use authorized third party for legal disposal of Industrial wastewater sludge?
- Does your facility retain documentation of all wastewater sludge transportation and disposal/treatment companies?
  - **Note:** This refers to the legally required amount of time that documentation must be retained, which may vary by jurisdiction. If there are no legal requirements documentation must be retained for at least two (2) years.
- Are all Industrial wastewater sludge transporters, treatment, and disposal facilities licensed and permitted?

Suggested Uploads:

- Samples of waste manifests or similar documentation related to the handling, transportation, processing, and disposal of industrial wastewater sludge.
- Copies of sludge handling/treatment/disposal vendor licenses and/or permits that show they are authorized to receive, process and dispose of the sludge.

Note: Uploading of all manifest or other documentation is not required, however they should be available for review at the time of verification.

What is the intent of the question?

The intent of this question is for facilities to demonstrate that processes are in place to obtain and retain information related to the handling, transportation, processing, and disposal of industrial wastewater sludge and to ensure that any third-party waste vendors have the required legal approvals to receive, process and dispose of the facility's sludge.

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Technical Guidance:

To ensure proper accountability, facilities should have established processes in place to maintain documentation related to the handling, transportation, processing, and disposal of industrial wastewater sludge. Often the minimum requirements for generating and maintaining documentation related to waste disposal is governed by legal requirements (particularly for hazardous wastes) and all applicable requirements should be met by facilities.

In addition to any legal requirements, facilities should ensure that a waste manifest or a similar local transport document that contains the following information is obtained and maintained for each sludge shipment as a good practice. If needed this additional information can be requested from waste vendors:

- Shipper (the facility generating the sludge).
- Mass or volume of net shipment.
- Transporter's company name.
- Shipment/Receiving dates
- Name of the disposal or processing facility that the sludge was shipped to.

Facilities should also ensure that any third-party waste vendors used have the required legal approvals to receive, process and dispose of the facility's sludge. Facilities should ensure that part of the waste vendor approvals process include the verification of all legally required approvals (e.g., licenses and permits). It is considered a good practice (if not legally required) for facilities to request and maintain up-to-date and valid copies of vendor approvals onsite.

Resources:

- ZDHC Supplier's Roadmap to Zero Output Section https://programme.roadmaptozero.com/suppliers/output
    - Wastewater & Sludge Guidelines

How This Will Be Verified:

Documentation Required:

- Documentation that shows the facility has obtained and maintains waste manifests or similar documentation related to the handling, transportation, processing, and disposal of industrial wastewater sludge and that sludge is being received by authorized vendors. This may include:
    - Waste manifests or other transport documentation.

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- Waste vendor licenses and/or permits that show they are authorized to receive, process and dispose of the facility's sludge.

Interview Questions to Ask:

- Staff responsible for managing wastes can explain the facilities procedures to obtain and maintain manifests and/or other transport information related to sludge disposal and how the facility ensures that waste vendors have the required approvals to collect, receive, or process the facility's sludge.

Inspection - Things to Physically Look For:

- Observations indicate that sludge is being collected and treated per the process reported by the facility (e.g., sludge disposal records, sludge storage conditions, presence of waste contractors onsite during verification, etc.)

14. Does your facility provide training to all employees whose work involves wastewater sludge handling (such as maintenance and custodial staff)? *(Ref ID - wwsludgetraining)*

Answer Yes if: Your facility provides training to all employees who handle wastewater sludge **and** the training covers safe handling, storage, and disposal of sludge.

Suggested Upload:

- Records of sludge handling training or general waste handling training if sludge is included in this.
- Copies of training material used.
- Employee training plans or procedures that demonstrate training are provided to all employees who handle sludge.

What is the intent of the question?

The intent of this question is to ensure facilities have procedures in place to train all employees who handle wastewater sludge on practices to minimize environmental and health risks associated with sludge.

Technical Guidance:

Wastewater sludge can pose significant risks to the environment and human health. Employees who handle sludge on-site should understand these risks and know how to

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safely, handle, store, and dispose of sludge to minimize environmental and health and safety impacts.

Additionally, having procedures to collect information to evaluate the effectiveness of training programs (e.g., trainee feedback questionnaires or test, observation, or reviews of trainer performance, etc) will help facilities ensure the effectiveness of trainings and knowledge retention.

Resources:

- ZDHC Wastewater Treatment System Operator Qualification Training Course - I : Basic Physical/Chemical Treatment
  https://academy.roadmaptozero.com/courses/group/3#category-18

How This Will Be Verified:

Documentation Required:

- Documentation that demonstrates that all employees who handle sludge are trained on safe handling, storage, and disposal of sludge. This may include:
  - Records of sludge or general waste training if sludge handling is included in this.
  - Training material used.
  - Employee training plans or procedures that demonstrate sludge handling training is provided to **all** employees who handle sludge.

Interview Questions to Ask:

- Staff responsible for sludge/waste management can explain the facility's sludge handling procedures and how all relevant employees are trained.
- Relevant employees understand the facility's sludge handling procedures and have received training.

Inspection - Things to Physically Look For:

- On-site observations indicate that sludge is being handled in accordance with the facility's waste handling procedures.

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16. Does your facility manage the residue of the Septic System?

(*Ref ID - wwsepticwater)*

Answer Yes if: Your facility has procedures or processes to manage the residue (e.g., sludge) from your septic system in accordance with the design and operating specifications of the septic system.

If you answer Yes to this question, you will be asked the following sub question:

- Is your Septic System adequately designed for the septic wastewater volume generated at your facility? (*Ref ID wwsepticdesign)*
    - **Answer Yes if:** You have supporting documentation of the septic system's design capacity and the wastewater quantity directed to the system, **AND** this demonstrates that the system is not being overloaded based on the design capacity.
    - **Answer No if:** You have supporting documentation of the septic system's design capacity and the wastewater quantity directed to the system, **AND** this shows that the wastewater volume being directed to the system is greater than the system's design capacity.
    - **Answer Unknown if:** You do not have supporting documentation of the septic system's design capacity and/or you do not know the quantity of wastewater being directed to the system.

Suggested Uploads:

- Documentation that shows how the facility manages residue (e.g., sludge) from the septic system (e.g., the septic system design drawings showing capacity, tracking records of volume of wastewater sent to the septic system, septic system cleaning schedule and records, records of sludge generation, collection and disposal manifests, records of the final treatment/disposal method being used by the waste vendor.)

What is the intent of the question?

The intent of this question is for facilities to demonstrate that wastes (e.g., sludge) from the septic system are being managed in accordance with the design and operating specifications of the septic system.

Technical Guidance:

Septic systems are engineered systems that are specifically designed based on the wastewater characteristics they are intended to treat (e.g., the volume of wastewater and pollutant loading). It is crucial septic systems are operated within their design

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specifications and operating parameters to ensure the effective treatment of wastewater.

Facilities should have established procedures to ensure that the system is operated, monitored, and maintained in accordance with the design specifications and manufacturer's specifications for all system equipment and components (e.g., pumps, flowmeters, monitoring/sampling, frequency for cleaning out sludge, etc.)

At minimum, residue (e.g., sludge) from the system should be disposed of in accordance with all applicable legal requirements related to sludge and waste disposal. This includes the use of qualified waste disposal vendors who are licensed/permitted to treat the sludge based on its hazardous characteristics.

As part of a facilities waste management program, it is important for facilities to understand how wastes (including septic system sludge) are treated and/or disposed of after leaving the facility. Facilities should have processes in place to communicate with waste vendors and verify the final treatment disposal methods for septic system sludge.

If sludge is treated and/or disposed of onsite, this should be done with proper permission (e.g., approvals/permits) from government authorities when required.

Resources:

- ZDHC Supplier's Roadmap to Zero Output Section https://programme.roadmaptozero.com/suppliers/output
    - Wastewater & Sludge Guidelines

How This Will Be Verified:

Documentation Required:

- Documentation that shows how the facility manages residue (e.g., sludge) from the septic system and how the system is being operated in accordance with its design capacity and operating specifications. This may include:
    - The septic system design drawings showing capacity.
    - Tracking records of volume of wastewater sent to the septic system (e.g., showing that the system is not being overloaded)
    - Septic system cleaning schedule and records.
    - Records of sludge generation, collection.
    - Septic system waste manifests.
    - Evidence of the final treatment/disposal method being used by the waste vendor.

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Interview Questions to Ask:

- Staff responsible for managing wastewater and/or the septic system can explain how the facility ensures that it is being operated in accordance with the design capacity

Inspection - Things to Physically Look For:

- Observations indicate that the specific system is being operated and maintained properly (e.g., no standing water, damp spots or strong odours near the septic tank or drainfield)

17. Is your facility required to test any wastewater based on legal requirements? *(Ref ID - wwtestlegalrequired)*

Answer Yes if: Your facility is legally required to test any of its wastewater.

Answer No if: There are no applicable legal requirements for your facility to test its wastewater.

If you answer Yes to this question, you will be asked the following sub question(s):

- Indicate which wastewater categories your facility must test based on legal requirements.
- Have you tested your wastewater against the legal requirements that apply to your facility?
    - **Answer Yes If:** Your facility has conducted wastewater testing at the frequency required by local law and for all the legally required parameters.
- Do the results show compliance against the requirement?

Note: The question “Do the results show compliance against the requirement?” Should be answered based on the guidance below:

- **Answer Yes if:** Testing results in **all** tests meet the legal requirements for **all** parameters.
- **Answer Partial Yes if:** Testing results show one parameter did not meet the legal requirements. If there are multiple test reports, there must be no more than one parameter exceedance in one (1) report.
- **Answer No if:** Testing results show one (1) or more parameters have not been met in multiple test reports, **or** more than one parameter have not been met in at least one report.

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Suggested Uploads:

- Copies of wastewater testing report.
- Wastewater discharge permit or approvals that show the testing parameters and discharge limits that are applicable to the facility.

What is the intent of the question?

The intent of this question is for facilities to demonstrate that wastewater has been tested against applicable legal requirements.

Technical Guidance:

Testing wastewater in accordance with legal requirements is a fundamental practice to determine if the facility's wastewater meets the applicable discharge limits. Facilities should ensure that all applicable testing requirements are understood and that procedures to test wastewater per the applicable legal requirements are implemented. This information should be used to monitor compliance and identify issues that require action to achieve and maintain compliance (if non-compliance is detected).

How This Will Be Verified:

Documentation Required:

- Wastewater testing results showing results of testing against all legally required parameters.
- Wastewater discharge permit or approvals that show the testing parameters and discharge limits that are applicable to the facility.

Interview Questions to Ask:

- Staff responsible for wastewater management and legal compliance can explain how the facility's wastewater testing covers all applicable legal requirements.

Inspection - Things to Physically Look For:

- Observations indicate that all wastewater is being tested in accordance with legal requirements (e.g., the facility has identified and tested all wastewater discharge points as per applicable legal requirements).

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18. Are you reporting against any wastewater standard (additional to the legal requirement)? *(Ref Id - wwstandard)*

Answer Yes if: Your facility is testing wastewater and reporting results against a wastewater standard in addition to legally required testing.

Note: If your facility has only tested wastewater in accordance with legal requirements, you should answer No to this question.

Answer Not Applicable if: There are no applicable industry wastewater standards (in addition to legal testing requirements) that apply to your facility.

Note: If your facility only generates domestic wastewater and there are no industry standards applicable to domestic wastewater (in addition to legal testing requirements) "Not Applicable" should be selected.

If you select Yes, you will be asked the following sub question(s):

- Please indicate which wastewater standard(s) you are reporting against:
    - ZDHC Wastewater Guidelines (for Leather & Textile) (WWG)
    - ZDHC MMCF Guidelines
    - ZDHC Sludge Reference Document
    - BSR
    - bluesign Wastewater Standard
    - Customer/Brand
    - Other

Suggested Uploads:

- Copies of wastewater testing results conducted in accordance with the applicable standard.

What is the intent of the question?

The intent of this question is for facilities to demonstrate that their wastewater is being tested against a wastewater standard in addition to any legally required testing.

Technical Guidance:

The standards referred to in this question refer to industry standards, and the intention is to evaluate compliance beyond basic legal discharge requirements.

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Industry standards and tools are developed to support facilities in the proper management and reduction of hazardous pollutants discharged in wastewater to the environment. These tools intend to provide consistent methodologies to identify, monitor and report discharge of hazardous pollutants. They also strive to support facilities in managing and reducing hazardous discharges by establishing progressive discharge limits that go beyond basic legal compliance.

Different standards or tools may have different requirements for monitoring and reporting of wastewater data (e.g., the type and frequency of reporting, types of pollutants that must be monitored/reported, or testing methodologies, etc.) When adopting an industry standard, facilities should review the guideline to determine the monitoring and reporting requirements that apply to their operations and put in place procedures to meet the required monitoring and reporting requirements.

Examples of industry guidance/tools for wastewater include:

- The ZDHC suite of guidelines which can be downloaded here: https://programme.roadmaptozero.com/suppliers/output
    - Wastewater & Sludge Guidelines
- ZDHC Man-Made Cellulosic Fibres (MMCF) Guidelines https://www.roadmaptozero.com/fibres#MMCF
- bluesign® CRITERIA for production sites (and its Annexes) which can be downloaded here: https://www.bluesign.com/en/downloads

How This Will Be Verified:

Documentation Required:

- Documentation that demonstrates the facility is monitoring and reporting wastewater in accordance with the applicable standard(s) selected. This may include:
    - Wastewater test report showing the parameters tracked by the facility.
        - **Note**: Testing should be conducted in accordance with the applicable standard (e.g., frequency or testing, test parameters, sampling and analysis methods, etc.)
    - If applicable, internal procedures used to ensure the requirements of the standard are being met.

Note: Required documentation may vary by standard being reported against. All wastewater reporting documentation required by the standard should be available for verification.

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Interview Questions to Ask:

- Staff responsible for managing wastewater understand and can describe the monitoring and reporting requirements of the standard the facility is reporting against.

Inspection - Things to Physically Look For:

- The relevant wastewater sources observed at the facility are included in the facility's monitoring/reporting procedures as required by the standard used to report wastewater data.

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Air Emissions

General Introduction

Air emissions from industrial processes and manufacturing operations have the potential to emit pollutants into the air that impact the environment, human health and contribute to climate change.

As governments and industry stakeholders continue to focus on reducing environmental impacts, more stringent requirements and regulations may be imposed. By proactively managing and working to reduce impacts of your facility's air emissions, you can reduce your exposure to regulatory risks or new requirements from business partners.

In general, the FEP Module Air Emissions section encourages you to:

- Identify and understand the types of emission sources and pollutants that are emitted from your facility.
- Understand and comply with all applicable legal requirements relating to air emissions including all permitting, reporting, and testing requirements.

Additional details on the intent and criteria for each FEP Module Air Emissions question is provided in the guidance below along with useful technical guidance and resources to support your facility in the management of emission to the air.

Air Emissions at your Facility

Pollutants are typically emitting from the one of the following types of emission sources:

- **Point Source:** air flow which is actively controlled and directed (e.g., by fan and exhaust ducting) into the atmosphere from a single stationary fixed source such as stack or vent. Examples include boiler exhaust stack, the exhaust stack of a local ventilation system used to capture emissions from processes that emit volatile organic compounds (VOCs).

- **Fugitive Emissions Source**: for the FEP Module, fugitive emission sources are those that are passively released into the outdoor environment and are **not** actively directed through a single exhaust point (e.g., stack or vent). Examples include screen printing, spot cleaning or dyeing areas with only general ventilation (e.g. passive sidewall ventilation or windows).

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- **Mobile Emissions Source**: for the FEP Module, mobile emission sources are those that are non-stationary sources of emission. Examples include powered motor vehicles (e.g., forklifts, trucks, passenger vehicles), heavy machinery (e.g., mobile cranes or lifts), small engines (e.g., landscaping equipment).

The FEP Module also further categorizes emissions based on the nature of the emission source as follows:

- **Emission from Facility Operations:** for the FEP Module, these include emissions from sources that support facility operations and are not the direct result of production processes. Emissions from facility operations are typically emitted through point source or mobile emissions sources. Examples include boilers, generators, heating and cooling systems (e.g., combustion heating, refrigerant-containing cooling equipment), and combustion engines.

- **Emissions from Production:** for the FEP Module, these include emissions from sources that are related to production processes. Emissions from production are typically emitted through point sources or as fugitive emissions. Examples include production processes that use chemicals (e.g., solvents, adhesives, printing, dyeing) processes that emit dust/particulates, products of combustion, or other hazardous or toxic air pollutants.

Reportable Pollutants in the FEP Module

The FEP Module requires that facilities track emission data for several key pollutants listed below.

