

CDR and Byproduct Reporting

- Significant burden associated with “simple” determination of whether and how to report a byproduct under Chemical Data Reporting (CDR)
- Entities must determine whether a substance is:
 - » Exempted; or
 - » A mixture or Unknown or Variable composition, Complex reaction products and Biological materials (UVCB) substance

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Byproducts -- Commercial Purpose

A byproduct may be reportable when it is manufactured for a commercial purpose

Manufacture for commercial purposes -- 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 C.F.R. § 704.3)

A byproduct not used for a separate commercial purpose is exempted by 40 C.F.R. § 720.30(h)(2), referenced by § 711.10(c)

Although they are manufactured for commercial purposes under the Act, they are not manufactured for distribution in commerce as chemical substances per se and have no commercial purpose separate from the substance, mixture, or article of which they are a part.

A byproduct that is used for a separate commercial purpose may be exempt if it meets the exemption criteria (burned as a fuel; disposed of as a waste, including in a landfill or for enriching soil; or extracted component chemical substances from it for commercial purposes)

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Determining Whether Byproducts Are Reportable

Is the byproduct used for a separate commercial purpose?

- If no -- no reporting
- If yes -- reporting required unless exempt
 - » Exemptions
 1. Byproduct is burned as a fuel;
 2. Byproduct is disposed of as a waste, including in a landfill or for enriching soil; or
 3. Byproduct is used to extract component chemical substances from it for commercial purposes
 - Component to be extracted must already exist as a distinct chemical substance in the byproduct
 - Byproduct is exempt if a chemical reaction occurs within the byproduct that facilitates the extraction of the component, but the component itself is not chemically changed
 - Byproduct is not exempt if a component is reacted without prior extraction, producing a different chemical substance of value (*i.e.*, converting cupric chloride to copper)

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Byproduct Reportable -- Characterization Considerations

- Discreet, single chemical
- Mixture: A mixture, composed of two or more well-defined chemical substances to be named and listed separately
 - » Multiple Chemical Abstracts Service (CAS) numbers
- UVCB: A reaction product to be listed as a single chemical substance, using one name that collectively describes the products or the reactants used to make the products
 - » Single CAS number for UVCB
 - » Description/definition of UVCB can include information on source or processing; any changes in source or processing impact chemical identification
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Characterization of Byproduct Reportable under CDR

