

Effective Substitutes for Products

DEP Policies and Case Examples



Presented by...



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What Do We Mean by an “Effective Substitute?”



- 40 CFR 261.2(e)(1) – “use/reuse” exemptions from hazardous waste requirements.
- Shorthand term for three different categories:
 - Materials used as ingredients in an industrial process to make a product without being reclaimed – section (e)(1)(i).
 - Materials used as effective substitutes for commercial products – section (e)(1)(ii).
 - Materials returned to the process from which they were generated , without being reclaimed – section (e)(1)(iii).

Things that Are NOT “Use/Reuse”

- 40 CFR 261.2(e)(1) & (2) -



- Materials that are “reclaimed.”
 - Processed to recover a usable product or regenerated.
 - Recovery of lead values from batteries.
 - Regeneration of spent solvents.
- Materials used in a manner constituting disposal, used to produce products that are applied to the land.
 - Subject to regulation under 40 CFR 266.20 - .23.
 - Examples:
 - Use in making fertilizers or other soil additives.
 - Use in making asphalt, concrete that is used in contact with the land (e.g. pavement, building foundations, etc.)

Things that are NOT “Use/Reuse” (Cont.)

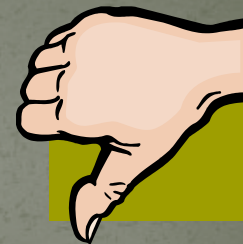
- 40 CFR 261.2(e)(1) & (2) -



- Materials that are burned for energy recovery, used to produce a fuel, or contained in fuels. Subject to regulation under:
 - 40 CFR 266.100 - .112 (Boilers and Industrial Furnaces).
 - 40 CFR 261.38 (Comparable Fuels/Syngas Fuels – not yet adopted in Connecticut regulations).
 - One exception: 40 CFR 261.2(c)(2)(ii) (Commercial Chemical Product Fuel Exemption).

Things that are NOT “Use/Reuse” (Cont.)

- 40 CFR 261.2(e)(1) & (2) -



- Materials that are “accumulated speculatively.”
 - In CT, includes any material stored for over one year.
 - Also includes materials that are accumulated for any length of time that do not have a feasible means of being recycled (i.e., without a legitimate market or disposition).
 - No known method or technology to recycle the material.
 - A recycling method or technology exists, but is not yet commercially available.
 - Purpose is to prevent accumulation of materials that do not have a reasonable likelihood of being reused or recycled.

Things that are NOT “Use/Reuse” (Cont.)

- 40 CFR 261.2(e)(1) & (2) -



- “Inherently waste-like materials” (40 CFR 261.2(d)):
 - Ordinarily disposed of, burned or incinerated.
 - Contain toxic constituents not ordinarily found in products.
 - Pose a substantial hazard to human health & environment.
 - Most common example: dioxin-containing wastes.

Other Similar Exemptions in RCRA

- Characteristic sludges and by-products being reclaimed.
- Commercial chemical products being reclaimed.
- Materials that are reclaimed from hazardous waste and used beneficially – 40 CFR 263.3(c)(2)(i).
 - Example: reclaimed metals that only have to be refined in order to be usable (if further reclamation is required, it is still subject to applicable HW requirements).
- “Co-Products.”
- “Continued Use.”
- Zinc Fertilizer Rule (not yet adopted in CT).



Use/Reuse Evaluation Criteria



- ☑ Does the material truly function as an ingredient or as a substitute for a commercial product, or is it “just along for the ride?”
- ☑ Does the use of the material result in distinct components as separate end products?
 - This is reclamation, not use/reuse.
- ☑ How contaminated is the material relative to the virgin material it replaces?

Use/Reuse Evaluation Criteria (Cont.)



- ☑ How variable is the material over time (QA/QC issue).
- ☑ Is the material used only in the amounts necessary for the production process?
- ☑ Is the material as an approximate 1-for-1 replacement for the virgin material it replaces? (e.g. 1000 lbs for 1000 lbs.)

Note: Recent Definition of Solid Waste Rule includes “legitimacy criteria” that would codify evaluation criteria (not yet adopted in CT).

Indicators of Sham Recycling



- ❌ The material is ineffective or only marginally effective for the claimed use.
- ❌ The material is used in excess of the amount necessary for operating the process.
- ❌ The user of the material does not require product specifications and/or the specification are not in accordance with those generally used in industry.
- ❌ The material is not as effective as the material it is replacing.

Indicators of Sham Recycling (Cont.)



- ❌ An absence of records regarding the exchange of the material.
- ❌ The material is not handled in a manner consistent with its use as a raw material or commercial product substitute .
 - Not stored or handled to guard against significant economic loss.
 - Stored on the ground or in a haphazard manner.

Documentation of Claims

- 40 CFR 261.2(f)

- ✍ Anyone claiming use/reuse or otherwise not a “solid waste” under RCRA must be able to document that their claim is legitimate.
- ✍ HW inspectors will ask for this information to verify the claim.
- ✍ Required documentation (4 elements):
 - ① That there is a known market or disposition for the material .
 - Names and addresses of facilities material is sent to.
 - Shipping papers, contracts, or correspondence with the facility.



Documentation of Claims (Cont.)

- 40 CFR 261.2(f)

- ② That the person making the claim meets the terms of the exclusion or exemption.
 - Definitions of Use/Reuse.
 - “Things that Are NOT Use/Reuse.”
 - Evaluation criteria.
 - Indicators of sham recycling.