Pollutants Emitted from Operations	Pollutants Emitted from Production Processes
● Particulate Matter ● Nitrogen Oxides (NOx) ● Sulfur Oxides (SOx) ● Carbon Monoxide (CO) ● Volatile Organic Compounds (VOC) or Total Organic Carbon (TOC) ● Hazardous or Toxic Air Pollutants (HAP/TAP)	● Particulate Matter ● Nitrogen Oxides (NOx) ● Sulfur Oxides (SOx) ● Carbon Monoxide (CO) ● Volatile Organic Compounds (VOC) or Total Organic Carbon (TOC) ● Hazardous or Toxic Air Pollutants (HAP/TAP) ● Ammonia (NH_3) ● Ozone (O_3) ● Ozone Depleting Substances (ODS) ● Carbon disulfide (CS_2) ● Hydrogen sulfide (H_2S)

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Volatile Organic Compounds (VOC)

VOC are defined as organic chemical compounds that under normal conditions are gaseous or can vaporise and enter the atmosphere. The general criteria for determining whether a pollutant is considered a VOC is provided below:

- It contains carbon.
- Vapor Pressure is > or = 0.01 kPa (~0.075 mmHg) at 20C
- Boiling point is < or = 250C at standard pressure of 101.3 kPa

Hazardous or Toxic Air Pollutants (HAP/TAP)

Are defined as compounds that are known or suspected to cause significant harmful impacts to human health or the environment.

Country-specific regulation may define which air pollutants are designated as HAPs/TAPs within a specific jurisdiction. Where country-specific definitions or regulations do not define HAPs/TAPs, recognized lists from other jurisdictions may be referenced when determining if pollutants from facility operations should be included in the reported quantity for HAPs/TAPs. For example, information on HAPs from the US EPA can be found here https://www.epa.gov/haps. A current list of HAPs (as defined by the US EPA can be found here: https://www.epa.gov/haps/initial-list-hazardous-air-pollutants-modifications

Applicability Questions

1. Does your facility contain any of the following operations equipment?

- Boiler
- Generators
- Combustion Engines (e.g., gasoline powered pumps)
- Industrial Ovens (for heating/drying/curing)
- Heating and Ventilation (Combustion Heating (Furnace))
- Refrigerant containing device (other than air conditioning system) (e.g,. ice makers, refrigerators, water coolers, etc.)
- Air conditioning (Cooling)
- Other sources of known air emissions from facility operations
- Other sources of volatile organic compounds (VOCs)

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2. Does your facility conduct any of the following processes or use any of the following substances?

- Yarn spinning or synthetic fiber manufacturing
- Finishes (i.e. any mechanical or chemical process that occurs after dying to affect the look, performance, or feel of the product)
- Solvents
- Adhesives/ cementing
- Printing
- Dyeing
- Tenterframes or other heating processes
- Spot cleaners (with VOCs) (*Spot cleaners are chemicals used to remove contaminated spots or non-permanent stains from materials or final products such as garments, fabric, shoes etc. Acetone-based chemicals are commonly used as spot cleaners. Spot cleaning activity may be done onsite during production processes, or a facility may have a dedicated room for spot cleaning.)
    - **Note**: Only spot cleaners that contain VOCs should be reported in the Air Section, whereas all spot cleaners (with or without VOCs) need to be reported in the Chemical Section.
- Sprayed chemicals or paints
- Other sources of ozone depleting substances (ODSs)
- Other sources of particulate matter (PM)
- Other sources of volatile organic compounds (VOCs)
- Hazardous or Toxic Air Pollutants (HAPs/ TAPs)

Air Emissions

1. Has your facility created an inventory of all point source air emissions sources at your facility? *(Ref ID - airsourceinvent)*

Answer Yes if: Your facility has a documented inventory of all point source emission sources at your facility including point sources from facility operations and production emission sources.

Notes:

- Air Conditioning units are not considered a point source emission source in the FEP. These are considered fugitive emission sources.

If you select Yes, you will be asked the following sub question(s):

- Does your facility's point source air emissions inventory include the following information? Select all that apply.

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- Unique source identifier (emission point name or number)
- Process or Equipment the source is linked to
- List of pollutants emitted from the source
- Legal or other emissions, testing or reporting requirements (i.e. testing parameters and frequency), if applicable
- Control devices installed on the source, if applicable
    - **Note**: The intent of this inventory item is to indicate the presence or absence of a control device for the source. If there is no control device for this source and this is indicated on the inventory, this option should be selected.

Suggested Uploads:

- A copy of the facilities inventory of point source air emission sources.

What is the intent of the question?

The intent of this question is for facilities to establish an inventory (i.e. a list) of all possible point sources of emissions to air on-site. This includes point sources from facility operations and production emissions. The intent is also for facilities to understand which pollutants are emitted or have the potential to be emitted from each point source.

Technical Guidance:

An air emission source inventory is needed for facilities to identify, track, and manage emission sources onsite. To prepare a comprehensive inventory, all point sources of facility emissions from operations and production should be included. Regular review should be carried out to make sure the inventory is up-to-date and accurate. This inventory should include emissions sources regulated by permits as well as those not currently regulated.

Emission source inventories can contain varying levels of detail and information, however the following basic information should be included in the inventory

- Unique source identifier (emission point name or number)
- Process or Equipment the source is linked to.
- List of pollutants emitted from the source.
- Legal or other emissions, testing or reporting requirements (ie. testing parameters and frequency), if applicable
- Control devices installed on the source, if applicable
    - **Note**: The intent of this inventory item is to indicate the presence or absence of a control device for the source. If there is no control device for

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this source and this is indicated on the inventory, this option should be selected.

An example inventory can be downloaded here:
https://www.sumerra.com/wp-content/uploads/Air-Emissions-Inventory.xlsx

Examples of common sources of emission sources and pollutants that can be emitted through point sources are provided below. Note that this is not an exhaustive list and facilities may require the support of qualified environmental experts to identify air emission point sources and all potential pollutants emitted.

- Particulate Matter (PM) – e.g., from fuel combustion, yarn spinning, slashing, weaving, synthetic fiber manufacturing, casting
- Oxides of Sulphur and Nitrogen (SOx and NOx) – typically associated with fuel combustion.
- Volatile organic compounds (VOCs) – e.g., from fabric finishes, solvents, adhesives, fabric printing, tenterframes, degreasing operations.
- Ozone depleting substances (ODS) – commonly found in refrigerants, many apparel spot cleaners, and some adhesives and solvents.
- Ammonia (NH3) – e.g., from fabric finishing, tanning processes.
- Ozone (O3) – e.g., from denim finishing
- Carbon disulfide (CS_2) – from Man-Made Cellulosic Fibres (MMCF) Production
- Hydrogen Sulfide (H_2S) - from Man-Made Cellulosic Fibres (MMCF) Production
- Hazardous or toxic air pollutants (HAPs/TAPs) - e.g., from fuel combustion, solvents, adhesives, and finishing processes (e.g., printing, potassium permanganate spray), anti-fungal/bacterial agents, metal plating, injection moulding, etc.

Country-specific regulation may define which air pollutants are designated as HAPs/TAPs within a specific jurisdiction. Where country-specific definitions or regulations do not define HAPs/TAPs, recognized lists from other jurisdictions may be referenced when determining if pollutants from facility operation are considered HAPs/TAPs. For example, information on HAPs from the US EPA can be found here https://www.epa.gov/haps. A current list of HAPs (as defined by the US EPA can be found here: https://www.epa.gov/haps/initial-list-hazardous-air-pollutants-modifications

How This Will Be Verified:

Documentation Required:

- An up-to-date inventory of all point source emission sources from the facility including operational and production emission sources.
- The inventory contains all the basic information listed in the sub-question and this information is accurate and complete.

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Note: This information may be maintained in several different documents. For example, if the facility has a list of all point sources and pollutants emitted from each source but maintains a separate legal register with all emission related regulatory requirements that can be linked to the inventory, this would be acceptable.

Interview Questions to Ask:

- Staff responsible for managing air emissions are able to explain the information in the inventory and how emission sources and pollutants are identified.

Inspection - Things to Physically Look For:

- All point source emission sources and potential pollutants from each source are properly identified and this is consistent with onsite observations.

3. Is your facility in compliance with all applicable legal requirements relating to air emissions including all permitting, reporting and testing requirements? *(Ref ID - aircompliance)*

Answer Yes if: Your facility is in compliance with all applicable legal requirements relating to air emissions including all permitting, reporting and testing requirements.

Note: If your facility does not have one or more of the legally required permits for air emissions noted in the Permits Section of the FEP Module, you should select No for this question.

If you answer No, you will be asked the following sub question:

- Does your facility have an action plan to address the non-compliance?

Suggested Uploads:

- Action plan to address the non-compliance if No is selected to the main question.

What is the intent of the question?

The intent of this question is to ensure that facilities are operating in compliance with all applicable legal requirements relating to air emissions including any permitting, reporting, and testing requirements.

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Technical Guidance:

Aspects related to air emissions at facilities may be regulated in multiple ways depending on several factors such as the type(s) of emission sources, pollutants, industry category, or the jurisdiction in which the facility operates.

Requirements may include:

- Discharge permits or approvals for facility emissions to air or specific facility operations or equipment.
- Source testing (also known as stack testing) of specific sources at frequencies defined by local law(s) to determine compliance with in-stack or emission rate concentrations of specific pollutants (e.g., ppm or mg/m3)
- Calculating or measuring annualized mass emission quantities of specific pollutants to demonstrate compliance with permits or other regulatory requirements (e.g., tons or kg per year)
- Calculating the offsite concentration of specific pollutants using air dispersion modelling to demonstrate compliance with ambient air quality guidelines or standards.
- Legally mandated control devices for emission sources.

Being in compliance means that all legally required permits are valid and up to date and any testing and/or reporting are performed in accordance with all applicable legal requirements.

How This Will Be Verified:

Documentation Required:

- Documentation that demonstrates the facility is meeting all applicable legal requirements relating to air emissions including all permitting, reporting and testing. This may include, but is not limited to the following:
    - Permits, licenses, or other approval documentation.
    - Testing reports
    - Legally required emissions and/or pollutant reporting documentation

Note – Required documentation may vary by facility as this will depend on the specific legal requirements that apply to each facility.

Interview Questions to Ask:

- Staff responsible for managing air emissions understand and can describe legal requirements relating to the facility's air emissions and the processes in place to ensure compliance.

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Inspection - Things to Physically Look For:

- All legally required permits are valid and up to date and any testing and/or reporting are performed in accordance with all applicable legal requirements.

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Waste

General Introduction

Waste from industrial processes and manufacturing operations have the potential to impact the environment, human health, and local ecosystem.

As governments and industry stakeholders continue to focus on reducing waste and promoting more sustainable manufacturing practices, more stringent requirements and regulations may be imposed. New materials and technologies are also being developed to reduce and recapture waste and work towards a circular economy that is more sustainable. By proactively managing and working to minimize waste generated from your facility, you can reduce impacts on the environment, exposure to regulatory risks or new requirements from business partners and contribute to a more sustainable future.

In general, the FEP Module Waste section encourages you to:

- Identify and understand the types of wastes that are generated at your facility.
- Ensure all wastes are appropriately managed onsite (e.g., storage and disposal)
- Understand how your wastes are treated/disposed of after leaving your facility.
- Track the quantity of wastes generated at your facility.

Additional details on the intent and criteria for each FEP Module waste question is provided in the guidance below along with useful technical guidance and resources to support your facility in the management and reduction of waste.

Waste at Your Facility

Waste is any material or substance that has no further use and is discarded from a facility which can pollute or contaminate the environment and surrounding communities.

In the FEP Module, wastes are categorized as follows:

- **Non-hazardous Waste:** is any waste that causes no harm to human or environmental health. Non-hazardous waste usually includes both non-hazardous production waste as well as domestic waste. Examples of non-hazardous waste include:
    - Non-hazardous production waste such as textile, leather, plastic, paper, metal, or packaging waste, etc.

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- Domestic waste such as food waste and sanitary wastes including household waste from the office and/or dormitory areas (e.g., toilet paper, yard/garden waste, glass, and food packaging), etc.

- **Hazardous Waste:** is any waste that could cause harm to public health and/or the environment because of its chemical, physical, or biological characteristics (e.g., it is flammable, explosive, toxic, radioactive, or infectious). Hazardous wastes can be liquids, solids, or gases. Examples of hazardous waste include:
  - Hazardous production waste such as used chemicals, chemical containers/drums, waste oils, contaminated materials (e.g. materials that contain other substances that are hazardous waste such as rags containing solvents), etc.
  - Waste from facility operations such as wastewater treatment sludge if hazardous, fly ash, fluorescent light bulbs, electronic waste, batteries, etc.

Note: For all companies manufacturing or distributing in or to the European Union, the WEEE (Waste from Electrical and Electronic Equipment) directive is an important directive to follow. The WEEE directive governs the reduction and separation of electronic waste.

Reportable Wastes in the FEP

The FEP Module requires that facilities track waste generation data for several specific waste categories listed below.

Non-hazardous Wastes	Hazardous Wastes
● Textile Waste ● Leather Waste ● Rubber Waste ● Metal (broken needles, metal swarf, etc.) ● Plastic ● Paper ● Cans ● Wood ● Food Waste ● Glass ● Cartons ● Foams (EVA, etc.) ● Pre-Water treatment sludge (Non-Hazardous) ● General or unspecified waste ● Slag (Non-Hazardous)	● Empty chemical drums and containers (without proper cleaning) ● Film and Printing Frame ● Pre-water treatment sludge (Hazardous) ● Expired/unused/used chemicals (waste oil, solvents, reactants, etc.) ● Compressed gas cylinders (refrigerants, etc.) ● Contaminated materials ● Batteries ● Fluorescent light bulb ● Ink cartridges ● Waste oil and grease (from cooking) ● Waste oil and grease (from production, maintenance, etc. - not cooking)

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• Other	• Metal sludge • Empty containers (cleaning, sanitizing, pesticides, etc.) • Electronic Waste • Coal combustion residuals (fly ash and bottom ash/coal slag) • Slag (Hazardous) • Other

Note: The legal classification of hazardous waste may differ from one country or jurisdiction to another. Facilities should, at minimum, follow local regulatory requirements and definitions for classifying wastes as hazardous or non-hazardous. If legal requirements do not exist, it is recommended that facilities use industry guidelines or internationally recognized definitions of hazards wastes (such as those listed in the Basel Convention http://www.basel.int/TheConvention/Overview/TextoftheConvention/tabid/1275/Default.asp). Additionally, where industry guidelines are more stringent than local requirements, it is recommended that facilities follow industry guidelines.

Waste to be Excluded from the FEP Module Reporting Scope:
The following waste materials should not be reported in the FEP, as these types of waste are not generated from a "business as usual" situation**:**

- Medical waste
- Major construction and demolition projects waste
- Waste from natural disasters such as flood, fire, tornado, hurricane.

Waste Disposal Methods in the FEP Module

The FEP Module does not require facilities to report how their wastes are currently being disposed of; however, the Higg FEM includes predefined waste disposal methods that can be selected. For reference, the table below provides a description of the available waste disposal method options in the Higg FEM. These are categorized into Preferred, Less Preferred and Least Preferred options based on their associated environmental impacts.

Waste Disposal Method	Description
Preferred Options (Material Recovery)	
Reuse	Pre or post-consumer wastes are reused to make new or second hand products without modification or additional manufacturing steps before using the waste.