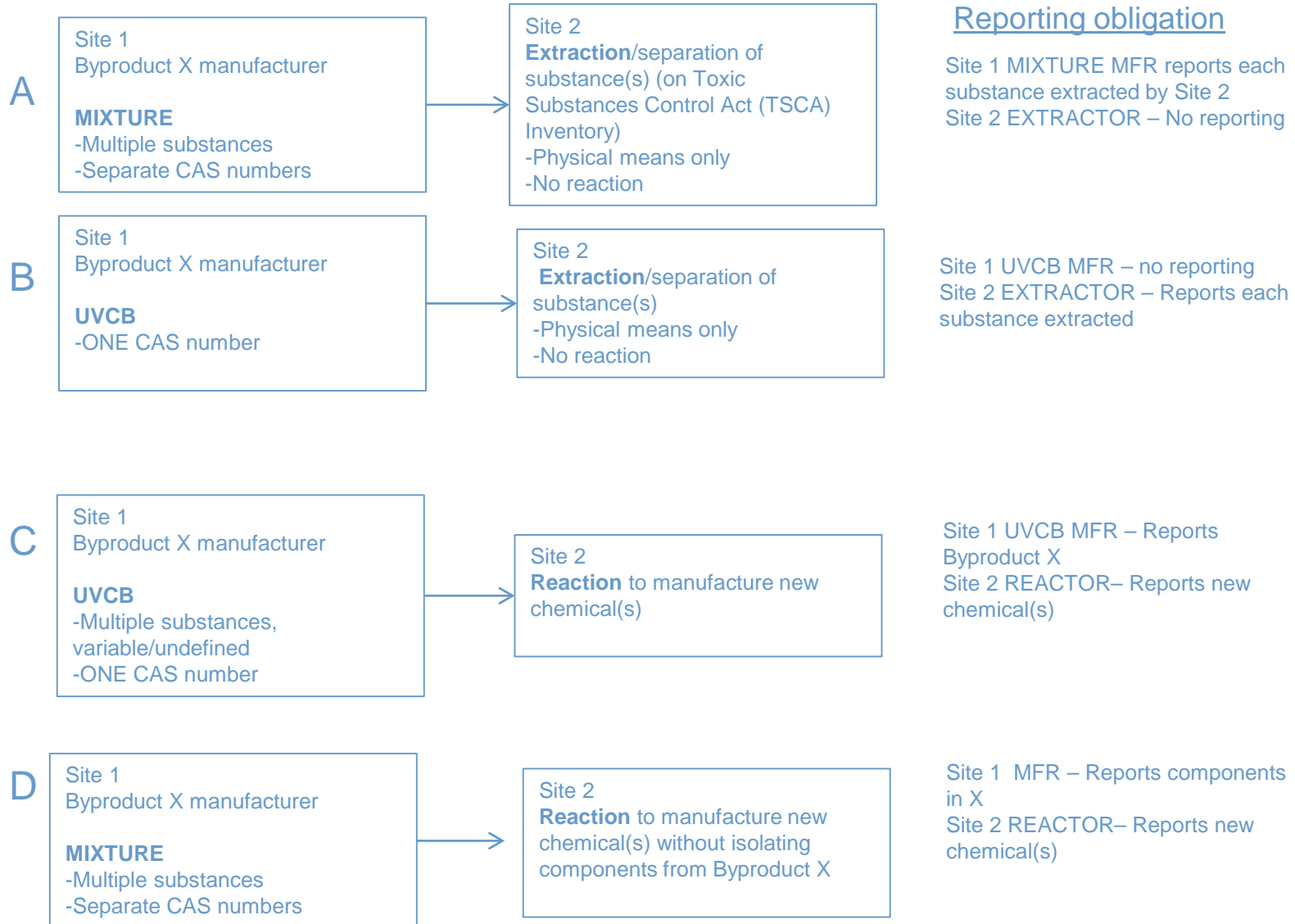
Mixture

“...any combination of two or more chemical substances if the combination does not occur in nature and is not, in whole or in part, the result of a chemical reaction; except that such term does include any combination which occurs, in whole or in part, as a result of a chemical reaction if none of the chemical substances comprising the combination is a new chemical substance and if the combination could have been manufactured for commercial purposes without a chemical reaction at the time the chemical substances comprising the combination were combined.”

UVCB

Complex byproducts can be identified as single UVCB chemical substances that represent the process stream. Volumes of the individual chemical substances that comprise a UVCB substance do not need to be determined

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Chemicals Extracted from Byproduct -- Scenario 1

As part of a reaction process involving chemicals X, Y, and Z, with the purpose of producing Chemical RRR, Site 1 manufactures a byproduct that is a mixture of chemical components A, B, C, D, and E. Site 1 sells the byproduct mixture to Site 2, which extracts -- without a chemical reaction -- Chemicals B and E for commercial use. The rest of the mixture is disposed. Assuming reporting thresholds are met, who reports what?

- Byproduct from Site 1 has separate commercial purpose beyond manufacture of Chemical RRR
- Site 1 reports Chemicals B and E; these are distinct chemicals produced by Site 1 with commercial value
- Site 2 does not report; it did not manufacture the chemicals but only extracted them from the existing mixture

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Chemicals Extracted from Byproduct -- Scenario 2

Site 1 manufactures a byproduct that is a UVCB that is on the Inventory as one CAS number. Site 1 gives the UVCB byproduct mixture to Site 2, which extracts -- without a chemical reaction -- Chemicals Q and R from it, and sells those chemicals downstream. The rest of the mixture is disposed. Assuming reporting thresholds are met, who reports what?

- Site 1 does not report because byproduct meets exemption criteria for extracted chemical components
- Site 2 reports Chemicals Q and R
 - » *What if Site 2 returns Chemicals X, Y, and Z to Site 1?*

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Chemicals Extracted from Byproduct -- Scenario 2A

Site 1 manufactures a byproduct that is a UVCB that is on the Inventory as one CAS number. Site 1 sells the UVCB byproduct mixture to Site 2, which reacts Q1 and R1 in the byproduct mixture to make Chemicals Q and R. Assuming reporting thresholds are met, who reports what?

Same as Scenario 2 -- except Site 2 will react Q1 and R1 in the byproduct mixture

- Site 1 reports the UVCB byproduct (total volume of byproduct, even though only Q1 and R1 are used for commercial purposes)
- Site 2 reports Chemicals Q and R

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Chemicals Extracted from UVCB Byproduct

- Byproduct is UVCB, but treated as a mixture
 - » Instead of treating the byproduct as a single UVCB chemical substance, it can be treated as a mixture of well-defined chemical substances or even just a single well-defined chemical substance, even though there are uncharacterized components to the mixture
 - » Where a manufacturer reasonably concludes 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

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Chemicals Extracted from Byproduct -- Scenario 2B

Site 1 manufactures a byproduct that is a UVCB. Site 1 sells the UVCB byproduct mixture to Site 2, with the belief that Site 2 will react Q1 and R1 to make Chemicals Q and R. Site 2 controls ownership of the byproduct mixture after purchasing it from Site 1. Assuming reporting thresholds are met, who reports what?

