

Q&A DOCUMENT: Recycling and the TSCA Chemical Substance Inventory - Premanufacture Notification and Chemical Data Reporting Requirements

As part of the Inventory Update Reporting (IUR) Modifications final rule, EPA is changing the identification of the regulation from IUR to Chemical Data Reporting (CDR). However, EPA is retaining the use of the IUR acronym throughout this document. The reader should recognize that where IUR is used to refer to the 40 CFR 711 regulations or to future IUR submission periods, IUR and CDR are synonymous.

This document is intended solely as guidance. This guidance is not a regulation, nor is it intended to change any underlying regulatory requirements prescribed by the Toxic Substances Control Act, 15 U.S.C. 2601 et seq. and specified in the Premanufacture Notification regulations, 40 CFR part 720 or the TSCA Chemical Inventory Reporting regulations, 40 CFR part 711. This guidance merely documents and clarifies existing regulatory requirements and Agency guidance on Inventory listing, PMN, and IUR requirements.

Nothing in this document serves to supersede or alter existing regulatory requirements, nor to impose any new legally binding requirements on EPA, state/local agencies, or the regulated community. The general description provided in this document may not apply to a particular situation based on the circumstances. Furthermore, interested parties remain free to raise questions or objections about the substance and application of the guidance as they arise in a particular situation. EPA retains the discretion to adopt approaches on a case-by-case basis that differ from those described in this guidance where appropriate. This document may be revised periodically without public notice.

A. General Byproduct Questions

A.1. What is a byproduct?

A byproduct is defined under 40 CFR 704.3 of the General Reporting and Recordkeeping Provisions for section 8(a) Information Gathering Rules and 40 CFR 720.3(d) of the Premanufacture Notification (PMN) Requirements as "... a chemical substance produced without a separate commercial intent during the manufacture, processing, use, or disposal of another chemical substance or mixture." A byproduct is often (but not necessarily) considered a waste by the manufacturer.

A.2. How do I properly identify my byproduct chemical substance for IUR purposes?

Byproduct chemical substances are often chemical combinations of variable or complex composition, and as such can be identified as a single chemical substance that represents the chemical process stream. Complex chemical substances are listed (or can be listed) on the Inventory as chemical substances of Unknown or Variable composition, Complex reaction products and Biological materials ("UVCB" substances). EPA's New Chemicals website has

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guidance documents¹ to help determine the appropriate name for UVCB substances, and to identify when a combination of chemicals is a UVCB substance and not a mixture. As a general matter, “each combination of substances resulting from a reaction is considered by the Agency to be either (1) a mixture, composed of two or more well-defined chemical substances to be named and listed separately, or (2) a reaction product, to be listed as a single chemical substance, using one name that collectively describes the products, or, failing that, the reactants used to make the products.” (See <http://www.epa.gov/oppt/newchemicals/pubs/rxnprods.txt>) Situations may exist where the byproduct substance is actually considered a mixture under TSCA, and it is EPA’s general view, consistent with past guidance, that “[a] combination of products resulting from a chemical reaction is considered a mixture provided that all of the component product substances are unambiguously identified and are represented as forming each time the reaction is run.”

Approximately one third of the substances included on the Inventory are UVCB substances. UVCB substances may include an Inventory definition to further describe the substance. Here are some examples of UVCB substances. Please see EPA’s UVCB guidance (see <http://www.epa.gov/oppt/newchemicals/pubs/uvcb.txt>) for further discussion:

Dust, iron-ore, sinter
CASRN 69012-53-9

Definition: Dust generated during the making, breaking and handling of sinter which is recovered through the use of pollution abatement equipment.

Gold, dross
CASRN 69029-68-1

Definition: A scum formed on the surface of molten gold.

Electrolytes, copper-manufg., spent
CASRN 69012-54-0

Definition: Spent copper sulfate electrolyte consisting of copper sulfate and sulfuric acid resulting from the electrolytic refining of copper.

If produced in sufficient quantities, these substances should be reported by the byproduct manufacturer as they are listed by EPA in the TSCA Inventory. As a single UVCB substance, this type of byproduct material does not need to be further analyzed by its manufacturer to determine the precise, detailed composition. Because byproducts would typically or generally be identified for TSCA purposes as single UVCB substances, the Agency does not believe that the identification and reporting of byproducts would be significantly burdensome. As a general matter, if there is to be appropriate stewardship of potential chemical risks, EPA believes that

¹ A list of the guidance documents available on the New Chemicals website can be found at <http://www.epa.gov/opptintr/newchemicals/pubs/guideman.htm>. This list includes the following two guidance documents: *Chemical Substances of Unknown or Variable Composition, Complex Reaction Products and Biological Materials: UVCB Substances* (available at <http://www.epa.gov/opptintr/newchemicals/pubs/uvcb.txt>) and *Combinations of Two or More Substances: Complex Reaction Products* (available at <http://www.epa.gov/opptintr/newchemicals/pubs/rxnprods.txt>).

