

## TSCA Chemical Data Reporting

### Fact Sheet: Reporting for Electricity Generating Sites

This fact sheet provides information on existing Chemical Data Reporting (CDR) rule requirements related to the reporting of chemical substances manufactured during operations conducted at electricity generating sites, such as utilities. This fact sheet supplements other documents, such as the [2020 CDR Instructions for Reporting](#).

Electricity generating sites produce electricity for themselves or to distribute to others. Although electricity can be generated using a variety of processes and feedstocks, this fact sheet focuses on operations that are common for sites using fossil fuels or other carbonaceous materials as a fuel source for electricity generation.

The primary goal of this document is to help the regulated community comply with the requirements of the CDR rule. This document does not substitute for that rule, nor is it a rule itself. It does not impose legally binding requirements on the regulated community or on the U.S. Environmental Protection Agency (EPA).

The CDR rule, issued under the Toxic Substances Control Act (TSCA), requires manufacturers (including importers) to give EPA information on the chemicals they manufacture domestically or import into the United States. EPA uses the data, which provides important screening-level exposure related information, to help assess the potential human health and environmental effects of these chemicals and makes the non-confidential business information it receives available to the public.

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#### Electricity Generating Sites and the CDR Rule

Electricity generating sites may be required to report manufactured chemical substances under the CDR rule. Reporting under CDR is based on the manufacture (including import) of chemical substances (see 40 CFR 711.8). The processing or use of one chemical substance may result in the manufacture of another chemical substance. In such cases, persons who process or use chemical substances may become subject to reporting requirements under CDR for the chemical substance *that they manufactured* during the course of their operations, not for the chemical substance that they processed or used.

Typically, chemical substances that are manufactured at an electricity generating site are considered to be byproducts, and may also be intermediates. They are generally manufactured for a commercial purpose because their manufacture is a part of the generation of electricity, and the generation of electricity is typically conducted to confer some commercial advantage to the party engaged in the activity. To the extent these chemical substances are further used for a non-exempt commercial purpose after manufacture occurs, the manufacture may be subject to reporting under CDR.

## 1. What is “manufacture for commercial purposes”?

Electricity generating sites may manufacture chemical substances for a commercial purpose during the combustion process to generate electricity or during the treatment of waste streams exiting the combustion process (e.g., flue gas, boiler slag, fly ash).

A chemical substance is reportable under CDR only when it is “manufactured for commercial purposes.” The scope of what is considered “manufactured for commercial purposes” is defined by regulation:

*Manufacture for commercial purposes* means:

(1) To import, produce, or manufacture with the purpose of obtaining an immediate or eventual commercial advantage for the manufacturer, and includes among other things, such “manufacture” of any amount of a chemical substance or mixture:

- (i) For commercial distribution, including for test marketing.
- (ii) For use by the manufacturer, including use for product research and development, or as an intermediate.

(2) Manufacture for commercial purposes also applies to substances that are produced coincidentally during the manufacture, processing, use, or disposal of another substance or mixture, including both byproducts that are separated from that other substance or mixture and impurities that remain in that substance or mixture. Such byproducts and impurities may, or may not, in themselves have commercial value. They are nonetheless produced for the purpose of obtaining a commercial advantage since they are part of the manufacture of a chemical product for a commercial purpose. (40 CFR 704.3, referenced by § 711.3)

“Manufacturer” and “Manufacture” also are defined by regulation:

*Manufacturer* means a person who manufactures a chemical substance. (40 CFR 711.3)

*Manufacture* means to manufacture, produce, or import, for commercial purposes. Manufacture includes the extraction, for commercial purposes, of a component chemical substance from a previously existing chemical substance or complex combination of chemical substances. A chemical substance is co-manufactured by the person who physically performs the manufacturing and the person contracting for such production when that chemical substance, manufactured other than by import, is:

- (1) produced exclusively for another person who contracts for such production, and
- (2) that other person dictates the specific chemical identity of the chemical substance and controls the total amount produced and the basic technology for the manufacturing process. (40 CFR 711.3)

As noted earlier, byproducts and intermediates manufactured at an electricity generating site are generally manufactured for a commercial purpose. The manufacture is part of the generation of electricity, and the generation of electricity generally confers some commercial advantage on the party engaged in the activity.

