

# Solid Waste Definition

The purpose of this module is (1) to outline the solid waste concept and its role in hazardous waste management and (2) to explore the regulations as a tool to make solid waste determinations.

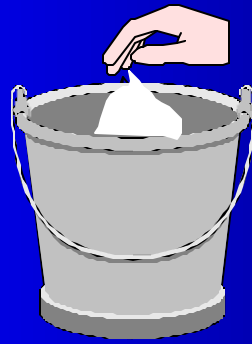
## Course Objectives

- **Define “solid waste”**
- **Identify solid waste exclusions**
- **Determine which recyclable materials are solid wastes**
- **Use 40 CFR 261.2, Table 1, as a tool for making solid waste determinations**

To meet this broad purpose, this module includes the following key learning objectives:

1. recognize the statutory and regulatory definitions of solid waste (pages SW-3 through SW-9),
2. recognize exclusions from the solid waste definition (pages SW-10 through 15),
3. be able to state four recycling options in which the recyclable material is a solid waste (page SW-17), and
4. be able to use Table 1, 40 CFR 261.2, to determine if recyclable materials are solid wastes (page SW-19 through SW-21).

What is a “solid waste”?



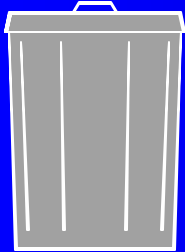
## What Is “Solid Waste?” The Law Says It Is

**“Any garbage, refuse, sludge. . ., and any other *discarded* material, including: *solid, liquid, semisolid or contained gaseous material*, resulting from industrial, commercial, mining, and agricultural operations and from community activities. . .”**

The definition of solid waste is not based on the physical form of the material, but hinges on the fact that the material is no longer usable. Section 1004(27) of RCRA defines a solid waste as:

“Any garbage, refuse, sludge..., and any other discarded material, including: solid, liquid, semisolid or contained gaseous material, resulting from industrial, commercial, mining, and agricultural operations and from community activities...”

## The Regulation Says A Solid Waste Is:



- **Any *discarded material* not excluded by regulation or variance.**
- **A *discarded material* is one that has been:**
  - **abandoned**
  - **recycled**
  - **considered inherently waste-like**

The regulatory definition of solid waste first appeared in the May 19, 1980, FR. This initial definition was modified significantly in the January 4, 1985, FR. Today's definition continues to reflect the definition promulgated January 4, 1985. EPA is currently considering the definition of the term "solid waste" and options for redefining the term to facilitate recycling.

The regulatory definition explains that solid wastes are discarded materials and further explains that "discarded" means **abandoned, recycled, or inherently wastelike** materials [40 CFR 261.2(a)].

## Abandoned Materials Are

- **Disposed of**
- **Burned or incinerated**
- **Accumulated, stored, or treated before or in lieu of disposal, burning, or incineration**

## Recycled Materials

- Uses constituting disposal (i.e., applying to land or adding to other materials that are applied to land)
- Burning for energy recovery
- Reclamation (processing to recover usable product)
- Speculative accumulation before recycling

Materials are solid wastes if they are **recycled** or accumulated, stored, or treated before recycling by (1) applying to the land or using in products that are applied to the land (unless the material is a commercial chemical product and land application is its ordinary manner of use) or (2) burning for energy recovery or using to produce fuels (unless the material is a commercial chemical product that is itself a fuel). Wastes that are processed to obtain usable product, such as spent solvents that are distilled, are also solid wastes. [40 CFR 261.2(c)]

Speculative accumulation refers to accumulating a waste with the **intent** of recycling [40 CFR 261.1(c)(8)].

In order to demonstrate that the wastes are being recycled and not accumulated speculatively, one must show that 75% of the waste on-site at the beginning of the calendar year is recycled by the end of that year. If one accumulates rather than recycles a secondary material, that material is a solid waste and must be further evaluated to determine whether it is hazardous.

Some materials at DOE facilities have been accumulated for future recycle. Such materials may be solid wastes. When they also qualify as hazardous wastes, they must be managed according to RCRA Subtitle C hazardous waste management standards.

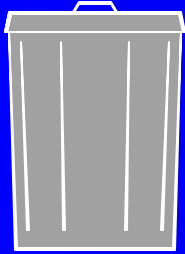
## Inherently Waste-Like Materials

- **Certain wastes from non-specific sources (hazardous waste nos. F020-F023, F026, F028)**
- **Wastes fed to a halogen acid furnace**