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Recycle (including Upcycle)	Pre or post-consumer wastes are reprocessed to produce new items of equal (or better) quality (e.g., textile to textile recycling or processing plastic bottles into fabric).
Downcycle	Pre or post-consumer wastes are recycled and processed to produce material or products of lesser economic value (e.g., recycled textiles used for rags, carpet padding, or sound insulation products).
Less Preferred Options (Energy Recovery or Non-valorized Disposal)	
Incineration with energy recovery for Non-Recyclables only	Energy recovery from the process of incinerating non-recyclable waste. **Note:** Recycling infrastructure and capabilities may differ among regions and countries.
Energy Recovery - Residual Management (e.g., Physical / Chemical / Biological Treatment)	Energy Recovery as a form of residual management, ie. Sludge Treatment that leads to Biogas Generation, heat generation from biological treatment (composting), energy generation from any such activity that does not include "Incineration"
Onsite incineration without energy recovery for Non-Recyclables	Incineration of non-recyclable wastes onsite at the facility that does not recover energy from the incineration process.
Offsite incineration without energy recovery for Non-Recyclables	Incineration of non-recyclable wastes offsite at a third-party facility that does not recover energy from the incineration process.
Non-valorized disposal - Other Treatment	Any disposal method that does not recover usable materials or attributes of the waste such as converting them into more useful by products like raw materials, fuels, or other sources of energy.
Non-valorized disposal - Responsibly Managed Landfills (for waste that cannot be managed in any of the options under Preferred options or Less Preferred Options)	In the Higg FEM, responsibly managed landfills aligns with the ZDHC Disposal Pathways definitions for landfills with significant control measures as defined in the ZDHC Sludge Management Document Version 1.0. available here: https://www.roadmaptozero.com/output, and as described below: Landfills with **Significant Control Measures** are landfills that control both leachate and gas produced from the materials placed in the landfill and are engineered to store waste in a manner that is safe to the surrounding environment. For

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	purposes of the WW Guideline, significant control measures are defined as: ● Lined landfill such that the permeability of no more than 1 x 10-7 cm/sec is achieved. This is most often achieved using a synthetic composite liner on top of a packed natural clay liner but can also be achieved through two synthetic liners. ● Leachate is collected above the liner and removed for proper treatment and disposal. Leak detection and collection is implemented beneath the primary liner and above the secondary liner. ● Gas produced from aerobic and anaerobic decomposition is collected and safely used or disposed of. This gas is primarily carbon dioxide or methane but can include sulphurous compounds. Depending on the content of the gas, carbon dioxide can be vented directly to the atmosphere or collected, filtered, and used beneficially. ● Monitoring and documentation are maintained for the life of the landfill. Landfills with **Limited Control Measures** are landfill types that do not meet the description requirements specified in the Landfill with Significant Control Measures section. The permeability, leachate and gas control, and documentation are generally less restrictive. Leachate control may be non-existent or consist of simple collection and drain to local sewer lines. Gases may be vented versus stored, treated and used. Monitoring requirements for these types of landfills are less stringent – requiring less frequent sampling, inspections, and records for a shorter time depending on the local laws and regulations.
Least Preferred Options	
Energy Recovery (e.g., Incineration with energy recovery for Recyclables)	Energy recovery from the process of incinerating of recyclable waste. **Note:** Material recovery is the preferred method for recyclable wastes. **Note:** Recycling infrastructure and capabilities may differ among regions and countries.

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Landfill/Dumping with No Control Measures	In the Higg FEM, landfill/dumping with no controls aligns with the ZDHC Disposal Pathways definitions for landfills with limited or no control measures as defined in the ZDHC Sludge Management Document Version 1.0. available here: https://www.roadmaptozero.com/output, and as described below: Landfills with **Limited Control Measures** are landfill types that do not meet the description requirements specified in the Landfill with Significant Control Measures section. The permeability, leachate and gas control, and documentation are generally less restrictive. Leachate control may be non-existent or consist of simple collection and drain to local sewer lines. Gases may be vented versus stored, treated and used. Monitoring requirements for these types of landfills are less stringent – requiring less frequent sampling, inspections, and records for a shorter time depending on the local laws and regulations. Landfills with **No Control Measures** are landfills constructed with no control measures. Any landfill that has not been designed to contain waste, limit percolation, or control leachates from exposure or entering the environment is considered a landfill with no control measure. This includes dump piles and holes with no lining or packing to limit waste exposure to the ground and/or groundwater. There may be few or no monitoring requirements for these types of landfills. In many cases, these types of landfills are constructed by simply digging a hole and then filling the hole with waste, or it may consist of filling a naturally occurring depression with waste.
Onsite Incineration without energy recovery for Recyclables	Incineration of recyclable wastes onsite at the facility that does not recover energy from the incineration process.
Offsite incineration without energy recovery for Recyclables	Incineration of recyclable wastes offsite at a third-party facility that does not recover energy from the incineration process.

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Other	Any other waste disposal method that does not fit the description of the above noted methods. **Note**: A detailed description of the other methods should be provided.

Waste

1. **Which non-hazardous waste streams does your site produce? Select all that apply:** *(Ref ID - wstsourcenh)*

- Textile Waste
- Leather Waste
- Rubber Waste
- Metal
- Plastic
- Paper
- Cans
- Wood
- Food Waste
- Glass
- Cartons
- Foams (EVA, etc.)
- Pre-water treatment sludge (Non-Hazardous)
    - **Note:** Wastewater treatment sludge waste is reported in the Wastewater section and should not be reported in the Waste Section.
- Slag (Non-Hazardous) including boiler ash
- General or unspecified waste
    - This includes any general/mixed waste not defined above (eg. Floor dust, fabric dust)
- Other

Resources:

- Textile waste segregation training resources
    - https://www.reverseresources.net/resources/training-videos

After selecting your waste streams, you will be asked the following questions related to tracking of your waste generation data:

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2. **Does your facility track any of its non-hazardous waste streams?** *(Ref ID - wstsourcenhtrack)*

    - **Answer Yes if**: You track the quantity of at least one (1) non-hazardous waste stream generated at your facility**.**
    - **Answer No if:** Your facility did not track the quantity of at least one (1) non-hazardous waste stream generated at your facility**.**

If you answer Yes to the question above, you will be asked the following to provide more information on your non-hazardous waste tracking.

3. **Does your facility track each non-hazardous waste stream your facility generates?** *(Ref ID - wstsourceeach)*

    - **Answer Yes if:** You track the quantity of all waste streams generated at your facility.
    - **Answer Partial Yes if:** You track the quantity of at least one (1) non-hazardous waste stream generated at your facility**.**

Note: If your facility does not track any of its waste streams, the answer to both questions above should be No.

Suggested Uploads:

- A waste inventory of all non-hazardous waste streams generated at the facility.
- Waste quantity/disposal tracking records that show the quantity of wastes disposed of in the reporting year (e.g., waste manifests, internal tracking records)

What is the intent of the question?

The intent is to ensure facilities are aware of all non-hazardous waste types (both production and domestic waste) produced at the facility and track the quantity of each waste type.

Technical Guidance:

Identifying all of the facility's waste streams and tracking waste quantities, provides facilities important information that can be used to identify opportunities to reduce waste and quantify these reductions.

Note: This guidance also generally applies to hazardous waste management covered in the FEP questions related to hazardous waste.

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Creating a Waste Inventory:
Developing a waste inventory is an important first step in waste management. When establishing your waste tracking and reporting program, start by doing the following:

- Determine what types of waste are generated.
- Determine where (location and processes) waste is being generated.
- Establish procedures to collect and track waste data:
    - Examples include on-site scales, waste invoices/manifests, receipts for waste materials that are sold, etc.
    - If estimation techniques are used to calculate the amount of waste, the methodology should be clearly defined and be supported by verifiable data.
- Record data (e.g., daily, weekly, monthly waste quantities) in a format that is easy to use and review such as Microsoft Excel

Note: Waste materials that are not generated from a "business as usual" situation should **not** be reported in the FEP Module. Examples include:

- Medical waste
- Major construction and demolition projects waste
- Waste from natural disasters such as flood, fire, tornado, hurricane.

Estimating Waste Quantity Data

In some cases, calculating annual waste quantities may require estimation. Any estimation methodology used should include documented and verifiable processes that includes details on the following:

- The calculation methodology and any data or assumptions used.
- Any production volume or facility operating data used in the calculations.
- Description of any updates or changes to the calculation methodology

Note: If an estimation technique is used, the methodology should be applied consistently and based on reasonable estimation factors that are derived from relevant data (e.g., actual weights of a representative sample of the waste).

An example of how waste quantity data can be estimated is provided below:

- A facility generates waste in barrels which are sealed when full and sent weekly for disposal. Weighing every barrel may not be possible. Therefore, the average weight of a full barrel can be determined by weighing a representative sample of barrels and then multiplying this average weight by the number of barrels disposed each week or month as shown below:
    - Average weight of a barrel = 25kg (based on representative weights of barrels from different days, months, production scenarios, etc.)

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- Number of barrels disposed of in 1 month = 65
- Total waste for this source in 1 month = 1,625kg (25kg x 65 barrels)

- Similarly, the same methodology above could be used to estimate food or sanitary waste from a canteen or dormitory by collecting representative weight measurements of the average bag or bin and then multiplying the average weight by the number of bags or bins disposed of per month.

How This Will Be Verified:

When verifying a facility's waste data, Verifiers **must** review all aspects of the facility's waste tracking program that could produce inaccuracies including:

- The initial data collection processes and data sources (e.g., weighing records, manifest/invoices/receipts, etc.)
- The process and tools used to aggregate the data (e.g., spreadsheet calculations, unit conversions, etc.)

If any inconsistencies or errors are noted, the reported information must be corrected, where possible, and detailed comments should be included in the Verification Data field.

Documentation Required:

- List of all non-hazardous waste produced by the facility, including but not limited to:
  - Production Waste
  - Packaging waste
  - Domestic Waste

Interview Questions to Ask:

- Staff responsible for managing wastes are able to explain the information in the waste inventory, how waste sources are identified, and waste quantities are tracked.
- Key staff should understand:
  - The procedures in place for tracking non-hazardous waste, including tracking the waste collection process, quantity measurement and type of disposal.
  - How data quality of the waste data tracking program is maintained.
  - Any estimation methodologies used to calculate annual waste quantities.

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Inspection - Things to Physically Look For:

- All non-hazardous waste streams observed are properly identified and tracked.
- Appropriate equipment for waste quantity measurement if applicable.

5. Which <u>hazardous</u> waste streams does your site produce? Select all that apply: *(Ref ID - wstsourceh)*

Note: Wastewater treatment sludge waste is reported in the Wastewater section and should not be reported in the Waste Section.

- Empty chemical drums and containers (without proper cleaning)
    - This category is for waste drums/containers of industrial chemicals such as those used for production.
- Film and Printing Frame
- Pre-water treatment sludge (Hazardous)
- Expired/unused/used chemicals (solvents, reactants, etc.)
- Compressed gas cylinders (refrigerants, etc.)
- Contaminated materials
- Batteries
- Fluorescent light bulb
- Ink cartridges
- Waste oil and grease (from cooking)
- Waste oil and grease (from production, maintenance, etc. - not cooking)
- Metal Sludge
- Empty containers (cleaning, sanitizing, pesticides, etc.)
    - This category is for waste containers of chemicals used for domestic operations such as domestic cleaning, sanitizing or pesticides.
- Electronic Waste
- Coal combustion residuals (fly ash and bottom ash/coal slag)
- Slag (Hazardous) including non-coal boiler ash
- Other

Notes:

- Boiler ash generated from Coal should be reported as “Coal combustion residuals (fly ash and bottom ash/coal slag)”.
- Hazardous biomass wastes including combustion residual (ie. from Biomass or Wood boilers) should be reported as “Slag (Hazardous) including non-coal boiler ash”.
    - If the facility has performed hazard analysis testing and found this waste to be non-hazardous, it should be reported under non hazardous waste. Annual testing is not required and a single test is sufficient to demonstrate

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the waste is not hazardous if the biomass source and composition has not changed since the initial testing.

- Hazardous combustion residual waste from fabric or other solid wastes should be reported as “Slag (Hazardous) including non-coal boiler ash”.
    - If the facility has performed hazard analysis testing and found this waste to be non-hazardous, it should be reported under non hazardous waste. Periodical testing (ie. at least annual) is recommended for this waste type as the source or composition of fabric waste or other waste can change significantly.

After selecting your waste streams, you will be asked the following questions related to tracking of your waste generation data:

6. **Does your facility track any of its hazardous waste streams?** *(Ref ID - wstsourcehtrack)*

    - **Answer Yes**, if you track the quantity of at least one (1) hazardous waste stream generated at your facility**.**
    - **Answer No if:** Your facility does not track the quantity of at least one (1) hazardous waste stream generated at your facility**.**

If you answer Yes to the question above, you will be asked the following to provide more information on your hazardous waste tracking.

7. **Does your facility track each hazardous waste stream your facility generates?** *(Ref ID - wstsourcehtrackeach)*

    - **Answer Yes,** if you track the quantity of all hazardous waste streams generated at your facility.
    - **Answer Partial Yes,** if you track the quantity of at least one (1) hazardous waste stream generated at your facility**.**

Note: If your facility does not track any of its hazardous waste streams, the answer to both questions above should be No.

Suggested Uploads:

- A waste inventory of all -hazardous waste streams generated at the facility.
- Waste quantity/disposal tracking records that show the quantity of wastes disposed of in the reporting year (e.g., waste manifests, internal tracking records)

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What is the intent of the question?

The intent is to ensure facilities are aware of all hazardous waste types produced at the facility and track the quantity of each waste type.

Technical Guidance:

Identifying all of the facility's hazardous waste streams and tracking waste quantities, provides facilities important information to ensure compliance with applicable regulations and information that can be used to identify opportunities to reduce waste and quantify these reductions.

Note: The legal classification of hazardous waste may differ from one country or jurisdiction to another. Facilities should, at minimum, follow local regulatory requirements and definitions for classifying wastes as hazardous or non-hazardous.

Reporting Hazardous Waste Data in the FEP Module

The guidance provided in the Technical Guidance section of Question 1 for non-hazardous wastes should be applied to hazardous waste tracking.

Estimating Waste Quantity Data

In most cases, local laws require the detailed tracking and reporting of hazardous waste quantities, however in some cases, calculating annual waste quantities may require estimation. Any estimation methodology used should include documented and verifiable processes that includes details on the following:

- The calculation methodology and any data or assumptions used.
- Any production volume or facility operating data used in the calculations.
- Description of any updates or changes to the calculation methodology

Note: If an estimation technique is used, the methodology should be applied consistently and based on reasonable estimation factors that are derived from relevant data (e.g., actual weights of a representative sample of the waste).

An example of how waste quantity data can be estimated is provided below:

- A facility disposes of empty chemical drums or full drums (containing liquid hazardous waste) Weighing every drum may not be possible. Therefore, the average weight of an empty or full drum can be determined by weighing a representative sample of drums and then multiplying this average weight by the number of drum disposed each week or month as shown below:
    - Average weight of a drum = 20kg (based on representative weights of drums from different days, months, production scenarios, etc.)

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- Number of drums disposed of in 1 month = 10
- Total waste for this source in 1 month = 200kg (20kg x 10 drums)

- Similarity, the same methodology above could be used to estimate other hazardous waste quantities such as printing screens or fluorescent light bulbs.

How This Will Be Verified:

When verifying a facility's waste data, Verifiers **must** review all aspects of the facility's waste tracking program including:

- The data collection processes and data sources (e.g., weighing records, manifest/invoices/receipts, etc.)
- The process and tools used to aggregate the data (e.g., spreadsheet calculations, unit conversions, etc.)

If any inconsistencies or errors are noted, the reported information must be corrected, where possible, and detailed comments should be included in the Verification Data field.

Documentation Required:

- List of all hazardous waste produced by the facility, including but not limited to:
  - Production Waste
  - Facility Operations waste

Interview Questions to Ask:

- Staff responsible for managing hazardous wastes are able to explain the information in the waste inventory, how waste sources are identified, and waste quantities are tracked.
- Key staff should understand:
  - The procedures in place for tracking hazardous waste, including tracking the waste collection process, quantity measurement and type of disposal.
  - How data quality of the waste data tracking program is maintained.
  - Any estimation methodologies used to calculate annual waste quantities.

Inspection - Things to Physically Look For:

- All hazardous waste streams observed are properly identified and tracked.
- Appropriate equipment for waste quantity measurement if applicable.

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9. **Does your facility both segregate waste (hazardous and non-hazardous) and store these wastes separately?** *(Ref ID - wstsegregatestreams)*

Answer Yes if: Your facility segregates hazardous and non-hazardous wastes for appropriate management and disposal.

Suggested Uploads:

- Photos of segregated storage areas
- Photos of segregated waste streams at waste collection points

What is the intent of the question?

The intent is for facilities to segregate hazardous and non-hazardous waste for appropriate management and disposal.

Technical Guidance:

The segregation of waste streams is important because different wastes (e.g., hazardous and non-hazardous wastes) often require different storage, handling and disposal methods. Segregating hazardous and non-hazardous waste can also:

- Prevent unwanted reactions between incompatible waste streams.
- Reduce pollution, harm to environment, and waste disposal costs (e.g., mixing wastes can increase the volume of waste classified as hazardous which costs more to dispose of).
- Reduce exposure risk for employees.

Additionally, facilities should:

- Have established procedures for the management of hazardous and non-hazardous waste including collection, segregation, handling, and storage of wastes .
- Provide sufficient working instructions and training to employees that handle wastes (e.g., formal training, awareness campaigns).
- Provide clear and consistent signage in the workplace directing employees where and how to segregate and dispose of each waste type (e.g., waste container labelling, posters, etc.)

How This Will Be Verified:

Documentation Required:

- Documentation that supports the facility's waste segregation program for hazardous and non-hazardous wastes. This may include:

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- Work instructions or operating procedures for the segregation of waste streams.
- Training materials and records of waste management, handling and disposal training.
- Awareness campaign documentation (e.g., posters, signage for segregating waste)

Interview Questions to Ask:

- Staff responsible for waste management and the handling, disposal and storage of wastes understand and are knowledgeable on the facilities waste segregation procedures.