## 2. What is a byproduct and when is it reportable under CDR?

“Byproduct” is defined by regulation:

*Byproduct* means a chemical substance produced without a separate commercial intent during the manufacture, processing, use, or disposal of another chemical substance or mixture. (40 CFR 704.3, referenced by § 711.3)

When a chemical substance is processed at an electricity generating site, it is also possible that byproducts are manufactured. Like other chemical substances manufactured for commercial purposes, byproducts manufactured at an electricity generating site are subject to CDR reporting unless an exemption applies.

The manufacture of a byproduct is exempt from reporting if the byproduct is not “used for commercial purposes.” (40 CFR 720.30(h)(2), referenced by § 711.10(c)) Even though a byproduct is manufactured for commercial purposes, it may or may not be used for particular commercial purposes after it is manufactured.

There are other circumstances where a byproduct may be exempt:

- The manufacture of a byproduct is also exempt from reporting if its only commercial purpose is for use by public or private organizations that:
  - (1) Burn it as a fuel.
  - (2) Dispose of it as a waste, including in a landfill or for enriching soil.
  - (3) Extract component chemical substances from it for commercial purposes. (This exclusion only applies to the byproduct; it does not apply to the component substances extracted from the byproduct.) (40 CFR 720.30(g), referenced by § 711.10(c)).
- For certain listed manufacturing processes, the listed byproducts are exempt when recycled or otherwise used within a site-limited, physically enclosed system that is part of the same overall manufacturing process from which the byproduct substance was generated, and when the site is reporting the byproduct or a different chemical substance that was manufactured from the recycled byproduct or manufactured in the same overall manufacturing process (40 CFR 711.10(d)(1)).

As of 2020, the listed manufacturing processes are Portland cement manufacturing and Kraft pulping process (40 CFR 711.10(d)(1)(i)). Therefore, at this time, this exemption is not expected to be applicable to byproducts manufactured at electricity generating sites. The public may petition for amendments to this list of industrial processes and associated byproducts (40 CFR 711.10(d)(1)(ii)). For more information, see [www.epa.gov/cdr](http://www.epa.gov/cdr).

- The manufacturing of byproducts is exempt from reporting if the byproducts are manufactured solely in the following equipment when the equipment is not integral to the chemical manufacturing processes of the site: (i) Pollution control equipment or (ii) Boilers used to generate heat or electricity for that site (40 CFR 711.10(d)(2)), unless the byproduct chemical is the subject of certain TSCA actions that affect reporting requirements.<sup>1</sup>

<sup>1</sup> See [TSCA Chemical Data Reporting Fact Sheet: Chemical Substances which are the Subject of Certain TSCA Actions](#).

Note that the further processing of a byproduct to manufacture a second byproduct is considered manufacturing for a commercial purpose, assuming that the manufacturer obtains some commercial advantage from the conversion (for example, processing the byproduct into a second byproduct that is more suitable for disposal and which results in lower disposal costs). This means that the first byproduct that is further processed is not exempt and must be reported under CDR. If the second byproduct is disposed of as a waste, it is exempt from CDR. Otherwise, whether the second byproduct is exempt depends on whether it is used for a non-exempt commercial purpose.

Table 1 provides examples of when byproducts specific to the electricity generating industry are reportable or exempted from reporting under CDR.

### **3. When is equipment integral or non-integral?**

Equipment is considered integral when it comprises a portion of the manufacturing process that is chemically necessary or provides primary operational support for the production of the intended product. Equipment is non-integral when it is not considered integral. For example, boilers are considered integral equipment at electricity generating sites, as they provide the primary operating process that is chemically necessary for the production of electricity, the intended product at the site. On the other hand, flue gas desulfurization systems typically are considered non-integral equipment, as they are not part of the manufacturing process that is chemically necessary for the production of electricity. For additional discussion, see the Byproduct and Recycling Scenarios document.