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chemical manufacturers, processors, and users should know and understand the identities of chemicals they handle.

A.3. Is it possible I am manufacturing a chemical byproduct in the course of manufacturing an article?

Yes, potentially. You need to consider whether you are manufacturing a chemical substance as a byproduct when you are manufacturing an article. For example, if your use or processing of a chemical substance (chemical A) to manufacture an article coincidentally produces a different substance (chemical B), apart from the article you intended to manufacture, then you have manufactured a byproduct chemical substance. This situation may occur, for example, when you are stripping a substance off of a part of the article, and the stripping process results in the formation of a different substance (possibly resulting in a “used” stripping solution). See the Instructions for Reporting and question A.2 for further information on properly identifying byproduct chemical substances. Note that if you intentionally manufactured the chemical substance (chemical B) for a commercial purpose separate from that of the article, then you have manufactured a coproduct and not a byproduct. See discussion of coproducts in question A.7, below.

A.4. Is a byproduct required to be listed on or added to the TSCA Chemical Substance Inventory (the Inventory)? Are byproducts not listed on the TSCA Inventory subject to the TSCA section 5 premanufacture notification (PMN) requirements?

It depends. A byproduct is required to be listed on the Inventory if the byproduct is used for a separate non-exempt commercial purpose. The fact that a byproduct does not have a separate commercial purpose at the time it is manufactured does not affect whether the byproduct can be used subsequently for a non-exempt commercial purpose after it is manufactured. A byproduct could be manufactured initially without a separate commercial purpose, and yet be used for some commercial purpose after it is manufactured.

A byproduct that is not used for a non-exempt commercial purpose after it is manufactured is not required to be listed on the TSCA Inventory (see 40 CFR 710.4(d)(2) of the TSCA Inventory Reporting Regulations and 40 CFR 720.30(h)(2) of the PMN requirements). In most cases, a byproduct that is used for a commercial purpose is required to be listed on the Inventory. But see the exceptions discussed in question A.5.

A.5. Are some byproducts with a commercial purpose exempted from the TSCA Inventory listing requirement?

There are some circumstances where a byproduct is exempted from the Inventory listing and PMN reporting requirements, notwithstanding the fact that it is used for a commercial purpose after it is manufactured. See 40 CFR 710.4(d)(2) (in note) and 40 CFR 720.30(g). 40 CFR 720.30(g) states that a byproduct is exempted if:

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“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, or (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.)”

In other words, when a byproduct is burned as a fuel, disposed of as a waste material including disposal in a landfill or for enriching the soil, or used for extracting component chemical substances, the manufacture of the byproduct is considered to have been for a limited commercial purpose and such manufacture is not required to be reported for Inventory listing, PMN, or IUR purposes. Further discussion is provided in question A.6.

A.6. Are byproducts required to be reported for Inventory Update Reporting (IUR)?

All substances that are listed on the Inventory are subject to the IUR requirements if their manufacture meets the production threshold requirements and they are not otherwise excluded. Byproducts that are manufactured in volumes of 25,000 lb at a single site are subject to IUR requirements if used for a non-exempt commercial purpose. However, 40 CFR 711.10(c) states that reporting is not required for those substances meeting the requirements of sections 720.30(g) or (h). Therefore, manufacturers are not required to report their byproduct 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, or (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.)”

In interpreting section 40 CFR 720.30(g) above, one needs to consider the following important points.

- Regarding 40 CFR 720.30(g)(1), note that where a byproduct is burned as a fuel, and is also being burned for other non-exempt commercial purpose for the byproduct (e.g., if the combustion residue is used as a process input), then the exemption under 40 CFR 720.30(g)(1) would not apply.
- Regarding 40 CFR 720.30(g)(2), although the manufacture of a byproduct is not reportable if the byproduct is subsequently disposed of as a waste for purposes of enriching the soil (e.g., to change the soil properties in a desirable way, such as by serving as a filler to make the soil less dense or enhancing moisture retention), a substance used as a fertilizer is not necessarily an excluded byproduct. For instance, if the substance’s ordinary manner of use is as a fertilizer, then the substance is not a byproduct in the first place, and the provisions at 40 CFR 720.30(g) are inapplicable.
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- Regarding 40 CFR 720.30(g)(3), individual component chemical substances extracted from a byproduct are reportable substances if they are extracted for a commercial purpose, even if the manufacture of the byproduct itself is not reportable pursuant to 40 CFR 720.30(g).