Documentation of Claims (Cont.)

- 40 CFR 261.2(f)

- ③ Appropriate documentation to demonstrate that the material is not a waste, or is exempt from regulation.
 - Contracts showing that someone uses the material as an ingredient in a process or as an effective substitute.
- ④ Owners and operators of facilities claiming that they use/reuse a material must be able to demonstrate that they have the necessary equipment to do so.
 - Letter from company describing their process and operations.



Case Study #1: Spent Copper Etchant Used as Ingredient to Make CuSO_4 .

- Copper etchant from printed circuit board manufacturing.
- High-purity copper; low levels of contaminants.
- Facility used the etchant in lieu of copper wire and virgin sulfuric acid to make CuSO_4 .
- Resulted in a product with better purity than that made with copper wire and virgin sulfuric acid.
- **Result: legitimate use/reuse.**
- Epilogue: land application was later discovered, voiding the exemption.



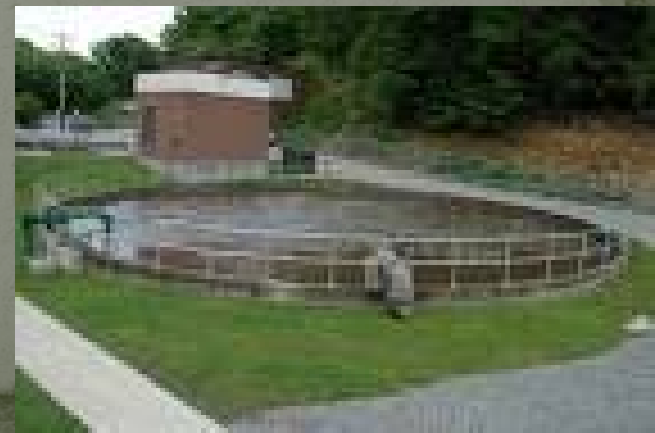
Case Study #2: Spent Copper Etchant Used to Make CuCl_2 and NH_4Cl .

- Copper etchant from printed circuit board manufacturing.
- High-purity copper; low levels of contaminants.
- Facility processed it to recover copper as CuCl_2 and ammonia as NH_4Cl .
- Some of CuCl_2 was used as an anti-fungal agent (often applied to ground).
- CT Supreme Court Case.
- Result: NOT legitimate use/reuse.



Case Study #3: Spent Caustic Used as a Substitute for Virgin Caustic.

- Spent caustic soda from acetylene production.
- Used in pH neutralization in a WW treatment facility.
- Meets appropriate specifications with respect to contaminant levels.
- Is effective as the virgin material it is substituted for.
- The material is stored and used under controlled conditions.
- User pays for the material.
- Result: legitimate use/reuse.



Case Study #4: Wastewaters Used as an Ingredient in Cement Production.

- Wastewaters used as substitute for city water as slurring agents in the production of cement.
- Contained constituents that were not necessary to the cement production process.
- Constituents were being effectively treated (stabilized/solidified) by being used in cement production.
- Result: NOT legitimate use/reuse.



Case Study #5: Spent Blasting Media Used as an Ingredient in Cultured Marble.

- Spent plastic blasting media containing paint chips.
- Hazardous for lead, chromium.
- Used to make “cultured marble” countertops, vanities, etc.
- Material served as an effective substitute for crushed marble and also added color to the final product.
- Testing showed product using spent blasting media was lower in toxic metals than product made with commercial pigments.
- **Result: legitimate use/reuse.**
- Epilogue: Company changed product and types of media it accepted.



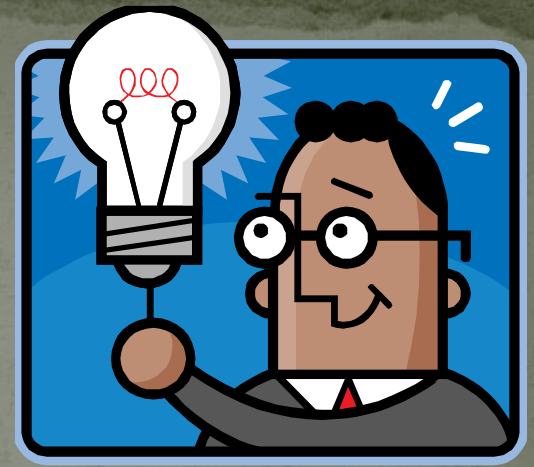
Case Study #6: Spent Stripping Acid Used as a Substitute for Virgin Acid.

- Spent stripping acid was from wire production.
- Contained high levels of Zinc.
- Originally intended to be used as a stripping agent.
- However, user ceased this process.
- Material was simply neutralized with caustic materials.
- Lime cake “product” was not actually sold to anyone.
- Generator charged \$75/drum (comparable to disposal costs).
- **Result: NOT legitimate use/reuse.**



Suggestions/Advice

- ✦ It's important to carefully research any potential use/reuse scenarios.
- ✦ Small details in a use/reuse scenario may make a big difference in whether or not use/reuse is legitimate.
- ✦ Details may change over time, voiding an exemption.
- ✦ Don't rely on the user's say-so. Double check their information.
- ✦ Be sure you have documented your claim.
- ✦ Specific use/reuse applications may be approved in other states but not in Connecticut.
- ✦ If in doubt, call or write DEP.



Questions?