### **4. Are byproducts manufactured in non-integral pollution control exempted for the electricity industry?**

Byproducts generated in nonintegral pollution control equipment are exempt from reporting. Examples of non-integral pollution control equipment at electricity generating sites typically include flue gas desulfurization and selective catalytic reduction systems. Therefore, in a typical utility, when a byproduct substance produced from this equipment (e.g., FGD gypsum) is recycled for a non-exempted commercial purpose, the byproduct is exempt from reporting under CDR. However, any chemical substance manufactured from the otherwise exempted byproduct would be subject to reporting unless otherwise exempted.

This exemption applies only to byproducts generating in non-integral pollution control equipment. Chemical substances that are intentionally manufactured in non-integral pollution control equipment (e.g., the production of ammonia from urea) for the purposes of air emissions control remain subject to CDR reporting (assuming all other reporting criteria are met).

### **5. When are byproducts manufactured in non-integral boiler equipment exempted for the electricity generating industry?**

For the most part, the exemption for byproducts manufactured in non-integral boiler equipment (40 CFR 711.10(d)(2)(ii)) is not expected to apply to electricity generating sites. This is because the use of boilers is integral to the generation of electricity (the utility's product) and therefore is not applicable for this exemption.

This exemption is expected to more likely be applicable at sites where the product is not the generation of electricity, but rather something that does not directly rely on the use of the boilers. For the purposes of this exemption, certain associated processes that are not chemically required to produce the intended product would be considered non-integral. These may be required due to other regulations or the need to generate heat or electricity on-site, but are not specifically necessary for the manufacture of the intended product.

## 6. What is an intermediate and when is it reportable under CDR?

“Intermediate” is defined by regulation:

*Intermediate* means any chemical substance that is consumed, in whole or in part, in chemical reactions used for the intentional manufacture of other chemical substances or mixtures, or that is intentionally present for the purpose of altering the rates of such chemical reactions. (40 CFR 704.3, referenced by § 711.3)

When a chemical substance is processed at an electricity generating site, it is possible that one or more intermediate chemical substances are manufactured and further consumed in the process. Reporting under CDR may be required for these intermediates. If an intermediate chemical is isolated and then used for a non-exempt commercial purpose, its manufacture would be subject to CDR reporting, unless there is a CDR reporting exemption that can apply.

An intermediate may qualify for the CDR non-isolated intermediate exemption. See 40 CFR 711.10(c), 40 CFR 720.30(h)(8). A non-isolated intermediate is exempt from reporting under CDR. “Non-isolated intermediate” is defined by regulation:

*Non-isolated intermediate* means any intermediate that is not intentionally removed from the equipment in which it is manufactured, including the reaction vessel in which it is manufactured, equipment which is ancillary to the reaction vessel, and any equipment through which the substance passes during a continuous flow process, but not including tanks or other vessels in which the substance is stored after its manufacture. Mechanical or gravity transfer through a closed system is not considered to be intentional removal, but storage or transfer to shipping containers isolates the substance by removing it from process equipment in which it is manufactured. (40 CFR 704.3, referenced by § 711.3)

See [TSCA Chemical Data Reporting Fact Sheet: Non-Isolated Intermediates](#) for additional information.

## 7. Are wastes reportable under CDR?

For CDR purposes, a variety of substances that the operator of an electricity generating site might deem to be ‘wastes’ are actually byproducts manufactured in the course of commercial operations. In general, such byproducts (in this case wastes) are reportable under CDR unless a reporting exemption applies. The applicability of the reporting exemptions found at 40 CFR 720.30(g) and 40 CFR 720.30(h)(2) (referenced by 40 CFR 711.10(c)) depend on what is done with the byproducts *after* they are manufactured. If a byproduct is used for a non-exempt commercial purpose (i.e., one not listed in 40 CFR 720.30(g)) after manufacture, then these reporting exemptions do not apply. In addition, byproducts manufactured in pollution control equipment, when that equipment is not integral to the chemical manufacturing processes of the site, are exempted by 40 CFR 711.10(d)(2).