A “component chemical substance” means a chemical substance that already exists in the byproduct. If the recycling process involves breaking chemical bonds or forming new chemical bonds to convert a chemical substance in the byproduct into a different chemical substance (which is then extracted), then the recycling process does not count as extracting a component chemical substance of the byproduct. Note: In circumstances where other substances in the byproduct are chemically reacted in order to facilitate the separation of a desired component chemical substance, such that the component chemical substance itself is not chemically changed before being extracted, then the process does constitute an extraction of the unchanged component chemical substance.

Note: Small businesses are generally not required to report information under IUR. Below are the two standards that can be used to qualify you as a small business for IUR purposes. Note that you may be a small business for one substance but, because of your production volume, not for another (40 FR 704.3, referenced by 40 CFR 711. 9).

(1) *First standard.* A manufacturer or importer of a substance is small if its total annual sales, when combined with those of its parent company (if any), are less than \$40 million. However, if the annual production or importation volume of a particular substance at any individual site owned or controlled by the manufacturer or importer is greater than 45,400 kilograms (100,000 pounds), the manufacturer or importer shall not qualify as small for purposes of reporting on the production or importation of that substance at that site, unless the manufacturer or importer qualifies as small under standard (2) of this definition.

(2) *Second standard.* A manufacturer or importer of a substance is small if its total annual sales, when combined with those of its parent company (if any), are less than \$4 million, regardless of the quantity of substances produced or imported by that manufacturer or importer.

Notwithstanding this exclusion, a person who qualifies as a small manufacturer is required to report under the IUR regulation for any chemical substance that is the subject of a rule, proposed or promulgated under section 4, 5(b)(4), or 6 of TSCA, or is the subject of an order in effect under section 5(e) of TSCA, or is the subject of relief that has been granted under a civil action under section 5 or 7 of TSCA. (40 CFR 711.9)

A.7. Am I manufacturing a byproduct or a coproduct? What is the difference?

The simultaneous manufacture of multiple chemical substances can occur for a variety of reasons. In the case of byproduct manufacture, the byproduct is manufactured without any separate commercial intent—that is, without any commercial intent other the commercial intent

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to manufacture, process, use, or dispose of some other chemical substance or mixture. See 40 CFR 704.3 (definition of “byproduct”). The Inventory listing and IUR requirements are based on the disposition of the byproduct, as explained above.

In the case of coproduct manufacture, there is commercial intent to produce the coproduct, separate from whatever commercial intent may concurrently exist to manufacture, process, use, or dispose of some other chemical substance or mixture. If both coproducts are chemical substances under TSCA, both are required to be listed on the Inventory unless otherwise excluded and both are subject to the IUR requirements if listed on the Inventory.

A.8. Byproducts whose only commercial purpose is as a source from which component chemical substances are extracted are not subject to Inventory listing or IUR. What is meant by “extract a component chemical substance”?

A component chemical substance is a chemical substance that is present in the byproduct prior to extraction. Heat or chemical reactions can be used to extract a component chemical substance, but the component substance extracted must be left chemically unchanged by the extraction process. Thus, for example, a chemical reaction could be employed on a byproduct to convert component chemical substance X into chemical substance Y, so as to facilitate the extraction of component chemical substance Z (which undergoes no chemical transformation) from the byproduct. However, if component chemical substance Z from the byproduct were first transformed into another chemical substance, and then that different chemical substance were extracted, the overall process would not qualify as extraction of a “component chemical substance.”

Note that the exemption at 40 CFR 720.30(g) only applies to the manufacture of the byproduct and does not apply to the manufacture of the extracted chemical substance. Thus, regardless of whether the manufacturer of the byproduct receives the benefit of this exemption (determined in part by whether or not the byproduct is subsequently used to extract component chemical substances), the manufacturer of the extracted chemical substance is subject to IUR.

Note also that the component chemical substance must be viewed as a particular chemical substance. For instance, elemental Nickel (Ni^0) and nickel hydroxide ($\text{Ni}(\text{OH})_2$) have different molecular identities and are not the same chemical substance. Additionally, because the Ni^{+2} ion cannot exist on its own and is therefore not considered a chemical substance, the Ni^{+2} ion is not considered a component chemical substance of the byproduct. Consider the following scenarios:

Scenario 1: If Ni^0 is recovered from a byproduct containing $\text{Ni}(\text{OH})_2$ as a component chemical substance, then an extraction of a component chemical substance has NOT occurred. Rather, the byproduct has been used as a chemical feedstock to manufacture Ni^0 , and both the byproduct and Ni^0 are therefore subject to IUR.