Inspection - Things to Physically Look For:

- On-site observations demonstrate that the facility is appropriately segregating wastes.
- Waste collection, storage and disposal areas have appropriate signage and waste disposal instructions (e.g., labelling, posters).

10. Does your facility have well-marked, designated hazardous waste storage areas and proper containers for all hazardous waste? *(Ref ID - wsthstorage)*

Answer Yes if: Your facility has designated hazardous waste storage areas and hazardous wastes are stored in appropriate containers.

Suggested Upload:

- Photos of hazardous waste storage areas and containers

What is the intent of the question?

The intent of this question is to ensure that hazardous waste is stored in a way that is safe for employees, the environment, and the local community.

Technical Guidance:

The proper storage of hazardous wastes is important to prevent unintended contamination of other wastes, the surrounding environment and to reduce exposure risks to employees. Facilities should have dedicated storage areas for hazardous waste

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storage and implement appropriate controls practices based on the hazardous characteristics of the waste such as those listed in the sub questions.

Information on the hazardous characteristics of waste can sometimes be found in Safety Data Sheets (SDS) of the hazardous raw materials used in the processes that generate the waste. For example, if flammable cleaning solvents are used, any waste that is contaminated with these solvents will likely have the same hazardous characteristics as the solvent (i.e., the raw material used).

Facilities should refer to material SDS for important information on the storage and handling requirements and any chemical incompatibilities which can be found in Sections 7 and 10, respectively on a GHS compliant SDS. Other important information such as measures to take in the event of fire, accidental release/spill, or employee exposure can also be found on the materials SDS.

Hazardous waste storage areas should also be inspected regularly to ensure good storage and housekeeping practices are continuously implemented.

How This Will Be Verified:

Documentation Required:

- Documentation to support the facilities procedures to ensure that hazardous wastes are stored appropriately. This may include:
    - Procedures or work instructions for hazardous waste storage areas
    - Safety Data Sheets, if relevant to the waste material(s).
    - Hazardous waste area inspection records

Interview Questions to Ask:

- Staff responsible for hazardous waste management handling and storage understand risks associated with the materials stored in the waste storage areas and how to properly store waste materials (which containers to use, chemical segregation, etc.)

Inspection - Things to Physically Look For:

- On-site observations indicate that wastes are being stored in designated areas with appropriate controls.

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11. Does your facility have well-marked, designated non-hazardous waste storage area(s) and containers? *(Ref ID - wstnhstorage)*

Answer Yes if: Your facility has designated waste storage areas and wastes are stored in appropriate containers.

Suggested Upload:

- Photos of non-hazardous waste storage areas and containers

What is the intent of the question?

The intent of this question is to ensure that non-hazardous waste is stored in a way that is safe for employees, the environment, and the local community.

Technical Guidance:

The proper storage of non-hazardous wastes is important to prevent unintended contamination of other wastes, the surrounding environment and to reduce exposure risks to employees as well as the risks of fires. Facilities should have dedicated storage areas for non-hazardous waste storage and implement appropriate control practices based on the characteristics of the waste such as those listed in the sub questions.

Non-hazardous waste storage areas should also be inspected regularly to ensure good storage and housekeeping practices are continuously implemented.

How This Will Be Verified:

Documentation Required:

- Documentation to support the facilities procedures to ensure that non-hazardous wastes are stored appropriately. This may include:
    - Procedures or work instructions for non-hazardous waste storage areas
    - Non-hazardous waste area inspection records

Interview Questions to Ask:

- Staff responsible for non-hazardous waste management handling and storage understand risks associated with the materials stored in the waste storage areas and how to properly store waste materials (which containers to use, waste segregation, etc.)

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Inspection - Things to Physically Look For:

- On-site observations indicate that wastes are being stored in designated areas with appropriate controls.

12. Does your facility forbid all irresponsible waste disposal actions including open burning, open dumping, burying waste and intentional release into soil and/or water? *(Ref ID - wstpolburn)*

Answer Yes if: Your facility has policies and procedures in place to forbid all irresponsible waste disposal practices.

Suggested Upload:

- Documented policies and procedures in place that forbid all irresponsible waste disposal practices at your facility.

What is the intent of the question?

The intent of this question is to ensure that facilities have policies and procedures in place to forbid all irresponsible waste disposal practices.

Technical Guidance:

Unauthorized or Irresponsible waste disposal practices including on-site open burning, landfilling, burying of waste can contaminate the surrounding environment and pose significant environmental and human health risks.

Facilities should strictly prohibit these practices and have appropriate policies and procedures in place that are communicated to all staff.

If waste disposal activities occur on-site, facilities must have the required approvals and permits in accordance with local law (e.g., for incineration of textile wastes).

How This Will Be Verified:

Documentation Required:

- Documented policies and procedures that demonstrate the facility has prohibited all forms of irresponsible waste disposal.
- Supporting evidence that policies and procedures have been communicated to all relevant staff (e.g., training records)

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- If waste is disposed of onsite, all required legal permits and approvals.

Interview Questions to Ask:

- Staff responsible for waste management and handling understand the facility's policies and procedures for responsible waste disposal which practices are prohibited.

Inspection - Things to Physically Look For:

- On-site observations confirm that there are no irresponsible waste disposal practices (e.g. burying, open burning, or dumping) at the facility ground or into the surrounding environment.

13. Does your facility provide awareness training to employees regarding segregation of waste? *(Ref ID - wsttraining)*

Answer Yes if: Your facility provides awareness training to **all** employees on waste segregation.

Answer Partial Yes if: Your facility provides awareness training to employees on waste segregation and this training has been provided to 50% or more, but not all employees.

Note: The intent of this question is that all employees at minimum have received training on waste segregation. Training does not need to be provided annually for each individual employee, however facilities are encouraged to provide refresher training at regular intervals as part of their on-going environmental training program (e.g., every 2-3 years) or if there are any significant changes in the facility's waste management program.

Suggested Upload:

- Records of waste segregation training.
- Copies of waste segregation training material used.
- Employee training plans or procedures that demonstrate waste segregation training is provided to all employees.

What is the intent of the question?

The intent of this question is to ensure training is provided to employees on proper waste segregation practices at the facility.

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Technical Guidance:

Separating wastes into different waste streams (i.e., waste segregation) allows facilities to understand and quantify the amount of each waste type that facilities produce. This also helps identify opportunities to reduce waste and increase recycling rates which can lower waste disposal costs.

To ensure that wastes are effectively segregated it is important that all employees are trained and understand how to properly separate wastes in the workplace. In addition to providing training, it is equally as important to have the proper waste disposal facilities in place such as colour-coding of bins and having clear and consistent signage throughout the facility to make it easy for staff to dispose of waste appropriately.

How This Will Be Verified:

Documentation Required:

- Documentation that demonstrates that employees are trained on waste segregation at the facility. This may include:
    - Records of waste segregation training
    - Copies of waste segregation training material used.
    - Employee training plans or procedures that demonstrate waste segregation training is provided to employees.

Interview Questions to Ask:

- Staff responsible for waste management and handling can explain the facility's waste segregation program and how employees are trained.
- Employees throughout the facility understand the facility's waste segregation program and have received training.

Inspection - Things to Physically Look For:

- On-site observations indicate that wastes are being separated in accordance with the facility's waste segregation program.

14. Does your facility provide training to all employees whose work involves hazardous waste handling (such as maintenance and custodial staff) within the facility? *(Ref ID - wsthtrain)*

Answer Yes if: Your facility provides annual training to all employees who handle hazardous waste **and** the training covers proper handling, storage and disposal, waste

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minimization, the use of personal protective equipment (PPE), and emergency response.

Answer Partial Yes if: Your facility provides annual training to all employees who handle hazardous waste, but the training does not cover all of the topics listed above.

If you answer Yes or Partial Yes to this question, you will be asked the following sub question on your training program:

- Select all topics included in your training:
    - Proper handling
    - Storage and disposal techniques and procedures
    - Specific operational procedures for waste minimization
    - Use of personal protective equipment
    - Emergency Responses

Suggested Upload:

- Records of hazardous waste training.
- Copies of training material used.
- Employee training plans or procedures that demonstrate hazardous training are provided to all employees who handle hazardous wastes.

What is the intent of the question?

The intent of this question is to ensure facilities have procedures in place to train all employees who handle hazardous waste on practices to minimize environmental and health risks associated with hazardous waste.

Technical Guidance:

- Hazardous waste can pose significant risks to the environment and human health. Employees who handle hazardous wastes on-site should understand these risks and know how to effectively minimize, handle, and dispose of hazardous wastes. Employees should also understand how to properly protect themselves when there is risk of exposure (e.g., through the use of appropriate PPE).

How This Will Be Verified:

Documentation Required:

- Documentation that demonstrates that all employees who handle hazardous waste are trained annually on proper handling, storage and disposal, waste

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minimization, and the use of personal protective equipment (PPE). This may include:

- Records of hazardous waste training.
- Copies of training material used.
- Employee training plans or procedures that demonstrate hazardous training is provided to **all** employees who handle hazardous wastes.
- List of PPE required for handling of hazardous wastes generated at the facility.

Interview Questions to Ask:

- Staff responsible for hazardous waste management can explain the facility's hazardous waste handling procedures and how all relevant employees are trained.
- Relevant employees understand the facility's hazardous waste handling procedures and have received training.

Inspection - Things to Physically Look For:

- On-site observations indicate that hazardous wastes are being handled in accordance with the facility's hazardous waste handling procedures.
- Appropriate PPE is available and being used by employees.

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Chemical Management

General Introduction

The use of chemicals in a facility's production processes and operations can pose significant risks to the environment and human health if not managed systematically and responsibly.

As governments and industry stakeholders continue to focus on responsible chemicals management, more stringent requirements and regulations may be imposed. New chemistries and technologies are also constantly being developed to support the reduction of hazardous chemicals in the supply chain. By proactively managing and striving to eliminate or reduce the use of hazardous chemicals, you can reduce impacts on the environment, exposure to regulatory risks or new requirements from business partners and contribute to a more sustainable future.

In general, the FEP Module Chemicals Management section encourages you to:

- Establish an effective Chemicals Management System (CMS) with appropriate policies, procedures, and commitments that drive continuous improvements.
- Understand all chemicals used in the facility for production and operations through good chemical inventorying practices.
- Establish responsible chemical purchasing practices that focus on the reduction of hazardous chemical use.
- Ensure staff are appropriately trained and qualified to work with and/or manage chemicals in the workplace.
- Ensure the proper facilities and protections are in place for safe chemical storage, handling, and use.

Additional details on the intent and criteria for each FEP Module Chemicals Management question is provided in the guidance below along with useful technical guidance and resources to support your facility in managing chemicals responsibly.

Note: The FEP Module Chemical Management section is the result of a collaboration between Cascale, Outdoor Industry Association, and Zero Discharge of Hazardous Chemicals (ZDHC).

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Chemical Use at your Facility

Chemicals are used for a wide variety of applications and processes. In the FEP Module, chemicals are categorized as follows:

- **Chemicals used in Production:** This refers to chemicals used in processes to make a product (e.g., chemicals used for dyeing or other wet processing, printing, laundry or washing, cementing or gluing, slashing during weaving, fibre extrusion, yarn spinning, leather tanning, electroplating, welding or other production process).

- **Chemicals used in Operations or Maintenance/Tooling/Equipment:** This refers to chemicals that are not used in production process and are used to operate the facility (e.g., chemicals used for fuels for boilers/generators, general facility/equipment maintenance, lubrication of facility equipment or tools, wastewater treatment, etc.)

ZDHC Collaboration and Resources

One of our collaborative organizations, the Zero Discharge of Hazardous Chemicals (ZDHC) Foundation, has developed a variety of excellent resources for managing chemicals that are referenced throughout the FEP Module Guidance. For more information on the ZDHC, its initiatives, and resources, we encourage you to visit the links throughout this guidance and/or visit their website here: https://www.roadmaptozero.com/?locale=en.

Applicability Questions

To determine which questions you will need to complete in the Chemicals section, you will need to complete the applicability questions listed below. You will be asked to select which processes you have on-site, whether you use commodity chemicals, and if your facility currently implements an MRSL. Your selections will direct you to complete the questions that are most applicable for your facility.

Based on your responses to the applicability questions, your facility will be classified in the FEP Module as one (or a combination) of the facility types listed below:

- **Facility that uses Chemicals in Production.**
    - This refers to chemicals used in processes to make a product (e.g., chemicals used for dyeing or other wet processing, printing, laundry or washing, cementing or gluing, slashing during weaving, fibre extrusion, yarn spinning, leather tanning, electroplating, welding, EVA pellets for footwear production or other production process).

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- **Facility that uses Chemicals in Operation only.**
    - This refers to chemicals that are not used directly in the production process but are used in equipment or processes utilized to operate basic energy conversion or wastewater management within the facility (e.g., Chemicals used in onsite wastewater treatment, Cooling Tower, Boilers (exclude small scale electricity boilers that are used for ironing/Mini Boilers))
- **Facility that uses Chemicals in Maintenance/Tooling/Equipment only.**
    - This refers to chemicals that are not used directly in the production process but are used for regular maintenance of facility equipment. (e.g., chemicals used for equipment maintenance, lubrication of facility equipment or tools (e.g. Machine Oil).)
- **Facility that only uses Spot Cleaner in production.**
    - This refers to chemicals used to remove contaminated spots or nonpermanent stains from materials or final products such as garments, fabric, shoes etc. Acetone-based chemicals are commonly used as spot cleaners. Spot cleaning activity may be done onsite during production processes, or a facility may have a dedicated room for spot cleaning.
        - **Note**: Both Non-VOC emitting Spot Cleaners and Spot Cleaners that contain VOCs should be reported in the Chemical Section, whereas only VOC emitting spot cleaners need to be reported in the Air Emission Section.
- **Facility that has minimal chemical use only.**
    - This refers to facilities that use only liquid and gaseous fuels (e.g., Diesel, LPG, for vehicles or cooking) and /or over the counter chemicals for cleaning and general factory up-keep (e.g., detergent, kitchen supplies, paint, thinner), and does not belong to any other chemical use types listed above.

1. Select all of the processes performed at your facility:

- Dyeing or other wet processing
- Printing
- Laundry or washing
- Cementing or gluing
- Fiber extrusion or yarn spinning (with chemical use)
- Slashing during weaving
- Leather tanning
- Lamination
- Extrusion, assembly, finishing of plastic parts

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- Metal Finishing (with chemical use)
- Welding (with chemical use)
- Casting/Foundry (with chemical use)
- Degreasing with organic solvents
- Laser cutting (with chemical use)
- Metal plating (anodization, electroplating, electroless plating)
- Painting
- Powder Coating (with chemical use)
- Soldering (with chemical use)
- Printed Circuit Board (PCB) electronic automation (with chemical use)
- Other production processes that require chemicals
- Spot cleaners - Spot cleaners are chemicals used to remove contaminated spots or non-permanent stains from materials or final products such as garments, fabric, shoes etc.
- Production Machine/Equipment Lubrication

2. Does your facility use commodity chemicals?

- Yes
- No

Note: The FEP Module aligns with the definition of a commodity chemical which is defined as single substances or chemical compounds whose chemical structure is well-known, have a single CAS number and their use is to create conditions or act as an aid in a process. Two commodity chemicals produced by different manufacturers can be the same and can be interchangeable. For additional information including the definition of commodity chemicals, please refer to ZDHC's Glossary and ZDHC Supplier's Roadmap to Zero Input Section.

3. Does your facility only use Minimal Chemicals (liquid and gaseous fuels, over the counter chemicals, maintenance chemicals for factory up-keep) onsite?

- Yes
    - **Note**: Yes should be selected if your facility **ONLY** uses minimal chemicals such as liquid and gaseous fuels, over the counter chemicals, maintenance chemicals for factory up-keep onsite. If your facility has other chemical use onsite for production or facility operations, you should select No to this question.
- No

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3.1. What kind of chemicals does your facility use? (Select all that apply)

Notes:

- This question will only be asked if you select No to the applicability question "Does your facility only use Minimal Chemicals (liquid and gaseous fuels, over the counter chemicals, maintenance chemicals for factory up-keep) onsite?".
- Please refer to the definitions above for examples of chemical use classifications.
    - Production Chemicals
    - Operations Chemicals
    - Maintenances/Tooling/Equipment Chemicals
    - Spot Cleaner Chemicals

4. Does your facility implement an MRSL?

- Yes - If yes is selected you will be asked to select from the following options:
    - Customer's MRSL
    - ZDHC MRSL
    - bluesign BSSL
    - OEKO-TEX ECO PASSPORT
    - OEKO-TEX STeP Standard
    - Other (If Other, please specify)
- No

Chemical Management

1. Does your facility have a written Chemical Management System (CMS) policy? *(Ref ID - chemcmspolicynonprod / chemcmspolicyprod)*

For facilities that do not use Chemicals in Production: *(Ref ID: chemcmspolicynonprod)*

Answer Yes if: Your facility has a documented Chemical Management System (CMS) policy that covers all of the following elements:

- Comply with all applicable laws and regulations.
- The safe use of chemicals, to ensure Health and Safety for workers and minimizing environmental impact.
- Capacity building and training of staff on CMS.