## Reporting Chemical Substances under CDR

### 1. How should I identify my manufactured chemical substance?

Under TSCA, a chemical substance is defined by its unique, specific chemical identity, generally identified by the Chemical Abstracts Service Registry Number (CASRN) and its corresponding Chemical Abstracts (CA) Index Name. In the manufacture of chemical substances, such as by electricity generating sites, chemical substances may exist as: 1) an individual chemical substance; 2) a mixture of individual chemical substances; or 3) a complex reaction product of unknown, uncertain or variable composition (what EPA often refers to as a “UVCB substance” (a substance of Unknown or Variable composition, Complex reaction products, and Biological materials). Generally, EPA considers each combination of substances resulting from a reaction to be either:

- (1) A *mixture*, composed of two or more well-defined chemical substances to be named and listed separately; or
- (2) A “*UVCB*” substance, or another type of single substance that EPA and CAS refer to as a “Class 2 substance” (non-UVCB, where the chemical structure is indefinite). A UVCB substance in this case is a “reaction product”, or combination of chemicals from a reaction, listed in the TSCA Inventory as a single chemical substance, using one name that collectively describes the products or, if that is not ascertainable, describes the reactants used to make the products and perhaps the nature of the reaction or key aspects of the manufacturing process.

As the manufacturer, the electricity generating site should determine, based on the specific manufacturing scenario, whether the manufactured chemical is more appropriately represented as an individual chemical substance, a mixture of individual chemical substances, or a UVCB chemical substance.

It may be appropriate for CDR purposes to characterize a complex byproduct as a mixture of well-defined chemical substances or a single well-defined chemical substance, even though there are some uncharacterized components in the combination of byproduct substances. In addition, where a manufacturer reasonably concludes (after considering all the facts known and reasonably ascertainable) that the uncharacterized components of a byproduct will have no subsequent commercial purpose after they are manufactured, for CDR purposes the manufacturer may treat the byproduct as a mixture of the remaining characterized components. The manufacturer would report each component as a separate substance. For each reported substance, the manufacturer would report the production volume associated only with that substance. The uncharacterized components that have no subsequent commercial purpose would not be reported to CDR.

Table 1 lists some of the potentially appropriate approaches for reporting some of the byproducts or other chemical substances manufactured by electricity generating sites.

## **2. How do I determine whether my chemical substance meets the reporting threshold?**

To determine whether a chemical substance meets the reporting threshold for CDR, compare the reporting volume threshold to the total amount of the chemical substance produced at the whole site (40 CFR 711.15). For example, if there are three processes at a site, and each process produces 10,000 lbs of byproduct, Chemical X, at the site in a single year, then the 25,000 lb reporting threshold is exceeded for Chemical X at the site.

If your reporting is based on the well-defined constituent(s) of the byproduct that have a subsequent commercial purpose, report the constituent(s) separately based on the production volume of the individual constituent. When reporting a byproduct as a UVCB substance, report based on the entire production volume of the whole byproduct.

To determine whether your chemical substance is subject to the lower 2,500 lb reporting threshold, read [TSCA Chemical Data Reporting Fact Sheet: Reporting Thresholds for 2020](#) and [TSCA Chemical Data Reporting Fact Sheet: Chemical Substances which are the Subject of Certain TSCA Actions](#).

For additional information about CDR reporting requirements, please read [Instructions for Reporting](#)

## CDR Reporting Scenario Examples

Table 1 identifies some of the chemical substances manufactured as a result of various operations conducted by an electricity generating site when fossil fuels (or other carbonaceous materials) are used to generate energy.