Scenario 2: If $\text{Ni}(\text{OH})_2$ is recovered from a byproduct containing $\text{Ni}(\text{OH})_2$ as a component chemical substance, then an extraction of a component chemical substance has occurred. In this case, the byproduct is not subject to IUR. The $\text{Ni}(\text{OH})_2$ is subject to

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IUR, as the extracted chemical itself does not qualify for the exemption at 40 CFR 720.30(g) (the provision applies to the byproduct, not to the chemical substance extracted from the byproduct).

For TSCA purposes, chemical substances are uniquely identified, typically by a Chemical Abstracts Service Registry Number (CASRN) when listed on the Inventory. However, for confidential substances on the Inventory, an Accession Number is used in place of a CASRN; these Accession Numbers are assigned by EPA.

A.9. EPA has a lot of programs encouraging recycling. If I am recycling my byproduct, do I need to be concerned about Inventory listings or the IUR?

EPA does encourage recycling, and has many programs to educate people and encourage recycling and reuse of materials. However, the Inventory is a listing of chemical substances in commerce, and many recycling activities involve bringing materials into commerce that otherwise would be disposed of as a waste and perhaps landfilled. If your manufactured substances are being recycled, you do need to consider whether those substances must be listed on the Inventory. In addition, those substances may be subject to the IUR.

As with all manufactured chemicals, IUR information on byproduct chemicals is of interest to the EPA because such exposure-related information is not otherwise available, and it is necessary for the Agency to manage risks associated with these chemicals, to fulfill its mandate of protecting human health and the environment. EPA does not believe byproducts inherently pose lower exposures or risks than other manufactured chemicals.

A.10. If my waste material is exempted from reporting by the RCRA program, do I need to be concerned with reporting under IUR? Likewise, if I report under IUR, do I need to be concerned with reporting for RCRA purposes?

The determination of the need to report for IUR and for RCRA are independent determinations. The IUR is focused on chemicals in commerce and RCRA is focused on waste and waste minimization. There are many examples of a waste stream from one process serving as an input or feedstock to another process. RCRA exemptions (or exclusions) do not apply to TSCA reporting obligations, and, given the different purposes of RCRA reporting and the TSCA IUR rule, are not necessarily relevant to IUR reporting. It is important to note that finding a commercial use for a substance that would otherwise be considered a waste under RCRA can relieve the manufacturer of that substance from some RCRA requirements, but may consequently subject that manufacturer to TSCA reporting requirements. EPA is aware that, in certain circumstances, reporting under both RCRA and TSCA may be required. It is the Agency's intention to identify and address such circumstances, retaining reporting under the rule that best fits Agency needs.

A byproduct that is manufactured for a commercial purpose and, after manufacture, is used for a separate commercial purpose may be excluded from reporting under IUR by 40 CFR 720.30(g)(2). 40 CFR 720.30(g)(2) states that if the byproduct's only commercial purpose is for

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use by public or private organizations that dispose of it as a waste, including in a landfill or for enriching soil, the byproduct is exempted from being reported under IUR. Following are two examples of manufacturers that may be subject to RCRA requirements, and how the 40 CFR 720.30(g)(2) byproduct exemption applies:

Example 1: Company ABC manufactures a byproduct. The byproduct does not qualify as a RCRA hazardous waste and does not meet the requirements of any exemption in 40 CFR 261.4. The manufacturer wishes to dispose of the byproduct, which can be used to enrich soil (e.g., to change the soil properties in a desirable way, such as by serving as a filler to make the soil less dense or enhancing moisture retention). Company ABC provides this byproduct to another person who then disposes of it as a waste by spreading it on land to enrich the soil. If this disposal of the byproduct is the byproduct's sole commercial use, the byproduct qualifies for the exemption under 40 CFR 720.30(g)(2). = Company ABC is not subject to reporting under the IUR, respecting the manufacture of its byproduct.

Example 2: Company ABC manufactures Byproduct X, which is not considered a RCRA solid waste because it serves as a feedstock to produce a zinc fertilizer and meets the requirements of 40 CFR 261.4(a)(20) (i.e., it is a hazardous secondary material used to make zinc fertilizers). The zinc fertilizer produced meets the requirements of 40 CFR 261.4(a)(21). Byproduct X is not being disposed of as a waste and therefore does not meet the IUR byproduct exemption at 40 CFR 720.30(g)(2). Company ABC is subject to reporting under the IUR, respecting the manufacture of its byproduct.