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For facilities that use Chemicals in Production: *(Ref ID:chemcmspolicyprod)*

Answer Yes if: Your facility has a documented Chemical Management System (CMS) policy that covers **all** of the following elements:

- Comply with all applicable laws and regulations.
- The safe use of chemicals, to ensure Health and Safety for workers and minimizing environmental impact.
- Capacity building and training of staff on CMS.
- Incorporating traceability and transparency into your facility's operations.
- Incorporating sustainable chemical management practices in production processes
- Commitment to continuously improve CMS effectiveness.

Answer Partial Yes if: Your facility has a documented Chemical Management System (CMS) policy that covers the three (3) elements listed below, but not all of the three (3) additional elements listed above:

- Comply with all applicable laws and regulations.
- The safe use of chemicals, to ensure Health and Safety for workers and minimizing environmental impact.
- Capacity building and training of staff on CMS.

If you select Yes or Partial Yes, you will be asked the following sub question(s):

- Which of the following has been included in the policy:
    - Comply with all applicable laws and regulations.
    - Ensuring the safe use of chemicals, to ensure Health and Safety for workers and minimizing environmental impact.
    - Capacity building and training of staff on CMS.

Suggested Uploads:

- A copy of the facility's Chemical Management System policy.

What is the intent of the question?

The intent of this question is for facilities to demonstrate that a formal policy is in place for managing chemicals safely and effectively.

Technical Guidance:

A chemical management system policy is the foundation for a facility's chemical management system. A policy is important to make sure all stakeholders (internal and

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external) are aware of the goals of the facility with respect to chemicals management. A CMS policy should include a clear statement that outlines a facility's commitments to chemicals management. and provide details on the practices and procedures followed by the facility.

The specific content of a chemical management system policy may vary based on the nature of chemicals used at a facility. For example, a facility that only uses chemicals in facility operations (e.g., machine maintenance and lubrication) versus a facility with chemical intensive manufacturing processes. However, there are some key basics elements that should be included such as commitments to:

- Comply with all applicable laws and regulations.
- Reduce risks to workers and the environment.
- Training and capacity building for staff
- Communicate the policy and associated CMS procedures to all relevant parties (e.g., staff, external stakeholders, etc.)

For facilities that use chemicals in production additional policy elements should be included such as commitments to:

- Continuous improvement of the CMS effectiveness.
- Incorporate sustainable chemical management practices in its production processes.
- Incorporate traceability and transparency into its operations.

A CMS policy should also be regularly reviewed and updated as needed. To ensure it provides a framework for continuous improvement, allowing facilities to identify areas where they can improve their chemical management practices and reduce risks.

Resources:

The ZDHC Supplier's Roadmap to Zero Input Section resources are designed to help companies establish a robust and effective CMS that meets the ZDHC framework requirements and reduces the environmental and health impacts associated with chemical use in the supply chain. These resources can be found here: https://programme.roadmaptozero.com/suppliers/input

How This Will Be Verified:

Documentation Required:

- **For facilities that use do not use Chemicals in Production,** Documented Chemical Management System policy that clearly includes the following elements:
    - Comply with all applicable laws and regulations.

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- The safe use of chemicals, to ensure Health and Safety for workers and minimizing environmental impact.
- Capacity building and training of staff on CMS.

- **For facilities that use Chemicals in Production,** Documented Chemical Management System policy that clearly includes the following elements:
  - Comply with all applicable laws and regulations.
  - The safe use of chemicals, to ensure Health and Safety for workers and minimizing environmental impact.
  - Capacity building and training of staff on CMS
  - Incorporating traceability and transparency into your facility's operations.
  - Incorporating sustainable chemical management practices in production processes
  - Commitment to continuously improve CMS effectiveness.

- Other supporting documentation that shows the facility's practices and procedures align with the CMS policy. This may include:
  - Communication and/or training records on the facility's CMS policy
  - CMS procedures
  - Records of management review of CMS policy.

Interview Questions to Ask:

- Staff responsible for chemicals management at the facility, including top management, and employees are aware of the facility's CMS policy and can describe the facility's efforts to meet its stated objectives.

Inspection - Things to Physically Look For:

- Observations onsite are consistent with the facility's CMS policy (i.e., the policy is relevant to the facility operations and chemical use onsite).
- Posting of the CMS policy at the site or other forms of communication to staff.

2. Have you assigned the responsibility of implementing and maintaining the Chemical Management System (CMS) to a team/staff member? *(Ref ID - chemcmstraining)*

Answer Yes if: Your facility has assigned the responsibility of implementing and maintaining the Chemical Management System (CMS) to a team or staff member and there are documented responsibilities for the implementing and maintaining the facility's CMS (e.g., job description).

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Note: This responsibility may be assigned to a single person/role at the facility or spread across multiple staff members/roles.

Suggested Uploads:

- List of staff responsible for implementing and maintaining the CMS and their responsibilities (e.g., documented job description).
- Documented CMS procedures that include responsibilities of staff related to CMS implementation.

What is the intent of the question?

The intent of this question is for facilities to demonstrate they have dedicated roles and responsibilities established and staff assigned for the implementation and maintenance of the facility's CMS.

Technical Guidance:

Assigning a team/staff member and having defined roles and responsibilities for implementing and maintaining the facility's CMS creates a clear chain of accountability for chemicals management within the facility. This is the foundation to effective implementation of a facility's CMS.

Based on the size and scope of operations, a facility can decide on the number of staff required for CMS implementation. It is good practice to have a Chemical Responsible Person or a Core Team, composed of trained, capable, and experienced personnel to oversee the implementation and monitoring of a CMS.

Implementing and maintaining a CMS at a facility requires an in-depth understanding of chemicals management principles. One of the major barriers to effective implementation of a CMS is the lack of technical competencies in chemicals management. A team with appropriate competencies in chemicals management, helps facilities better understand the risks and impacts of chemicals in use, and helps to identify and implement appropriate measures to mitigate those risks and make improvements. Also, it helps ensure compliance with relevant regulations and other requirements, which are constantly evolving and becoming more complex.

Resources:

The ZDHC Supplier's Roadmap to Zero Input Section resources The ZDHC CMS and Technical Industry Guide framework sets out the principles and practices that should be included in a CMS policy and CMS, which are designed to help companies establish a robust and effective CMS that meets the ZDHC framework requirements and reduces

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the environmental and health impacts associated with chemical use in the supply chain. These resources can be found here: https://programme.roadmaptozero.com/suppliers/input.

How This Will Be Verified:

Documentation Required:

- Documentation that shows the facility has assigned the responsibility of implementing and maintaining the CMS to a team or staff member and there are documented responsibilities for the team member(s). This may include:
    - List of staff responsible for implementing and maintaining the CMS and their responsibilities (e.g., documented job description).
    - Documented CMS procedures that include responsibilities of staff related to CMS implementation.

Interview Questions to Ask:

- Staff responsible for chemicals management are able to explain the roles and responsibilities of staff or team members related to the CMS.
- Relevant staff responsible for the implementation and maintenance of CMS are able to demonstrate their competency in SDS, RSL, MRSL, GHS for classifications and labelling or equivalent.

Inspection - Things to Physically Look For:

- Observations indicate that CMS are being managed by staff with appropriate technical competency and the facility's chemicals management practices are in line with the CMS.

3. Does your facility have a chemical purchasing policy? *(Ref ID - chempurchasingpolicy)*

Answer Yes if: Your facility has established a formal documented chemical purchasing policy.

If you select Yes, you will be asked the following sub question(s):

- Which of the following criteria are being included into consideration in your chemical purchasing policy: (Select all that apply):
    - Legal requirements
    - Health and Safety requirements

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- RSL and/or MRSL requirements

Note: RSL and MRSL requirements refers to both brand specific requirements and the requirements of other industry programs (e.g., ZDHC, bluesign, etc)

Suggested Uploads:

- A copy of the facility's chemical purchasing policy

What is the intent of the question?

The intent of this question is for facilities to demonstrate that a chemical purchasing policy is in place to ensure that chemicals are screened against established criteria before being purchased.

Technical Guidance:

Establishing a formal chemical purchasing policy helps ensure chemicals are appropriately screened before being purchased. A chemical purchasing policy should clearly define the criteria for chemicals that can and cannot be purchased (e.g., specific legal or other requirements, health and safety considerations, etc.) The goal of the policy should be to reduce risk of hazardous or non-compliant chemicals entering the facility.

When developing a chemical purchasing policy, facilities should consider the following key elements of an effective chemical purchasing policy:

- Developing specific criteria (e.g., legal or other requirements) for selecting chemicals to purchase.
- Detailed procedures and responsibilities for the review and approval of chemicals before they are purchased.
- Procedures to communicate the policy and purchasing criteria to chemical suppliers (e.g., including terms and conditions in contracts and/or purchase agreements).
- Requirements for suppliers to provide sufficient chemical information for review, such as providing safety data sheets (SDS), labelling requirements, lot numbers, expiry dates, and other information on the environmental and health impact of their products.
- Procedures to ensure that staff are trained on the policy and understand the importance of selecting appropriate chemicals for use at the facility.

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Resources:

The ZDHC Supplier's Roadmap to Zero Input Section resources The ZDHC CMS and Technical Industry Guide framework sets out the principles and practices that should be included in a CMS policy and CMS, which are designed to help companies establish a robust and effective CMS that meets the ZDHC framework requirements and reduces the environmental and health impacts associated with chemical use in the supply chain. These resources can be found here:
https://programme.roadmaptozero.com/suppliers/input

How This Will Be Verified:

Documentation Required:

- Documentation that shows the facility has an established chemical purchasing policy. This may include:
    - Chemical purchasing policy that outlines how chemicals are screened against established criteria before being purchased.
    - Chemical purchasing records that demonstrate chemicals are being purchased in line with the established chemical purchasing policy.
- Other supporting documentation that shows the facility's practices and procedures align with the chemical purchasing policy. This may include:
    - Communication and/or training records on the facility's purchasing policy.
    - Chemical procurement procedures.

Interview Questions to Ask:

- Staff responsible for chemical purchasing at the facility are aware of the facility's policy and can describe their process screening and purchasing chemicals in line with the established policy.

Inspection - Things to Physically Look For:

- Observations onsite indicate the chemicals are being purchased in line with the purchasing policy (e.g., all chemicals onsite are covered in the purchasing policy

4. Does your facility keep a Chemical Inventory List (CIL) and the suppliers of each chemical product? *(Ref ID - chemtrack)*

Answer Yes if: Your facility has an up-to-date chemical inventory list (CIL) that includes **all** chemicals used at the facility.

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Answer Partial Yes if: Your facility has an up-to-date chemical inventory list (CIL) that includes **some, but not all** chemicals at the facility.

Note: Up-to-date means that the information in the inventory includes all chemicals currently in use **and** accurately reflects chemical use at the facility (e.g., chemicals that are not currently onsite, but are commonly used within and by the facility).

If you select Yes or Partial Yes, you will be asked the following sub question(s):

- Does your facility include the following types of chemicals in the inventory?
    - All chemicals used in manufacturing processes (including chemicals in production, reactants and additives.
    - All chemicals used in tooling/equipment (lubricants and grease).
        - **Note**: If your facility uses subcontractors to maintain facility production equipment and the subcontractors bring and remove these chemicals from the facility, they still need to be included in the CIL.
    - All chemicals used to operate and maintain the facility, and wastewater treatment plant chemicals where applicable.
        - **Note**: If your facility uses subcontractors to maintain facility operations equipment (e.g. boilers, generators, etc.) and the subcontractors bring and remove these chemicals from the facility, they do not need to be included in the CIL.
    - Spot cleaner(s).

Note: To be able to answer Yes to the main question all responses to the sub question above must be either Yes or Not Applicable. If any of the responses to the sub questions above are No, the response for the main question must be Partial Yes

If you select Partial Yes or No, you will be asked the following sub questions:

- For data not included in your facility's Chemical Inventory List, is there an action plan for obtaining this data?

Suggested Uploads:

- A copy of the facility's Chemical Inventory List
- If applicable, documentation action plan to obtain missing information in the inventory.

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What is the intent of the question?

The intent of this question is to ensure that facilities have identified and created an inventory of all chemicals onsite.

Technical Guidance:

Understanding which chemicals are used within a facility is a necessary first step in building a chemical management system. Identifying all chemicals used and their properties allows a facility to understand and manage regulatory and customer requirements, and ensure appropriate controls are in place to protect workers and the environment. A chemical inventory can also help facilities with purchasing decisions, increase transparency and traceability, and promote responsible chemical use.

Facilities should have a robust process for creating and updating their chemical inventory and have dedicated staff, in charge of maintaining the inventory.

While preparing an inventory, there are some important considerations that should be reviewed including:

- How to ensure that all chemicals are covered including production and non-production chemicals.
    - An inventory should contain all chemicals used and stored in the facility and may cover, but is not limited to, cleaners, adhesives, paints, inks, detergents, dyes, colourants, auxiliaries, coatings and finishing agents, and commodity chemicals, as well as those used for ETP, sanitary, laboratory and utility purposes.
- What information is needed in the inventory to manage the chemicals effectively and safely and how this information will be obtained (e.g., from chemical suppliers, SDS, other sources, etc). Key information that should be included, but is not limited to, the following:
    - Chemical name and type
    - Supplier/Vendor name and type
    - Manufacturer/Formulator name
    - Safety Data Sheet (SDS), Global Harmonization System (GHS) compliant or equivalent
    - Function
    - Hazard classification
    - Where it is used
    - Storage conditions and location
    - Quantities (quantity of chemicals used)
    - CAS number or numbers (when in a mixture)
    - Lot numbers (if applicable)

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    - MRSL conformance
    - Purchase date
    - Expiration dates (if applicable)
- How the inventory will be updated (e.g., addition/removal of new/old chemicals, review frequency and responsible staff).
- How the inventory may be used to support monitoring of chemical consumption and purchasing to reduce risks of expiry or storage of excessive quantities of chemicals onsite.

Resources:

The resources below provide example templates and reference information that can support a facility in creating or updating their chemical inventory.

Note: The resources provided below are for reference only and facilities should ensure their chemical inventory complies with any applicable law or regulations.

- ZDHC Supplier's Roadmap to Zero Input Section https://programme.roadmaptozero.com/suppliers/input
    - Chemical Purchasing
- UNECE Globally Harmonized System of Classification and Labelling of Chemicals (GHS) https://unece.org/about-ghs

How This Will Be Verified:

Documentation Required:

- Documentation that shows the facility has a chemical inventory list (CIL) and this the list is up-to-to-date and accurate. This may include:
    - The chemical inventory list (CIL)
    - Purchase records of chemicals

Interview Questions to Ask:

- Staff responsible for the chemical inventory list are able to explain how the facility ensures that the list is maintained and updated.

Inspection - Things to Physically Look For:

- Observations onsite indicate that the inventory is up-to-date and accurate (e.g., chemicals observed to be in use at the facility are included on the inventory)

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5. **Does your facility's Chemical Inventory List (CIL) include the following data? Select all that apply.** *(Ref ID - chemtrackdatahtml)*

- Chemical name and type
- Supplier/Vendor name and type
- Manufacturer/Formulator name
- Safety Data Sheet (SDS), Global Harmonization System (GHS) compliant or equivalent
- Function
- Hazard classification
- Where it is used
- Storage conditions and location
- Quantities (quantity of chemicals used)
- CAS number or numbers (when in a mixture)
- Lot numbers (if applicable)
- MRSL conformance
- Purchase date
- Expiration dates (if applicable)

Notes:

- Exception for lot numbers: Facilities that do not use chemicals in production, (e.g., spot cleaning or ETP chemicals) that would not lead to RSL, MRSL, ZDHC Wastewater testing failures do not need to include the lot numbers for these chemicals and should check the box for lot number if these are the only types of chemicals used onsite.
- If a chemical does not conform to specific MRSL requirements, it does not mean the facility does not have a CIL or the required information, if the MRSL conformance status is listed.