**Table 1: CDR Reporting for Example Chemical Substances Potentially Manufactured by Electricity Generating Sites**

Process at Electricity Generating Sites	Description of Chemical Substances Manufactured	CDR Reporting Requirement and Selected Examples
<b>Electricity Generation</b>		
<p>Generation of electricity: Burning of fossil fuels or other carbonaceous materials to generate energy.</p>	<p>Residuum from the burning of fossil fuels or other carbonaceous materials</p>	<p><b>Reportable</b> byproduct chemical substance, if residue is to be used for non-exempt commercial purposes.</p> <p>e.g., Ashes, Residues (CASRN 68131-74-8); Definition: The residuum from the burning of a combination of carbonaceous materials. The following elements may be present as oxides: aluminum, calcium, iron, magnesium, nickel, phosphorus, potassium, silicon, sulfur, titanium, and vanadium.</p> <p>A utility may call the residuum fly ash, bottom ash, bed ash, or wood ash. For purposes of CDR, these would all be considered to be “Ashes, Residues,” per the definition provided by CAS. Some of these materials may be used for the commercial production of concrete or roofing materials.</p> <p>e.g., Slags, coal; CASRN 68476-96-0; Definition: Inorganic residuum from the combustion of coal. Electric utility boiler slag (coal)</p> <p><b>Not Reportable</b>, if residue is not used for any non-exempt commercial purpose after it is manufactured, or if it is simply disposed of as a waste or used for the extraction of a component chemical substance.</p>

Process at Electricity Generating Sites	Description of Chemical Substances Manufactured	CDR Reporting Requirement and Selected Examples
<b>Air Pollution Control</b>		
<p>Ammonia On Demand (AOD) System:</p> <p>Production of ammonia from urea for use in Selective Catalytic Reduction (SCR)</p>	<p>Ammonia produced from hydrolysis of urea</p> <p>CO<sub>2</sub> and H<sub>2</sub>O produced during the hydrolysis of urea in AOD systems and released with exhaust gases</p>	<p><b>Reportable</b>, if the ammonia is used for a commercial purpose such as removing NO<sub>x</sub> from flue gas.</p> <p>e.g., Ammonia; CASRN 7664-41-7</p> <p><b>Not Reportable</b> to the extent that the ammonia is emitted as part of the exhaust gases (i.e., slip gas), which are not used for any commercial purpose.</p> <p><b>Not Reportable.</b> These exhaust gases are not used for any post-manufacture commercial purposes.</p> <p>e.g., CO<sub>2</sub> and H<sub>2</sub>O [Also, water, if manufactured, is specifically fully exempt from CDR]</p>
<p>Selective Catalytic Reduction (SCR) System: Scrub flue gas - catalytic reduction of nitrogen oxide gases (NO<sub>x</sub> gases) to produce N<sub>2</sub> and water</p>	<p>N<sub>2</sub> and H<sub>2</sub>O, are produced during the catalytic reduction process and released as exhaust gases</p>	<p><b>Not Reportable.</b> Exhaust gases are not used for any commercial purpose.</p> <p>e.g., N<sub>2</sub> and H<sub>2</sub>O [Also, water, if manufactured, is specifically fully exempt from CDR]</p>
<p>Flue Gas Desulfurization (FGD) Wet Scrubber System: Air pollution control – removal of SO<sub>2</sub> from flue gas using a number of sorbents (such as lime, limestone,</p>	<p>Regenerated thiosulfate compounds and related compounds formed during oxidation inhibition (i.e., anti-scaling)</p>	<p><b>Reportable</b> if regenerated thiosulfates and related compounds are manufactured for a non-exempt commercial purpose and are not otherwise exempt (e.g., as non-isolated intermediates).</p> <p>e.g., Calcium thiosulfate (CaS<sub>2</sub>O<sub>3</sub>) (TSCA Inventory name: Thiosulfuric acid (H<sub>2</sub>S<sub>2</sub>O<sub>3</sub>), calcium salt (1:1)), CASRN 10124-41-1</p> <p>e.g., Sodium thiosulfate (Na<sub>2</sub>S<sub>2</sub>O<sub>3</sub>) (TSCA Inventory name: Thiosulfuric acid (H<sub>2</sub>S<sub>2</sub>O<sub>3</sub>), sodium salt (1:2)), CASRN 7772-98-7</p> <p>e.g., Tetrathionate and Trithionate compounds</p>