A.11. If I am burning my byproduct for energy recovery, should I be concerned with reporting under IUR?

The distinction between whether a byproduct is burned for energy recovery or incinerated is generally not relevant under the IUR. This is because the IUR exempts both byproducts whose “only commercial purpose” is for burning as a fuel (40 CFR 720.30(g)(1)), and byproducts that are “not used for commercial purposes” (40 CFR 720.30(h)(2)). This latter category would include incineration, solely for destruction. Note, though, that where a byproduct is burned for energy recovery, but that is not the only commercial purpose for the byproduct (e.g., if the combustion residue is used as a process input), then the exemption under 40 CFR 720.30(g)(1) would not apply.

B. General Byproduct Reporting Examples

The following examples consider the reporting responsibilities associated with recycling, reusing, reprocessing, or remanufacturing chemical substances. Please note that these examples are not comprehensive and that each situation needs to be individually considered. If after reviewing these examples you remain unclear about your own situation, please contact the EPA.

B.1. How do I determine if I am manufacturing or purifying a chemical substance?

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There are numerous examples of chemical substances separated/extracted from various sources, such as air, mined substances, petroleum refinery streams, and byproduct/waste streams that are considered manufactured and therefore, reportable for the TSCA Inventory. The separation techniques are quite varied such as solvent extraction, distillation, and crystallization. EPA's rules implementing TSCA Sections 5 and 8(a) clarify that the statutory definition of "manufacture" includes persons who extract a chemical from another chemical substance or mixture of substances. See 40 CFR 711.3 (defining "manufacture"), 704.3 (defining "manufacture for a commercial purpose"), and 720.3(t) (defining "manufacturer"). A person who extracts a component chemical substance from a previously existing chemical substance or a complex combination of substances is a manufacturer of that component chemical substance.

To determine whether you are manufacturing or purifying a chemical substance, you need to first make sure that you have properly identified the chemical substance(s) used as the precursor chemical(s). See the answer for question A.2 for further substance identification information. Purification does not change the chemical identity, while extraction involves removing one substance from another substance (typically a UVCB chemical). In the latter case, the original chemical has a different identity than the extracted chemical. The extraction of component chemical substances from certain complex byproduct mixtures or process streams, such as UVCB substances, is not considered purification, because the complex byproduct mixture and the extracted substance do not have the same chemical identity for TSCA purposes, and they may have significantly different compositions.

B.2. Can you provide an example of when a substance is purified?

When 80% pure chemical A (correctly identified, for TSCA purposes, as that discrete substance and not as a UVCB substance) is purified to make 98% pure chemical A, the activity does not constitute manufacturing of chemical A, but it is considered to be processing of chemical A for purposes of IUR and PMN reporting. The two batches of chemical A differ only in their purity. For purposes of TSCA, they are considered to be the same chemical substance. See question A.2 for further discussion regarding naming byproducts.

Note that it is the original manufacturing of the 80% pure chemical A that triggers reporting under IUR. Note also that the need to report any substance produced during the purification process may need to be addressed (e.g., the substance(s) removed from Chemical A may trigger reporting itself, depending upon the specific situation and the use of the removed substance(s)).

B.3. Can you provide examples of when a substance is extracted and not purified?

Example 1. For example, a manufacturing process involving the use of solvent A results in the manufacture of a spent solvent. As a variable, complex mixture of solvent A, finished product, unreacted reactants, individual byproduct substances, and other impurities, the spent solvent is considered to be a UVCB substance. It is not unusual for the manufacturer to extract solvent A from this UVCB substance. In such a case, the extracted solvent A is considered to be manufactured, and therefore is reportable for purposes of IUR. When the spent solvent is a byproduct whose only commercial purpose is the extraction of a component chemical substance,

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solvent A, the byproduct exemption at 40 CFR 720(g)(3) can be applied and the spent solvent byproduct does not need to be reported. The extracted solvent A is nevertheless reportable for purposes of IUR.

Example 2. For recycling or reclaiming, it is important to determine whether the resulting chemical substance is the same or different than the starting material. If the starting and resulting substances are the same (e.g., a newly manufactured substance that one intends to make, such as salicylic acid, which is initially impure but then is purified), then the activity is considered to be processing and no manufacturing has occurred. If the resulting substance is different, for example, reduction of copper oxide to elemental copper, then the activity is considered to be manufacturing.

B.5. Can you provide some examples of using a byproduct as a feedstock to manufacture another chemical?