Suggested Uploads:

- A copy of the facility's Chemical Inventory List (CIL)
- Examples of supporting information for the data that is included in the CIL (e.g., SDS, chemical usage records, purchase records, MRSL conformance tests or declarations, etc.)

What is the intent of the question?

The intent of the question is for facilities to demonstrate that their chemical inventory contains the necessary information for each chemical.

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Technical Guidance:

An effective chemical inventory should include all information needed to manage the chemicals effectively and safely. For the FEP Module, the list of information included in this question is considered important to include in an inventory, however there may be additional information that is valuable to support a facility's management of chemicals. For example, it is also recommended as a good practice to indicate whether chemicals in your inventory are included in a positive list or negative list of any industry standard, if applicable.

The guidance below provides additional details on the type of information to include for the key items in the inventory:

- Chemical Product and Chemical Formulator name
  - This can be obtained from Section 1 of the SDS where the Chemical Product name and Chemical Formulator name are detailed. This should also be confirmed with the GHS-label on the chemical container.
- Supplier name
  - In case this is different from Chemical Formulator, such as a trader or distributor.
- Safety Data Sheet (SDS) Information
  - The date of issue of the SDS should be inputted, only if the SDS for the chemical product is available in the manufacturing facility. In case the SDS is not available or is found to be outdated, a follow-up should be made with the Chemical Formulator to obtain the latest SDS and then the date of issue should be input.
- Function
  - Indicates the use or application of the chemical.
- Hazard classification
  - Hazard Statements for the three Hazard Types - Physical, Health and Environmental- should be inputted, as listed in Section 2 of the SDS.
  - Storage, handling and discharge precautions: Refer to the P-Statements given in Section 2 and Section 7.2 of the SDS
- Where it is used
  - Input the locations/areas the chemical is used.
- Storage conditions and location
  - The location such as the main store, sub-store or a specific storage place can be described here to quickly understand the place of storage.
- Quantities (quantity of chemicals used)
  - For example, actual monthly/annual usage amount and unit
- CAS number or numbers
  - Input the CAS (Chemical Abstract Service) numbers of the hazardous substances as listed under Section 3 of the SDS.

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- Input the CAS number and % of the substance for mixtures.
- Lot numbers (if applicable)
  - The batch or lot number(s) of the chemical product purchased in the month can be inputted to establish traceability in case of Root Cause Analysis.
- MRSL conformance
  - Input the conformance status with any applicable MRSL.

Resources:

The resources below provide example templates and reference information that can support a facility in creating or updating their chemical inventory.

Note: The resources provided below are for reference only and facilities should ensure their chemical inventory complies with any applicable law or regulations.

- ZDHC Supplier's Roadmap to Zero Input Section https://programme.roadmaptozero.com/suppliers/input
  - Chemical Purchasing
- UNECE Globally Harmonized System of Classification and Labelling of Chemicals (GHS) https://unece.org/about-ghs

How This Will Be Verified:

Documentation Required:

- Documentation that shows the facilities chemical inventory list (CIL) up-to-to-date and includes accurate information on chemicals in the list. This may include:
  - The chemical inventory list (CIL)
  - Safety Data Sheets (SDS) or Technical Data Sheets (TDS)
  - Chemical usage records
  - Purchase records of chemicals
  - MRSL conformance tests or declarations

Interview Questions to Ask:

- Staff responsible for the chemical inventory list are able to explain how the facility obtains information in the inventory and ensures that the list is maintained and updated.

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Inspection - Things to Physically Look For:

- Observations onsite indicate that the inventory is up-to-date and the associated information in the inventory is accurate (e.g., chemicals observed to be in use at the facility are included on the inventory)

6. Does your facility make Safety Data Sheets (SDS) available to employees for all chemicals used? *(Ref ID - chemsds)*

Answer Yes if: Your facility has up-to-date SDS information available to employees for **all** chemicals used **and** the SDS is at minimum, compliant with country specific regulations **and** the facility has an established process to ensure that SDS information is kept up-to-date.

Answer Partial Yes if: Your facility has up-to-date SDS information available to employees for some, but not all chemicals used **and** the available SDS are at minimum, compliant with country specific regulations.

Note: Up-to-date means that the SDS has been updated at the frequency defined by local law and/or if any of the following have occurred:

- An ingredient used in the formulation is changed due to which there is an impact on the hazard classification of the formulation.
- New toxicological/legislative information is applicable to any ingredient used in the formulation that may impact the overall hazard classification of the formulation.
- Any type of new restriction or authorisation has been imposed on a substance or mixture (e.g., under EU- REACH regulation or other legislation).

If you select Yes or Partial Yes, you will be asked the following sub question(s):

- Are Safety Data Sheets posted readily accessible where hazardous chemicals are stored/used?
- Are Safety Data Sheets available in languages workers understand (at least sections directly related to operational worker safety and storage requirements, such as first aid, hazard, and flammability information)?

Notes:

- Readily accessible means that SDS information is easily accessed in areas of use. For example, this could be achieved by posting of SDS and/or maintaining SDS information in a folder at a nearby work areas.
- It is not required to translate all SDS information into the language of workers in its entirety. It is acceptable to create translated simplified data sheets that contain translation of necessary information for workers related to their job

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function and chemical hazards/safety (e.g., appropriate handling, use, and storage of the chemical, personal protection, proper first aid/emergency response and disposal precautions).

Suggested Uploads:

- Photo images showing the SDS information available in applicable work areas and accessible to the employees.
- Copies of SDS
    - **Note:** Copies of all SDS do not need to be uploaded but should be available for review during verification.
- Procedures for ensuring SDS information is up-to-date.

What is the intent of the question?

The intent of this question is for facilities to ensure that up-to-date SDS information is available for all chemicals used in the facility.

Technical Guidance:

Safety Data Sheets (SDS) are a fundamental source of information on the hazards associated with a chemical. SDS provide crucial information on how to manage chemicals in a responsible manner including how chemicals should be stored, used, handled, and disposed of as well as information on health, safety, and environmental hazards.

An SDS (either as hard or soft copy) for every chemical used in a facility should be kept at a central location and also in areas where the chemical is stored and/or used so that it is readily accessible by staff. Staff should also be trained on how to read and understand SDS information.

The Globally Harmonized System of Classification and Labelling of Chemicals (GHS/CLP) is an internationally recognized system for the classification and labelling of chemicals. The GHS was developed to replace individual sets of classification and labelling standards used in different countries with a single, standardized set of criteria for the classification and labelling of chemicals and standardized requirements for the information required on SDS.

Country specific levels of GHS adoption may vary, however it is recommended that facilities request GHS compliant SDS form chemical suppliers when available, but at minimum facilities should follow applicable country specific regulations relating to SDS content.

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It is also important that SDS information be provided in the language of all workers so that it is easily understood. It is not required to translate all SDS information into the language of workers in its entirety. It is acceptable to create translated simplified data sheets that contain translation of necessary information for workers related to their job function and chemical hazards/safety (e.g., appropriate handling, use, and storage of the chemical, personal protection, proper first aid/emergency response and disposal precautions) or as legally required.

The date of issue of SDS and its version number should be carefully monitored. An SDS needs to be updated by a chemical supplier when:

- Any ingredient(s) are changed that results in a change to the hazard classification of the chemical.
- New toxicological/legislative information is applicable to any ingredient(s) that may impact the hazard classification of the chemical.
- Any type of restriction or authorisation has been imposed on chemical or its ingredient(s) (e.g., under EU- REACH regulation or other legislation).

It is considered a good practice for facilities to monitor the validity of the SDS for each chemical product by checking regularly with the supplier for any potential updates. (**Note** that the FEP does not define a required frequency for this.)

In cases where certain SDS information is not available at the point of purchase (e.g., tooling or cleaning chemicals), a facility should strive to obtain as much information about the chemical as possible (e.g., by contacting manufacturers or suppliers provided on the product). Facilities should also ensure these products have appropriate labels which should provide details of ingredients and hazards. In cases where appropriate labels or SDS are not available, the original labels should be compliant to GHS/CLP or country specific regulations.

Resources:

The resources below provide helpful information on SDS management.

Note: The resources provided below are for reference only and facilities should ensure that their SDS management program complies with any applicable laws or regulations.

- UNECE Globally Harmonized System of Classification and Labelling of Chemicals (GHS) https://unece.org/about-ghs
- GHS implementation status by country - https://unece.org/transportdangerous-goods/regionalcountry-level?accordion=0#accordion_1
- ZDHC Supplier's Roadmap to Zero Input Section https://programme.roadmaptozero.com/suppliers/input

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How This Will Be Verified:

Documentation Required:

- Documentation that demonstrates the facility has up-to-date SDS information available in the workplace and that SDS information is available to workers. This may include:
    - Copies of up-to-date SDS that are at minimum compliant with legal requirements for SDS.
    - Copies SDS information translated into the language of workers.
    - SDS Training records for workers.
    - Procedures that demonstrate the facility has processes in place to ensure SDS information is kept up-to-date.

Interview Questions to Ask:

- Staff responsible for SDS management at the facility are able to explain the facility's procedures for managing SDS information and how the facility ensures up-to-date SDS information for chemicals is obtained and communicated and made accessible to workers.

- Relevant employees understand the facility's SDS program and can explain how SDS information is accessed when needed.

Inspection - Things to Physically Look For:

- Observations that indicate up-to-date SDS information is available at the facility and made accessible to workers (e.g., SDS are available for chemicals observed onsite, SDS are stored (in hard or soft copy) in work areas)

7. Does your facility train all employees who handle chemicals on chemical hazards, risk, proper handling, and what to do in case of emergency or spill? *(Ref ID - chemtraining)*

Answer Yes if: Your facility has provided training to employees and the training meets **all** of the following criteria:

- Training has been delivered to **all** employees who handle chemicals.
- The Training covers all of the topics listed in the sub question below.
- The training is documented (with training records and/or material)
- Training is conducted at least annually **or** at a frequency that allows training all new employees according to the turnover rate.

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Answer Partial Yes if: Your facility has provided training, but one (1) or more of the following criteria is **not** met:

- Training has been delivered to **all** employees who handle chemicals.
- The Training covers all of the topics listed in the sub question below.
- The training is documented (with training records and/or material)
- Training is conducted at least annually **or** at a frequency that allows training all new employees according to the turnover rate.

Note: If your facility has not provided training to any employees on chemicals, you should answer No to this question.

If you select Yes or Partial Yes, you will be asked the following sub question(s):

- Please select all topics included in your training:
  - Chemical hazards and identification
  - MSDS/SDS
  - Signage
  - Compatibility and risk
  - Proper storage and handling
  - PPEs
  - Procedure in case of emergency, accidents, or spill
  - Access restriction to chemical storage areas
  - Potential environmental impact of the chemicals in tanks
  - The physical protection provided to employees in the area(s) where the factory uses, stores, and transports these containers.
  - Individual duties associated with monitoring and maintaining this protection here.

Suggested Uploads:

- Documentation that demonstrates the facility has conducted training on chemicals for employees (e.g., Training plan/schedule, training records, training material used for training, post-training evaluation procedures and/or records)

What is the intent of the question?

The intent of this question is for facilities to demonstrate that procedures are in place to train employees who handle chemicals on chemicals hazards and safety, and that trainings have been conducted.

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Technical Guidance:

It is important that all levels of employees are aware of chemical hazards, risks, safety precautions and emergency response for chemicals in use at the facility. Facilities should have formal documented training processes to ensure awareness and knowledge is shared with all employees who handle chemicals.

Effective training programs ensure that all levels of employees understand the potential hazards, risks, and controls associated with chemicals in the workplace. Various levels and types of training may be required to ensure training is appropriate for employees in different positions or with responsibilities and directly relates to the types of chemicals they may come into contact with during regular operations or emergency situations.

Having procedures to collect information to evaluate the effectiveness of training programs (e.g., trainee feedback questionnaires or test, observation, or reviews of trainer performance, etc) will help facilities ensure the effectiveness of training and knowledge retention.

Resources:

- The ZDHC Academy offers trainings to create awareness, learn and develop skills on sustainable chemical management - https://www.implementation-hub.org/academy

How This Will Be Verified:

Documentation Required:

- Documentation that shows the facility has provided chemicals related training employees. This may include:
    - Training plan that identifies training schedule(s), topics covered, and type of training for employees.
    - Training attendance records
    - Training material used for environmental training,
    - Training evaluation procedures and/or records

Interview Questions to Ask:

- Staff responsible for the facility's chemical training program can explain how training is provided and if applicable, how the effectiveness of training is evaluated.
- Employees who have received the training are aware of the content of the training.

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Inspection - Things to Physically Look For:

- Supporting evidence of the facility's environmental training program (e.g., awareness posters, informational postings related to the facility's chemical management/safety programs, if available)

8. Does your facility have a chemical spill and emergency response plan that is practiced periodically? *(Ref ID - chememergplan)*

For facilities that use chemicals in production:

Answer Yes if: Your facility has a documented chemical spill and emergency response plan that meets the requirements listed in Section 4.3 of the ZDHC Chemical Management System (CMS) Framework **and** practice drills are conducted at least twice per year for all relevant staff.

Answer Partial Yes if: Your facility has a documented chemical spill and emergency response plan, but the plan does not meet the requirements listed in Section 4.3 of the ZDHC Chemical Management System (CMS) Framework **or** practice drills are not conducted at least twice per year for all relevant staff.

Note: For this question, **relevant staff** means any employee or manager that handles chemicals, works in areas where chemicals are used, and/or has defined responsibilities in the facility's chemical spill and emergency response plan/procedures.

For facilities that only use chemicals for operations or tooling/equipment:

Answer Yes if: Your facility has a documented chemical spill and emergency response plan that meets the requirements listed in Section 4.3 of the ZDHC Chemical Management System (CMS) Framework. Practice drills are not required.

Answer Partial Yes if: Your facility has a documented chemical spill and emergency response plan, but the plan does not meet the requirements listed in Section 4.3 of the ZDHC Chemical Management System (CMS) Framework. Practice drills are not required.

Note: The ZDHC Chemical Management System (CMS) Framework related documents can be referenced here: https://programme.roadmaptozero.com/suppliers/input

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Suggested Uploads:

- Documentation that demonstrates the facility has an emergency response plan in place and that practice drills are conducted, when required (e.g., copy of emergency response plan/procedures, records of practice drills, etc.)

What is the intent of the question?

The intent of this question is for facilities to demonstrate that emergency response procedures are in place and that employees are trained on how to respond in the event of a chemical emergency.

Technical Guidance:

The FEP Module aligns with the ZDHC criteria for emergency response plan content and procedures contained in Section 4.3 of the ZDHC Chemical Management System (CMS) Framework. These criteria are summarized below:

At minimum, facilities need to have:

- A procedure to identify and respond to potential chemical and natural incidents related but not limited to spills, fires, accidents, injuries to employees and damage to buildings and equipment.
- Detailed instructions on how to evacuate the building and contain contact names/ information for individuals in charge of the evacuation.
- Twice per year testing of procedures which shall include all employees, sub-contractors, EMS teams, and depending on the size and scope of the drill, and the outside community EMS team.
- Consultation of appropriate municipal officials since control may be exercised by the local government in major emergencies and additional resources may be available.
- Communication and training to ensure adequate performance in times of an emergency.
- Methods to update procedures where necessary after practice drills and actual emergencies. All drills and follow-up should be documented.

Resources:

- The ZDHC Chemical Management System (CMS) Framework related documents can be referenced here: https://programme.roadmaptozero.com/suppliers/input

How This Will Be Verified:

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Documentation Required:

- Documentation that shows the facility has a documented emergency response plan in place and that practice drills are conducted, when required. This may include:
    - Emergency response plan/procedures,
    - Documentation of practice drills (e.g., drill practice/training records)

Interview Questions to Ask:

- Staff responsible for managing the facility's emergency response plan and procedures can explain the facility's procedures for responding to emergencies and how drills are practiced.
- Relevant staff understand the facility's emergency response procedures and have participated in drill, if applicable.

Inspection - Things to Physically Look For:

- Observations indicate that the facility has the necessary procedures and equipment in place to respond to chemical emergencies per their developed plan. (e.g., Availability of emergency response equipment e.g., spill kits, showers, eyewash stations, fire extinguishers, SDS, emergency exits clearly marked, unobstructed and unlocked, etc.)

9. Does your facility have appropriate and operable protective and safety equipment, as recommended by the Global Harmonization System compliant (or equivalent) Safety Data Sheet, in all areas where chemicals are stored and used? *(Ref Id - chemsafetyequip)*

Answer Yes if: Your facility has appropriate and operable protective and safety equipment as recommended chemical safety data sheets (SDS) in **all** areas where chemicals are stored and used.