- **Site 1 could report**
 - » UVCB (total byproduct volume) OR
 - » Chemicals Q1 and R1 and associated volumes
 - Reporting components of UVCB on CDR is only suitable in circumstances in which byproduct manufacturer knows for certain what components will be recycled
- **Site 2 reports Chemicals Q and R**

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Chemicals Extracted from UVCB Byproduct

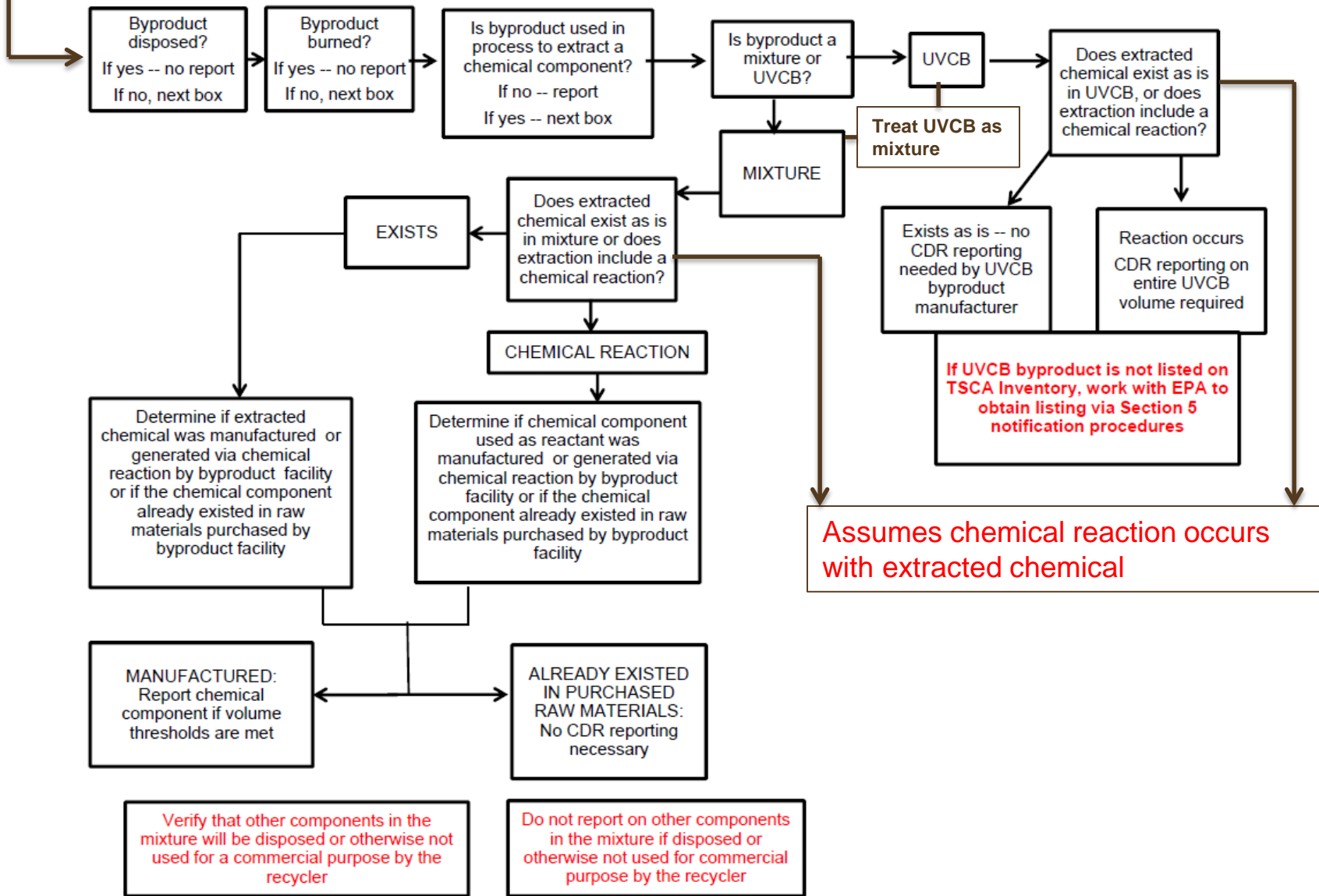
- If the recycler finds other components to reuse and does not inform the byproduct manufacturer, the byproduct manufacturer would be out of compliance
- Site 2 develops a process to extract Chemical Z, but Site 1 only reports reactants for Chemicals Q and R; Site 1 would be out of compliance if reporting threshold met
 - » If the byproduct mixture is sold to the recycler, what authority does the byproduct manufacturer have on what the recycler does with it?

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Is the byproduct used for separate commercial purpose?

If no, no report.

If yes, next box



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Factors Altering Reportability of Byproducts

- Market conditions
- Evolution of technology/recycling processes
- Ownership of byproduct after transfer to recycling facility
- Others?

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What Is the Business Impact?

- Single CDR report takes 90 to 140 hours to complete at a cost of \approx \$10,000
 - » Byproduct issue complex -- further adding to potential costs
 - Technical assistance
 - Legal review
 - Compliance audit

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Issues Associated with Byproduct Volume Reporting

- If byproduct is reported as UVCB, volumes could be estimated/calculated based on volumes of intended chemical manufacture
 - » Concern: Is byproduct UVCB name listed on TSCA Inventory? If not, manufacturer (and recycler) is out of compliance
 - » Concern: Reported volumes for entire byproduct manufacture do not reflect what is actually being processed downstream
- If byproduct is reported as individual chemical component, volumes more difficult to estimate if byproduct is not fully characterized or impact of process variabilities on percentage of chemical component

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Questions/Discussion

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