Example 1: Your byproduct is listed on the TSCA Inventory as a UVCB substance and includes among its components a certain substance (chemical R). Without removing chemical R from the byproduct, you react chemical R with another substance to produce chemical M for a commercial purpose. In this scenario, chemical M is not a component chemical substance present in the byproduct and has been newly created. The byproduct has been used to manufacture chemical M, which is listed on the TSCA Inventory. Both the byproduct and chemical M are subject to IUR requirements. Chemical R was never separated from the byproduct and is not part of the TSCA chemical identity of the byproduct, therefore is not subject to either Inventory listing or update reporting requirements.

Example 2: A process involves using an etchant to strip copper off of a substrate, resulting in a byproduct containing a complex combination of substances known as “spent cupric chloride etchant” (or “spent etchant”). If the spent etchant is recycled, and the recycler produces elemental copper from the spent etchant by electrolytic reduction, then the recycler used the spent etchant as a feedstock and used a chemical reaction to recover a chemical substance. The recycler did not extract a component chemical substance. The byproduct manufacturer should report the spent etchant and the recycler should report the elemental copper (assuming other requirements, such as production volume, are met).

Example 3: Tall oil is a byproduct from the pulping of pine trees representing a complex combination which is composed of numerous chemical substances—the most common of which are rosin and fatty acids, with lesser amounts of terpenes and sterols. Each species of pine tree yields a different precise composition of tall oil, and the composition of the tall oil could be influenced by the climate and local terrain. This byproduct, tall oil, is used as the feedstock for fractional distillation, to form a variety of useful fractions (rosin, TOFA, distilled tall oil, heads and pitch). The distillation/extraction of the various fractions from tall oil constitutes the manufacture of those fractions.

B.6. When do you not need to report a byproduct that is recycled?

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A manufacturer may send byproduct materials to an unrelated plant for recycling rather than disposing of the byproduct material as a waste. Typically, recycling the byproduct will result in IUR responsibilities respecting the original manufacture of the byproduct (assuming other criteria, such as production volume, are met). However, there are certain commercial uses to which a byproduct may be put, specified in 40 CFR 720.30(g), which relieve the byproduct manufacturer from the need to report the byproduct. For instance, if the recycler extracts a component chemical substance from the byproduct for a commercial purpose, then the byproduct manufacturer need not report the byproduct.

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C. Specific Byproduct Reporting Examples

C.1. My site consists of a petroleum refinery and a chemical plant. The refinery chemically removes sulfur from crude oil. The sulfur is then used as an intermediate by our chemical plant to produce other chemical substances. Do I need to report the sulfur under the IUR rule? What if the chemical plant does not use the sulfur, but it is instead removed from the crude oil and disposed of as a waste in a landfill?

The manufacture of the sulfur byproduct is reportable under the IUR rule if you then use that sulfur byproduct for a non-exempt commercial purpose, including as an intermediate to produce other chemical substances for a commercial purpose. If you dispose of the sulfur as waste, however, you do not need to report manufacture of the sulfur under the IUR. If your site disposes of a portion of the sulfur and uses the remainder to manufacture other chemicals, you should provide IUR reporting of only the amount of sulfur used to manufacture other chemicals. (See 40 CFR 711.10(c) and 40 CFR 720.30(h)(2))

C.2. At a site, an ore (e.g., bauxite) is refined to create a product (e.g., alumina). The ore contains another metal compound or salt, which is reduced to the elemental metal, removed from the product during processing, and disposed of as waste. Should the elemental form of this metal be reported under the IUR rule?

No. Reporting is not required if the metal byproduct from the refining is disposed of as a waste. See 40 CFR 711.10(c) which references 40 CFR 720.30(g).

C.3. If the elemental metal byproduct mentioned in the previous question is sold, is it subject to IUR reporting requirements?

Yes, because neither the exemption provision at 40 CFR 720.30(g) nor the exemption provision at 40 CFR 720.30(h)(2) would apply to the manufacture of this byproduct metal. Because the byproduct metal is being used for a commercial purpose (other than the commercial purposes listed in 40 CFR 720.30(g)), you would evaluate the IUR reporting requirements for this substance (e.g., was the amount of the byproduct metal produced at a single site during the reporting year 25,000 lb. or more?)

C.4. My metal smelting process generates a large amount of dust, which is collected in a baghouse. Since this dust has a high metal content, we recycle the baghouse dust rather than disposing of it. Do I have any reporting obligations for this material?