Answer Partial Yes if: Your facility has appropriate and operable protective and safety equipment as recommended chemical safety data sheets (SDS) in **some, but not all** areas where chemicals are stored and used.

Notes:

- This question applies to all production and non-production related chemicals.
- For this question the terms appropriate and operable are defined as follows:

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- **Appropriate** – refers to protective and safety equipment recommended for use on the SDS of each chemical or as required by a health and safety risk assessment conducted by a qualified safety professional.
- **Operable** – refers to the protective and safety equipment being readily accessible to employees and maintained in good repair and/or working order (e.g., per the equipment manufacturer's specifications).

Suggested Uploads:

- Documentation that shows the facility has identified appropriate protective and safety equipment required and that the equipment is regularly replenished and/or maintained (e.g., health and safety risk assessment showing the required controls, inventory list of PPE and safety equipment with schedules of stock replenishment/replacement, equipment maintenance, etc.).

What is the intent of the question?

The intent of this question is to ensure facilities understand and provide appropriate protective and safety equipment to reduce worker exposure to health and safety risks of chemicals in the workplace.

Technical Guidance:

Ensuring appropriate personal protective equipment (PPE) (e.g., gloves, respirators, protective clothing, etc. and other safety equipment (e.g., spill kits, eye wash stations, emergency showers, fire extinguishers, etc) is available in areas where chemicals are stored and used is crucial to protecting workers from chemical exposure risks.

Information on the recommended safety and protective equipment may be found in the following sections of a GHS compliant SDS (note that SDS sections and content may vary by jurisdiction)

- Section 4: First-Aid Measures
- Section 5: Fire-Fighting Measures
- Section 8: Exposure Controls/Personal Protection

The selection of the most suitable PPE and safety equipment should be evaluated by an accredited health and safety professional to determine the most effective equipment and any limitations. This is particularly important for facilities that use a high number of chemicals where workers are potentially exposed to multiple chemicals and chemical mixtures.

For all PPE and safety equipment, appropriate replacement and maintenance schedules should be defined and be based on available information such as

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manufacturer recommendations, onsite conditions, the level and duration of potential exposures to chemicals.

It is also important for facilities to remember that PPE should only be used as a last resort if no other control methods are available or are sufficient. For tasks where PPE is needed, it should be selected based on a formal job hazard review that identifies the specific chemical or physical hazards and the most effective type of PPE.

Resources:

- U.S. OSHA – Personal Protective Equipment - https://www.osha.gov/sites/default/files/publications/osha3151.pdf
- Chemical Safety in the Workplace Guidance Notes on Personal Protective Equipment (PPE) for Use and Handling of Chemicals - http://www.labour.gov.hk/eng/public/os/C/equipment.pdf
- ZDHC Supplier's Roadmap to Zero Process Section https://programme.roadmaptozero.com/suppliers/process
    - Chemical Handling & Worker Safety

How This Will Be Verified:

Documentation Required:

- Documentation that shows the facility has identified appropriate protective and safety equipment required and that the equipment is regularly replenished and/or maintained. This may include:
    - Documented health and safety risk assessment and/or SDS showing the required protective/safety equipment.
    - Inventory list of PPE with schedules for stock replenishment/replacement
    - Inspection and maintenance schedules for safety equipment (e.g., eyewash, emergency showers, etc)

Interview Questions to Ask:

- Staff responsible for health and safety at the facility can explain how the facility identifies the required type of PPE and safety equipment needed.
- Staff responsible for providing or maintaining protective and/or safety can explain the facility’s procedures for ensuring equipment is available and in good working order.

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Inspection - Things to Physically Look For:

- Observations onsite indicate that appropriate PPEs and safety equipment is available in relevant areas and are consistent with hazard classification on chemical SDS and safety equipment is accessible and functioning.

10. Does your facility have chemical hazard signage and safe handling equipment in the areas of the facility where chemicals are used? *(Ref ID - chemhazardsign)*

Answer Yes if: Your facility has chemical hazard signage and safe handling equipment is available in **all** areas where chemicals are used.

Answer Partial Yes if: Your facility has chemical hazard signage and safe handling equipment **in some, but not all** areas where chemicals are used.

Note: This question applies to all production and non-production related chemicals.

Suggested Uploads:

- Documentation that demonstrates the facility has appropriate practices and procedures to ensure that chemical hazard signage and safe handling equipment are available in areas where chemicals are used (e.g., chemical labelling/signage procedures, examples of chemical signage, inspection schedule/procedures that cover chemical hazard signage and handling equipment, etc.)

What is the intent of the question?

The intent of this question is for facilities to demonstrate that practices and procedures are in place to ensure chemical hazard signage and safe handling equipment is in place in all areas where chemicals are stored.

Technical Guidance:

It is important that the presence of chemical hazards in the workplace are clearly communicated and visible to employees. This helps employees understand where chemical hazards are present as well as the type of hazards that exist (e.g., flammable, toxic, corrosive, etc.). Facilities should post signage at all areas where chemicals are stored or used. Signage should depict the hazard classification(s) of chemicals as provided on the SDS (Section 2: Hazard(s) Identification) and/or other hazard identifiers required by local law.

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Areas in the facility that may require chemical hazard signage include, but are not limited to:

- Receiving and delivery areas
- Chemical storage areas (centralized warehouse and temporary storage areas)
- Chemical process areas (e.g., manufacturing/production areas)
- Waste chemicals storage (including chemical residues and expired chemicals)
- Laboratories
- Maintenance areas

Safe handling and transfer equipment (e.g., trolleys, carts, pumps) should be available at relevant locations to ensure safe handling which can reduce the potential for spills, which can result in negative impacts to workers' health or the environment. These tools can also result in cost savings by reducing chemical loss.

Resources:

- ZDHC Supplier's Roadmap to Zero Process Section https://programme.roadmaptozero.com/suppliers/process
- U.S. Occupational Safety and Health Administration (OSHA) Hazcom website - https://www.osha.gov/hazcom

How This Will Be Verified:

Documentation Required:

- Documentation that demonstrates the facility has appropriate practices and procedures to ensure that chemical hazard signage and safe handling equipment are available in areas where chemicals are used. This may include:
    - Chemical labelling/signage procedures with requirements for chemical hazard signage
    - Inspection schedule/procedures that cover chemical hazard signage and handling equipment.
    - SDS that shows the hazard classes of chemicals onsite.

Interview Questions to Ask:

- Staff responsible for the facility's chemical management and/or safety programs can explain the facilities procedures to ensure appropriate hazard signage is available in areas where chemicals are stored and used.
- Relevant employees understand the facility's chemical hazard signage and how to use the provided safe handling equipment.

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Inspection - Things to Physically Look For:

- Observations onsite indicate that chemical hazard signage is in place in all areas where chemicals are used, and the signage is consistent with the hazards indicated on SDS.
- Observations that indicate safe handling equipment is available and in being used.

11. Does your facility select and purchase chemicals based on their hazards and MRSL requirements? *(Ref Id - chempurchasereqmrsl)*

Answer Yes if: Your facility has a documented process in place to select and purchase chemicals based on their hazards and MRSL requirements;
and all chemicals meet the requirements of MRSL and the facility's purchasing policy;
and MRSL conformance is confirmed annually (e.g., through certificates/declarations of MRSL conformance, certificates of analysis, etc).

Answer Partial Yes if: Your facility has a documented process in place to select and purchase chemicals based on their hazards and MRSL requirements but have purchased chemical(s) that do not have sufficient documentary evidence to prove compliance to MRSL, **and** your facility has a clear plan for obtaining the documents from chemical suppliers within 6 months or changing to a chemical supplier who can meet the requirements in order to increase the % of compliant chemicals meeting MRSL.

Non-production chemicals and spot cleaners:

For chemicals not used in the manufacturing process (e.g., lubricants, cleaning chemicals, etc.) or spot cleaners, it might not be feasible to obtain third party certificates/declarations of MRSL compliance or certificates of analysis. For these types of chemicals, this documentation is not required, but facilities must have an established process in place to review the chemical ingredients against the MRSL to check for conformance.

Notes:

- The ZDHC MRSL conformance levels (1, 2 and 3) from the ZDHC Gateway-Chemical Module should be used for the determination of the conformity with the ZDHC MRSL. For more information about the ZDHC MRSL conformance, refer to the ZDHC MRSL Conformance Guidance here: https://downloads.roadmaptozero.com/input/ZDHC-MRSL-Conformance-Guidance

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- Tools to check your chemical inventory against the ZDHC MRSL, you can refer to ZDHC InCheck Solutions https://programme.roadmaptozero.com/suppliers/input

If you select Yes or Partial Yes, you will be asked the following sub question(s):
- If yes, do all chemicals purchased and used in production meet the facility's chemical purchasing policy?

If you select No, you will be asked the following sub question(s):
- If no, do you have a process or plan for eliminating chemicals that do not meet the facility's chemical purchasing policy?

Suggested Uploads:

- Documentation that demonstrates the facility selects and purchases chemicals based on their hazards and MRSL requirements such as:
    - MRSL(s) applicable to the facility (e.g., customer's MRSL, ZDHC MRSL, combined facility MRSL).
    - Chemical purchasing policy and procedure(s).
    - Positive lists used for chemical purchasing.
    - Third party MRSL conformance certification/test reports/declarations and/or certificate of analysis of chemical composition.
    - Chemical inventory showing MRSL compliance status of all chemicals.

What is the intent of the question?

The intent is to ensure facilities have an established process to evaluate chemical hazards and MRSL conformance during procurement and that only compliant chemicals are purchased for use at the facility.

Technical Guidance:

MRSL is a Manufacturing Restricted Substance List which can be defined as a list of chemicals that are banned from use in manufacturing. The goal of an MRSL is to ensure facilities are using the environmentally preferred chemicals that result in less harm to the environment and human health. Using an MRSL in chemicals procurement can also help ensure more consistent material compliance.

To ensure that chemicals are appropriately evaluated before purchase, facilities should:
- Establish their own chemical MRSL that covers all MRSL requirements from clients (e.g., brands) they work with or industry initiatives they are a part of or implement a strategy to use compliant chemicals from an active list that covers all MRSL (e.g., the bluesign system).

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- Establish a process to communicate MRSL requirements to all chemical suppliers including the required evidence from suppliers to confirm compliance (e.g., positive lists, certificates/declarations of MRSL conformance, certificates of analysis, or other relevant documentation)
- Include MRSL compliance as a purchasing requirement for all chemicals.
    - This should include procedures to verify chemicals conform to MRSL requirements through documentation provided by chemical suppliers.
    - Where applicable, facilities should purchase chemicals that are certified to meet MRSL requirements such as bluesign approved chemistry, Ecopassport by OekoTex.
- Ensure all chemical procurement staff are aware of MRSL requirements and the facility's purchasing policy and procedure.
- For chemicals not used in the manufacturing process (e.g., lubricants, cleaning chemicals) ensure there is a process in place to, at minimum, review the list of ingredients and SDS if available against the facility's MRSL to confirm MRSL conformance.

It is critical that facilities discuss MRSL requirements with their chemical suppliers to determine which chemical products are MRSL compliant and the requirements for chemical suppliers to be able to demonstrate their products comply with the facility's MRSL requirements.

It is also important that facilities not only rely on simple declarations or assurances from suppliers alone, but ensure there is a validation processes in place to ensure compliance such as chemical composition test reports from ISO 17025 certified laboratories approved for conducting the required chemical testing or use of established positive lists that confirm compliance with applicable MRSL (e.g., ZDHC, bluesign, OEKO-TEX, etc.)

Guidance for Hardgoods facilities:

In the hardgoods sector MRSL (Manufacturing Restricted Substances List) requirements may not be available. However, there is a significant impact from the use of chemicals and therefore Restricted Lists should be used.

For hardgoods manufacturing, black, grey and white lists are often used. Black lists contain chemicals that are prohibited in manufacturing, grey lists contain chemicals that should be phased out from manufacturing and white lists contain chemicals that may be used. As a summary term we have chosen "Restricted Lists". Beyond the fact that different lists are used in the hardgoods sector, the question about selection and purchasing is also valid for hardgoods facilities.

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It is expected that facilities may use either a sector-wide list, a brand-specific restricted list or create their own list.

All textile components in the hardgoods sector (for example, products such as rucksacks, tents, etc.) should apply the MRSL criteria as outlined in the FEP Module.

All other components should be governed *at least* by a Restricted List regarding their use during manufacturing. The restrictions on the final product, as applied through an RSL, may especially be relevant for the metal processing and electronics industry, and yet again for other sectors are not relevant. With RSLs the management of residual chemicals on the final product is secured, however this may depend on the product and materials used.

Three examples of “Restricted Lists” are:

1. The RoHS directive of the EU, the European Union. The RoHS directive restricts residual chemicals on electronic products and is strongly linked to the EU WEEE directive mentioned in the waste section guidance. Electronic Products that may be relevant for the hardgoods section includes Consumer equipment, Lighting equipment (including light bulbs, Electronic and electrical tools, Toys, Leisure and Sports equipment, Monitoring and Control instruments). The chemicals that are restricted are:
    a. Lead (Pb)
    b. Mercury (Hg)
    c. Cadmium (Cd)
    d. Hexavalent chromium (Cr6+)
    e. Polybrominated biphenyls (PBB)
    f. Polybrominated diphenyl ether (PBDE)
    g. Bis(2-ethylhexyl) phthalate (DEHP)
    h. Butyl benzyl phthalate (BBP)
    i. Dibutyl phthalate (DBP)
    j. Diisobutyl phthalate (DIBP)
        i. Maximum Permitted Concentration: 0.1%[5]
        ii. Maximum for Cadmium: 0.01%[5]
2. The GADSL (Global Automotive Declarable Substance list).
3. The ABB List of Prohibited and Restricted Substances.

It is expected that facilities may use either a sector-wide list, a brand-specific restricted list or create their own list.

For the time being, it has been decided by the Hardgoods FEM working group, that the facilities that have not yet been exposed to the concept of MRSL or received an MRSL from one of their Brand/ Retail buyers, will not need to respond to the questions related to MRSL.

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Please observe that this provision is an interim compromise in order to support hardgoods facilities that have not yet been exposed to the MRSL concept. However, we expect that these facilities as well strive for solutions related to MRSL.

Resources:

- ZDHC Supplier's Roadmap to Zero Input Section https://programme.roadmaptozero.com/suppliers/input
    - Chemical Purchasing
- ZDHC MRSL Conformance Guidance https://downloads.roadmaptozero.com/input/ZDHC-MRSL-Conformance-Guidance
- ZDHC ChemCheck https://www.zdhc-gateway.com/reports/chemcheck
- bluesign https://www.bluesign.com/en
- OEKO-TEX https://www.oeko-tex.com/en/

How This Will Be Verified:

Documentation Required:

- Documentation that demonstrates the facility selects and purchases chemicals based on their hazards and MRSL requirements. This may include:
    - MRSL(s) applicable to the facility (e.g., customer's MRSL, ZDHC MRSL, combined facility MRSL).
    - Chemical purchasing policy and procedure(s) that include, but are not limited to:
        - Process of communicating MRSL with the chemical suppliers,
        - Process to obtain suppliers' confirmation/declaration of MRSL compliance,
        - Collection of up-to-date positive lists from chemical suppliers.
        - Preference/requirements for purchasing chemicals on positive lists.
    - Positive lists used for chemical purchasing.
    - Annual third party MRSL conformance certification/test reports/declarations and/or certificate of analysis of chemical composition.
    - Chemical inventory showing MRSL compliance status of all chemicals.
- For chemicals not used in the manufacturing process documentation that the facility has a process in place to review chemical ingredients against the facility's MRSL. This may include:
    - SDS or TDS
    - Ingredient lists from consumer labels.

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Interview Questions to Ask:

- Staff responsible for the facility's chemical management program can explain how the facility established its MRSL and MRSL requirements of the facility's chemical purchasing policy and procedure.
- Staff responsible for chemical procurement understand and can explain how chemicals are evaluated and approved for purchase in relation to the facility's MRSL and purchasing policy and procedure..

Inspection - Things to Physically Look For:

- Observations onsite indicate that all chemicals in use comply with the facility's MRSL and chemical purchasing policy and procedure (e.g., observed chemicals have been appropriately screened and there is documentary evidence to confirm MRSL conformance).

14. Does your facility have well marked, designated chemical storage areas? *(Ref ID - chemstorage)*

Answer Yes if: Your facility has well marked, designated chemical storage areas for all chemicals stored onsite.

Suggested Uploads:

- Facility map showing the location of chemical storage areas.
- Floor layout plan of chemical storage areas, specifying categorization and storage location of different types of chemicals.
- Standard operating procedures for chemical storage and labelling.
- Example photos of chemical storage areas and controls
- Examples of storage in/out logs, FEFO records, specifying date of arrival at storage, lot number, and date of dispatch to production, etc.)
- Audits/inspections checklists or reports of chemical storage areas.