Process at Electricity Generating Sites	Description of Chemical Substances Manufactured	CDR Reporting Requirement and Selected Examples
magnesium-enhanced lime, soda ash) and oxidation systems (such as forced, inhibited, natural).	Gypsum byproduct	<p><b>Not Reportable</b> if the gypsum byproduct is manufactured solely in non-integral pollution control equipment. (Exempt under § 711.10(d)(2))</p> <p><b>Not Reportable</b> if gypsum byproduct is not used for any commercial purpose after it is manufactured or if it is simply disposed of as a waste. (Exempt under §§ 720.30(h)(2) or 720.30(g)(2), respectively)</p> <p><b>Reportable</b> if gypsum byproduct is not manufactured solely in non-integral pollution control equipment (e.g., FGD system) and is used for a non-exempt commercial purpose after manufacture (e.g., gypsum may be used to make the commercial product of wallboard.).</p> <p>e.g., Synthetic or FGD gypsum, report as Calcium sulfate (TSCA Inventory name: Sulfuric acid, calcium salt (1:1)), CASRN 7778-18-9 (i.e., gypsum is calcium sulfate dihydrate, but the non-hydrated form is used for CDR purposes)</p>
	The waste product from flue gas desulfurization system	<p><b>Not Reportable</b> if the waste product (a byproduct of operating the scrubbers) is manufactured solely in non-integral pollution control equipment (Exempt under § 711.10(d)(2)).</p> <p><b>Not Reportable</b> if the waste product/byproduct is not used for any commercial purpose after it is manufactured, or if it is simply disposed of as a waste or used for the extraction of a component chemical substance. (Exempt under §§ 720.30(h)(2) or 720.30(g)(2) or (g)(3), respectively)</p>
	The stabilized waste product obtained by mixing the scrubber waste from the flue gas desulfurization system with fly ash and lime, Composed primarily of the scrubber sludge, calcium sulfoaluminates, and comparable sulfites	<p><b>Not Reportable</b> if the stabilized waste product (a byproduct of operating the scrubbers) is manufactured solely in non-integral pollution control equipment (Exempt under § 711.10(d)(2)).</p> <p><b>Not Reportable</b> if the stabilized waste product/byproduct is not used for any commercial purpose after it is manufactured, or if it is simply disposed of as a waste or used for the extraction of a component chemical substance. (Exempt under §§ 720.30(h)(2) or 720.30(g)(2) or (g)(3), respectively)</p>

Process at Electricity Generating Sites	Description of Chemical Substances Manufactured	CDR Reporting Requirement and Selected Examples
	Waste solids formed in the flue gas desulfurization system	<p><b>Not Reportable</b> if the waste solids are manufactured solely in non-integral pollution control equipment (Exempt under § 711.10(d)(2)).</p> <p><b>Not Reportable</b> if the waste solids are not used for any commercial purpose after they are manufactured, or if they are simply disposed of as a waste or used for the extraction of a component chemical substance. (Exempt under §§ 720.30(h)(2) or 720.30(g)(2) or (g)(3), respectively)</p>

**For further information:**

To access copies of additional fact sheets and other CDR information, visit [www.epa.gov/cdr](http://www.epa.gov/cdr).

If you have questions about CDR, you can contact the TSCA Hotline by phone at 202-554-1404 or e-mail your question to [eCDRweb@epa.gov](mailto:eCDRweb@epa.gov).