The baghouse dust is a byproduct of your manufacturing process. If you use it for a non-exempt commercial purpose, you would evaluate the IUR reporting requirements for the baghouse dust (e.g., was the amount of the baghouse dust produced at a single site during the reporting year 25,000 lb. or more?) or the PMN reporting requirements, if the substance is not listed on the TSCA Inventory.

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An example of a non-exempt commercial purpose is to smelt the baghouse dust to produce a metal. The smelting process uses chemical reduction, a form of extractive metallurgy. A common mistake is to think that at high temperature the metal just melts out of the ore or baghouse dust. However, if you just heat up the ore without the proper reducing agent, you will just obtain molten ore. A metal obtained from baghouse dust by chemical reduction or smelting is manufactured using a chemical reaction, and cannot be considered to be a component chemical substance (which would have potentially qualified the byproduct for the 40 CFR 720.30(g) exclusion from reporting). Both the baghouse dust and the metal produced by the smelting process are subject to reporting under the IUR.

C.5. In the secondary aluminum process, scrap is remelted to recover aluminum alloy recycled ingot (RSI). Is the recovered aluminum reportable?

Recovered aluminum alloys from scrap are mixtures. The aluminum is separated without chemical alteration and therefore is not reportable under the IUR. Keep in mind, however, that if you import aluminum scrap to re-melt, that the import of the alloy components is reportable under IUR.

C.6. Chemical substance X is formed unintentionally, without any separate commercial purpose, during the manufacture of another chemical substance, Y. Furthermore, it is not isolated from substance Y. Would it be accurate to describe substance X as an impurity with no reporting obligation?

Yes. Chemical substance X is both a byproduct and an impurity. The unintentional byproduct that remains with the intended product (i.e., is not isolated from that intended product) is an impurity. The manufacture of that impurity is not reportable for PMN or IUR purposes. See 40 CFR 711.10(c) and 40 CFR 720.30(h)(1).

However, if the chemical substance that remained with the primary product *did* have a separate commercial purpose – for instance, if it improved the performance of the primary product – it would be neither a byproduct nor an impurity and its manufacture would be reportable for PMN or IUR purposes.

C.7. Our organization uses metal catalysts. When the catalysts are spent, they are sold to metal reclaimers who extract the metals out of the spent catalyst. The only value that we receive for the spent catalyst is the value of the metals reclaimed. Would we have reporting obligations under the IUR for this situation? If so, what substances would actually be reported?

Your spent catalyst is a byproduct, and as such is subject to reporting unless it has no commercial purpose or 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, or (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))

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Therefore, your spent metal catalyst byproduct is reportable unless the extracted substances are component substances of the byproduct. If the extracted substance is an elemental metal, but the component substance of the byproduct is a metal compound, salt, or complex, then the component substance of the byproduct is different from the extracted substance (e.g., some chemical reaction took place to convert the metal compound into elemental metal). In this case, the exemption at 40 CFR 720.30(g)(3) is inapplicable and the byproduct is potentially reportable under the IUR.

If the byproduct is potentially reportable under the IUR, note that any applicable IUR reporting thresholds for the byproduct manufacturer would be based on the *weight of the byproduct*, not the weight of the reclaimable metal content. By contrast, any applicable IUR reporting thresholds for the metal reclaimer would be based on the weight of the reclaimed metal, not the weight of the byproduct.

C.8. We have facilities that recycle spent solvents. The spent solvents are received as a hazardous waste and are often complex mixtures of different types of solvents. These materials are re-distilled to remove water and other contaminants and to separate the various solvents, and are re-sold as solvents. Is the recycling of the solvents a "manufacturing" activity?

In this case, the spent solvents are considered to be byproducts of use. However, according to 40 CFR 720.30(g), the manufacture of a byproduct is exempt from reporting when the byproduct is solely used to extract a component chemical substance from the byproduct. The extracted component chemical substances, the various purified solvents in this case, are reportable chemical substances.

C.9. A U.S. plant is importing aluminum castings for purposes of machining them to produce articles for its own use or for sale to customers. Recyclable aluminum chips are a byproduct of the machining process. The plant then sells the recyclable aluminum chips. Would the imported aluminum castings need to be reported for IUR purposes?

The determination of the need to report the imported aluminum castings for IUR purposes hinges on whether the castings are considered by EPA to meet the TSCA definition of an "article" (provided below). If the aluminum castings are articles, then the import of those castings is exempt from the IUR reporting requirements. See 40 CFR 711.10(b). Under the IUR, the article exemption often applies to items that are in near final shape and need only slight trimming or shaping. Contact EPA if you have questions about your specific situation. Note that the machined portion (i.e., the aluminum chips), if intended to be removed from the article, may have been reportable at the time of import.