What is the intent of the question?

The intent of this question is for facilities to demonstrate that all storage areas are well-marked and have sufficient controls to prevent contamination and safety risks.

Technical Guidance:

Proper chemical storage with appropriate controls is important to reduce and prevent health & safety and environment risks. A well-planned storage area allows easy

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movement and protection of chemicals during handling and use. Storage conditions should be based on the recommended storage practices listed on safety data sheets (SDS) and/or storage practices recommended by chemical suppliers. Additionally, all legal requirements related to the storage of chemicals should be complied with.

Chemical storage areas and controls should be designed and appropriate for the specific types, quantities, and hazards of chemicals used on site. The list below provides recommended good practices for chemical storage that should be considered and implemented when appropriate:

- Separate chemical products based on their physical state and inherent properties. Solid and liquid chemicals should be stored separately.
- Ensure proper compatibility of chemicals as per information in the SDS (section 10).
- Provide proper ventilation, lighting and controlled temperature and humidity wherever required for storage of chemical products sensitive to these parameters.
- Make floors of storage area impermeable to liquids and non-slippery. They should be easy to clean and resistant to acids and organic solvents.
- Plan the layout to accommodate all chemical containers with enough space for movement and easy accessibility to the containers.
- Use color markings on the floor for designated walk areas and exit glow signs.
- If required, ensure emergency exits are available and kept clear of obstacles, and that the exit door opens outwards with a push-bar handle.
- Do a regular clean-out of expired chemical products, spill wastage and used containers.
- Mark a designated area with a red (or the local required color) border for non-conformant chemical products that are to be returned to the chemical supplier. Keep relevant documents in the vicinity.
- Keep the requisite amount of compatible fire- extinguishers in the stores and install smoke-detection alarms or sprinkler systems.
- Ensure secondary containment for containers. At a minimum, the capacity of secondary containment must meet applicable legal requirements based on chemical volume and container size and should be 110% of the original (primary) container(s).
- Gas cylinders should be stored in an upright position and in a separate location. The stored cylinders should be secured. LPG cylinders should be protected from direct sunlight and separated from flammable, combustible or oxidizing chemicals or other compressed gas cylinders.
- Chemical products stored outdoors should have a proper cover to protect them from sun and rain and high temperatures. The area should be fenced to prevent unauthorized access. The flooring of such storage areas should be secured to prevent any leakages from contaminating the soil or water.

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- Access to chemical stores should be given only to authorized staff and their names and photographs should be displayed near the main entrance door.
- Keep a spill control kit to contain spillages.
- Keep a box file of all the SDS of chemical products stored near the Stores main entrance door. The file should be indexed properly with the names of the Chemical Formulator and products. The SDS file should be accessible to all staff. SDS can also be put in plastic folders and displayed on a notice board near the stores.
- Install warning signage at key locations of stores to keep staff informed of risks.
- Prepare “Chemical Safety Cards” to convey important information on hazards and First-Aid/emergency response measures in a pictorial manner for a quick understanding by staff handling chemical products.

Resources:

- ZDHC Supplier’s Roadmap to Zero Process Section https://programme.roadmaptozero.com/suppliers/process
    - Safe Chemical Storage

How This Will Be Verified:

Documentation Required:

- Documentation that demonstrates the facility controls in place in chemical storage areas and these are appropriately maintained. This may include:
    - Facility map showing the location of chemical storage areas.
    - Floor layout plan of chemical storage areas, specifying categorization and storage location of different types of chemicals.
    - Standard operating procedures for chemical storage and labelling.
    - Examples of storage in/out logs, FEFO records, specifying date of arrival at storage, lot number, and date of dispatch to production, etc.)
    - Audits/inspections checklists or reports of chemical storage areas.

Interview Questions to Ask:

- Staff responsible for chemicals management understand the hazards and controls associated with chemical storage areas and can explain the facility’s procedures to ensure controls are in place and properly maintained.
- Relevant staff (management and employees) understand the controls in place and their responsibilities for maintaining chemical storage areas.

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Inspection - Things to Physically Look For:

- Observations onsite indicate that the listed controls are in place and being properly maintained (e.g., incompatible chemicals are stored separately or at safe distances, stored chemicals have appropriate labels, secondary containment is in place and of sufficient size, protections are in place for flammable chemicals, required PPE is present and being used, etc.).

15. Does your facility have well marked sub-storage areas?

(Ref ID - chemsubstorage)

Answer Yes if: Your facility has designated, well marked sub-storage areas for chemicals.

Answer Not Applicable if: Your facility does not have sub-storage areas.

Note: Sub-storage areas are defined as temporary or permanent areas used for storage and handling of chemicals during their use in production processes that are separate from the facility's main bulk chemical storage area(s). This includes temporary storage areas used for loading, QA inspections, etc.

Suggested Uploads:

- Facility map showing the location of chemical sub-storage areas.
- Floor layout plan of chemical sub-storage areas, specifying categorization and storage location of different types of chemicals.
- Standard operating procedures for chemical storage and labelling (including sub-storage areas).
- Example photos of chemical sub-storage areas and controls
- Examples of storage in/out logs, FEFO records, specifying date of arrival at sub-storage, lot number, and date of dispatch to production, etc.)
- Audits/inspections checklists or reports of chemical sub-storage areas.

What is the intent of the question?

The intent of this question is for facilities to demonstrate that all sub-storage areas are well-marked and have sufficient controls to prevent contamination and safety risks.

Technical Guidance:

Proper chemical storage with appropriate controls is important to reduce and prevent health & safety and environment risks. This also applies to sub-storage areas which are defined as temporary or permanent areas used for storage and handling of chemicals

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during their use in production processes that are separate from the facility's main bulk chemical storage area(s). This includes temporary storage areas used for loading, QA inspections, etc.

Implementing effective chemical storage practices in sub-storage areas can contribute to minimizing the risk of environmental contamination and maintaining a safe work environment. Storage conditions should be based on the recommended storage practices listed on safety data sheets (SDS) and/or storage practices recommended by chemical suppliers. Additionally, all legal requirements related to the storage of chemicals should be complied with.

Chemical sub-storage areas and controls should be designed and appropriate for the specific types, quantities, and hazards of chemicals used on site. For a detailed list of recommended good practices for chemical storage that should be considered and implemented when appropriate, refer to the Technical Guidance section for the FEP Module question above on chemical storage.

Resources:

- ZDHC Supplier's Roadmap to Zero Process Section https://programme.roadmaptozero.com/suppliers/process
    - Safe Chemical Storage

How This Will Be Verified:

Documentation Required:

- Documentation that demonstrates the facility controls in place in chemical sub-storage areas and these are appropriately maintained. This may include:
    - Facility map showing the location of chemical sub-storage areas.
    - Floor layout plan of chemical sub-storage areas, specifying categorization and storage location of different types of chemicals.
    - Standard operating procedures for chemical storage and labelling (including sub-storage).
    - Examples of storage in/out logs, FEFO records, specifying date of arrival at sub-storage, lot number, and date of dispatch to production, etc.)
    - Audits/inspections checklists or reports of chemical sub-storage areas.

Interview Questions to Ask:

- Staff responsible for chemicals management understand the hazards and controls associated with chemical sub-storage areas and can explain the facility's procedures to ensure controls are in place and properly maintained.

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- Relevant staff (management and employees) understand the controls in place and their responsibilities for maintaining chemical sub-storage areas.

Inspection - Things to Physically Look For:

- Observations onsite indicate that the listed controls are in place and being properly maintained (e.g., incompatible chemicals are stored separately or at safe distances, stored chemicals have appropriate labels, secondary containment is in place and of sufficient size, protections are in place for flammable chemicals, required PPE is present and being used, etc.).

16. Does your facility train employees responsible for the chemical management system on Restricted Substance Lists (RSLs)?

(Ref ID - chemtrainingr)

Answer Yes if: Your facility has a designated person(s) responsible for RSL compliance who is knowledgeable on RSL, **and** documented training is provided to relevant employees with training records and/or material.

Answer Partial Yes if: Your facility has a designated person(s) responsible for RSL compliance and training is provided to relevant employees, but it is not documented with training records and/or material or responsible staff are not knowledgeable on RSL.

Note: RSL training must be provided by a knowledgeable and qualified person (internally or externally) who understands RSL requirements and procedures in place at the facility.

Suggested Uploads:

- Documentation that demonstrates the facility has conducted training on RSL for relevant employees (e.g., RSL training records, training material, post-training evaluation records)
- Documented job description for staff responsible for RSL management and compliance.

What is the intent of the question?

The intent of this question is to ensure that facilities have knowledgeable staff that are trained on RSL management and compliance.

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Technical Guidance:

To effectively manage and implement RSL compliance programs, it is important to ensure that staff have the appropriate knowledge and training on RSL management and compliance. RSL management requires specific knowledge about applicable RSL requirements and procedures to ensure compliance.

Facilities should ensure that there are dedicated roles and responsibilities for staff who manage RSL compliance. This provides facilities with the needed resources to oversee RSL program implementation and ensure that relevant staff are trained on RSL requirements and procedures at the facility.

RSL training requirements can vary based on facility type and operations or products, however there are some key aspects that should be included in RSL training including, but not limited to:

- All applicable RSL requirements at the facility
- The facilities RSL management policy and procedures including procedures to investigate the root cause of RSL failures.
- Chemical procurement and screening with respect to RSL
- Areas of specific risks to RSL compliance at the facility.

Having procedures to collect information to evaluate the effectiveness of training programs (e.g., trainee feedback questionnaires or test, observation, or reviews of trainer performance, etc) will help facilities ensure the effectiveness of RSL trainings and knowledge retention.

Resources:

- ZDHC Academy https://academy.roadmaptozero.com/
- AFIRM Group RSL Toolkit https://afirm-group.com/Toolkit-EN/
- AAFA Product Safety Guidance: Restricted Substances List (RSL) https://www.aafaglobal.org/AAFA/Solutions_Pages/Restricted_Substance_List

How This Will Be Verified:

Documentation Required:

- Documentation that demonstrates the facility has a dedicated person(s) responsible for RSL compliance who is knowledgeable on RSL, and documented training is provided to relevant employees.
    - Documented job description and qualifications for staff responsible for RSL management and compliance
    - RSL training records and/or training material
    - Post-training evaluation records

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- RSL management policy and procedures

Interview Questions to Ask:

- Staff responsible for managing RSL at the facility can demonstrate appropriate knowledge of RSL.
- Staff responsible for the facility's RSL training program can explain how training is provided and if applicable, how the effectiveness of training is evaluated.
- Employees who have received the trainings are aware of the content of the training.

Inspection - Things to Physically Look For:

- Observations onsite indicate that the facility's RSL program is being managed by trained and knowledgeable staff.

17. Does your facility train employees responsible for the chemical management system on Manufacturing Restricted Substance Lists (MRSLs)? *(Ref ID - chemtrainingm)*

Answer Yes if: Your facility has a designated person(s) responsible for MRSL compliance who is knowledgeable on MRSL, **and** documented training is provided to relevant employees with training records and/or material.

Answer Partial Yes if: Your facility designated a person(s) responsible for MRSL compliance and training is provided to relevant employees, but it is not documented with training records and/or material **or** responsible staff are not knowledgeable on MRSL.

Note: MRSL training must be provided by a knowledgeable and qualified person (internally or externally) who understands MRSL requirements and procedures in place at the facility.

Suggested Uploads:

- Documentation that demonstrates the facility has conducted training on MRSL for relevant employees (e.g., MRSL training records, training material, post-training evaluation records)
- Documented job description for staff responsible for MRSL management and compliance.

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What is the intent of the question?

The intent of this question is to ensure that facilities have knowledgeable staff that are trained on MRSL management and compliance.

Technical Guidance:

All facilities should ban non-compliant hazardous chemicals from use in the facility as required by laws and regulations and/or customers' requirements (e.g., the ZDHC Manufacturing Restricted Substance List (MRSL)).

To effectively manage and implement MRSL compliance programs, it is important to ensure that staff have the appropriate knowledge and training on MRSL management and compliance. MRSL management requires specific knowledge about applicable MRSL requirements and procedures to ensure compliance.

Facilities should ensure that there are dedicated roles and responsibilities for staff who manage MRSL compliance. This provides facilities with the needed resources to oversee MRSL program implementation and ensure that relevant staff are trained on MRSL requirements and procedures at the facility.

MRSL training requirements can vary based on facility type and operations or products for example facilities that use chemicals in production processes typically use a larger number of chemicals on-site and may require a more complex MRSL manage program that staff need be trained on as opposed to facilities that only use chemicals for facility operations or tooling. However, there are some key aspects that should be included in MRSL training including, but not limited to:

- All applicable MRSL requirements at the facility
- The facilities MRSL management policy and procedures including procedures to investigate the root cause of MRSL non-conformances that are identified.
- Chemical procurement and screening with respect to MRSL
- Areas of specific risks to MRSL compliance at the facility.

Having procedures to collect information to evaluate the effectiveness of training programs (e.g., trainee feedback questionnaires or test, observation, or reviews of trainer performance, etc) will help facilities ensure the effectiveness of MRSL trainings and knowledge retention.

Resources:

- ZDHC MRSL https://mrsl.roadmaptozero.com/
- ZDHC Academy https://academy.roadmaptozero.com/

How This Will Be Verified:

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Documentation Required:

- Documentation that demonstrates the facility has a dedicated person(s) responsible for MRSL compliance who is knowledgeable on MRSL, and documented training is provided to relevant employees.
    - Documented job description and qualifications for staff responsible for MRSL management and compliance
    - MRSL training records and/or training material
    - Post-training evaluation records
    - MRSL management policy and procedures

Interview Questions to Ask:

- Staff responsible for managing MRSL at the facility can demonstrate appropriate knowledge of MRSL.
- Staff responsible for the facility's MRSL training program can explain how training is provided and if applicable, how the effectiveness of training is evaluated.
- Employees who have received the trainings are aware of the content of the training.

Inspection - Things to Physically Look For:

- Observations onsite indicate that the facility's MRSL program is being managed by trained and knowledgeable staff.

18. Does your facility have an established process to investigate and resolve a potential RSL failure? *(Ref ID - chemfailresolution)*

Answer Yes if: Your facility has a documented process for investigating and resolving RSL failures.

If you select Yes, you will be asked the following sub question(s):

- If yes, does your facility have a Standard Operating Procedure (SOP) to resolve or prevent such a failure?
    - Please upload your SOP

Suggested Uploads:

- RSL management procedures that include the RSL failure investigation process.
- Examples of documentation from past RSL failure investigations (e.g., failure investigation/resolution form)

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What is the intent of the question?

The intent of the question is for facilities to demonstrate that a process is in place to investigate and resolve any RSL failures.

Technical Guidance:

The goal of an RSL compliance program should focus on ensuring that chemicals and/or materials that are not RSL compliant or could result in RSL failures are not permitted to be used at the facility, however, if an RSL failure does occur, it is important to have a formal process to investigate and resolve RSL failures.

The cause of individual RSL failures can vary and having procedures to conduct a systematic investigation will help facilities identify the cause of the failure and address any gaps in their RSL management program. The investigation process should also include procedures for conducting a root cause analysis of the failure to prevent failures in the future.

When failures do occur, facilities should initiate an investigation and resolution process that includes, but is not limited to the key aspects listed below:

- Stop production of the noncompliant material/product and quarantine and potentially non-compliance materials/products.
- Ensure that any non-compliant material/products are not shipped from the facility.
- Evaluate the scope of the issue and the current materials/processes that produced the failure.
- Conduct a root cause investigation to identify the cause of the failure.
    - Engage with material/chemical suppliers as needed to help identify the root causes.
- Evaluate the need to update RSL management procedures to ensure the issue does not happen again.

Resources:

- AFIRM Group RSL Toolkit https://afirm-group.com/Toolkit-EN/ (**Note:** Appendix D contains examples of RSL failures and corrective actions)

How This Will Be Verified:

Documentation Required:

- Documentation that shows the facility has documented procedures to investigate and resolve RSL failures. This may include:

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- RSL policy and/or management procedures that include RSL failure investigation process.
- Records of historical RSL failure investigations (e.g., failure investigation/resolution form)

Interview Questions to Ask:

- Staff responsible for RSL management can explain the facility's RSL failure investigation and resolution procedures.

Inspection - Things to Physically Look For:

- Staff responsible for RSL failure investigation demonstrate sufficient knowledge of RSL and RSL failure investigation/resolution.

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Higg FEM and FEP Module – Glossary

Cascale will continue to update the glossary as per requests to provide better and proper definitions. You can find the most updated glossary for Higg FEM and FEP Module here.

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