If it is determined that the aluminum castings are not articles, then the aluminum is subject to reporting upon import into the United States. For example, if the aluminum chips are the intended product, then the aluminum casting was not in its near final shape and was not an article upon import. The 40 CFR 704.3 definition for *article* is:

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An *article* is a manufactured item:

- (1) Which is formed to a specific shape or design during manufacture,
- (2) Which has end use function(s) dependent in whole or in part upon its shape or design during end use, and
- (3) Which has either no change of chemical composition during its end use or only those changes of composition which have no commercial purpose separate from that of the article, and that result from a chemical reaction that occurs upon end use of other chemical substances, mixtures or articles; except that fluids and particles are not considered articles regardless of shape or design.

C.10. The burning of coal by an electric utility to generate power results in the production of coal ash. The coal ash can be disposed in a landfill, or provided for a beneficial purpose such as for mine fill, to amend soil, to build roadbeds, or for other purposes. Is the coal ash reportable?

The coal ash is considered a byproduct of your production of power. Your need to report the coal ash under the IUR is dependent upon what is done with the coal ash. In your examples above, disposing of the coal ash in a landfill is considered disposing as a waste, and therefore reporting is not required. The applications of mine fill and building roadbeds are considered commercial uses, and, in those circumstances, the coal ash is IUR-reportable. The amending soil application needs to be examined more closely. In general, EPA agrees that mixing coal ash with mulch is considered soil enrichment. Coal ash is often added to soils as an amendment to improve chemical and physical properties, thereby promoting better plant growth. Under the IUR rule, a person who manufactures byproducts that are then disposed of as a waste, including in a landfill or for enriching soil, is not subject to reporting for the manufacturing of those byproducts (see 40 CFR 711.10(c), which refers to 40 CFR 720.30(g)). Therefore, the coal ash used for soil enrichment in this example is likely to qualify for the byproduct exemption. On the other hand, note that giving or selling the coal ash to a company that is using it in a product that is packaged and sold is not treating the byproduct coal ash as a waste; it is a commercial use of the coal ash not covered by 40 CFR 720.30(g). In such instance, the coal ash byproduct would be subject to IUR reporting.

C.11. During a reporting year, a utility extracts melonite from coal ash byproduct and then uses the resulting, purified ash for a commercial purpose. Assuming that 25,000 pounds or more of coal ash is involved, does the utility have to report the coal ash (less the melonite) on Form U? Or is the ash exempt from IUR reporting under the byproduct exemption at 40 C.F.R. 720.30(g) on the basis that ash is a byproduct and a component chemical (melonite) is extracted from the ash for commercial value, even though the remaining ash is eventually used for a beneficial purpose?

The byproduct exemption, 40 CFR 720.30(g), specifies that a byproduct is exempt from reporting if its only commercial purpose is to extract component chemical substances from it for

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commercial purposes, or one of the other commercial purposes listed in 40 CFR 720.30(g). This question identifies that, not only is a component chemical substance (melonite) removed from the byproduct (coal ash), but the remaining coal ash has an additional commercial purpose. Therefore, up to three substances may be reported – the coal ash, the melonite, and the coal ash remaining without the melonite content (assuming it has a different chemical identity under TSCA than the original byproduct). If the remaining coal ash is used in another manner that is also exempted by 40 CFR 720.30(g), such as for enriching soil, then it may be exempted from reporting.

C.12. The paper pulping process involves a recycling loop for the pulping chemicals. The spent pulping liquors (also called black liquor) is a byproduct of the pulping process. The black liquor is burned to produce power, and the resulting smelt is recovered to begin the process to make white liquor. Since the black liquor is used as a fuel, do I need to report it under the IUR? How about the smelt?

The potential exemption in question is found in 40 CFR 720.30(g), which provides the requirements for certain byproducts that have limited commercial purposes to be excluded from PMN reporting and IUR reporting requirements. The section states that a byproduct is excluded 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, or (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.)”

Note that, while the black liquor is a byproduct burned as a fuel, it is also used to manufacture smelt (and, ultimately, white liquor). If the smelt were disposed of as a waste in a landfill, then reporting the black liquor would not be required.

However, as a byproduct, the black liquor is reportable when used for a non-exempt commercial purpose. While the black liquor is burned to generate power, the remainder of the byproduct undergoes a chemical change to become manufactured smelt. The smelt is then used to manufacture white liquor via a few additional manufacturing steps. Because the white liquor is used for a commercial purpose – as a pulping chemical – the black liquor byproduct does not meet the 40 CFR 720.30(g) exemption.

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