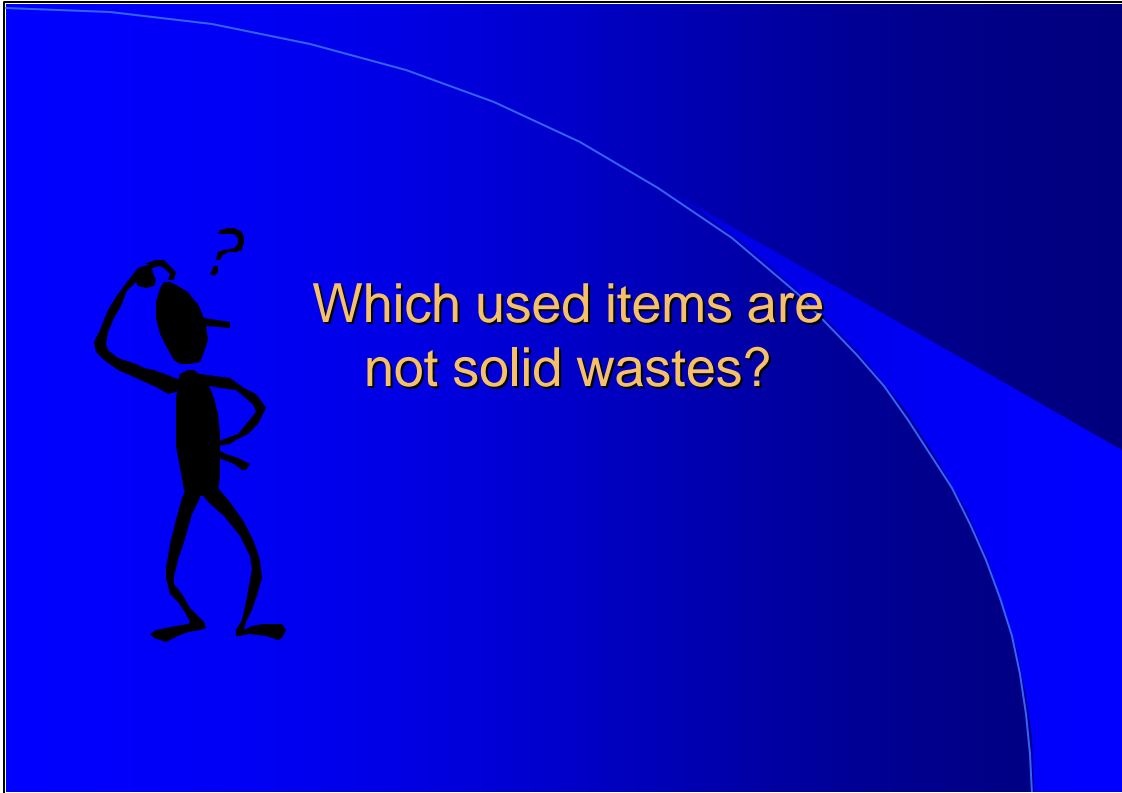
The term **“inherently wastelike”** has special meaning. EPA can designate any waste that meets certain criteria [40 CFR 261.2(d)] as “inherently wastelike.” Such wastes, even when recycled, are considered solid wastes. The following waste streams have been designated as inherently wastelike: F020, F021, F022, F023, F026, and F028 [40 CFR 261.2(d)(1)] and certain secondary materials fed into halogen acid furnaces [40 CFR 261.2(d)(2)].



## But What Does This Really Mean? Solid Wastes Are Materials That:



- **Can no longer serve their original intended purpose**
- **Are thrown away**
- **Are stored and managed to facilitate their disposal**
- **Are discarded from one use but are accumulated for reuse elsewhere (with a few exceptions)**



## What Is *Not* A Solid Waste?

- Domestic sewage (untreated) and mixtures of sewage and other materials that pass through a POTW
- Industrial wastewater discharges that are point sources under NPDES
- Source, special nuclear, and by-product material subject to the AEA, as amended
- Materials recycled in a closed loop

The statutory and regulatory exclusions from the solid waste definition are important because such excluded wastes are not regulated under RCRA's hazardous waste provisions. Some of the key exclusions include:

**POTW exclusion:** Constituents that are discharged to Publicly Owned Treatment Works (POTWs) and mixed with domestic sewage are not solid wastes and, therefore, are not regulated as hazardous even if they would otherwise qualify as hazardous wastes [40 CFR 261.4(a)(1)]. POTWs are off-site treatment works associated with nearby towns and cities to which an installation may discharge.

**National Pollutant Discharge Elimination System (NPDES) exclusion:** This exclusion only applies to the NPDES-permitted discharge point. The exclusion does not apply to activities that occur upstream of the discharge point, such as treatment works [40 CFR 261.4(a)(2)].

**Atomic Energy Act (AEA)-regulated waste exclusion:** RCRA Section 1004(27) excludes source, special nuclear, and by-product material as defined by the Atomic Energy Act (AEA) of 1954, as amended, from the definition of solid waste. Thus, RCRA does not regulate source, special nuclear, and by-product materials. The exclusion only applies to source, special nuclear, and by-product radioactive materials. Nonradioactive hazardous waste components mixed with the radioactive waste are regulated under RCRA. For example, chromate-contaminated wipes that are also low level radioactive wastes are RCRA-regulated even though the radionuclides they contain are excluded [40 CFR 261.4(a)(4)]. This type of mixture is referred to as radioactive mixed waste (RMW).

## What Is *Not* A Solid Waste? Materials Recycled In A Close Loop

The materials that are reclaimed must be returned to the original process in which they were generated and involve:

- only tank storage, which must be connected by pipes to the rest of the process;
- no controlled flame combustion in recovery process;
- no storage longer than 12 months; and
- no use of reclaimed materials as fuel or in land application.

EPA's regulatory exclusions from the hazardous waste definition are outlined in 40 CFR 261.4(a). One that may be important to you is closed-loop recycling [40 CFR 261.4(a)(8)].

An example of closed loop recycle is a solvent distillation unit connected via pipes to a solvent degreaser. The still recovers usable solvent, which is returned to the degreaser through a system completely connected via pipes. However, the distillation still bottoms *may* be hazardous waste, depending on the specific solvent used and conditions of operation.

Another example is recycling antifreeze by withdrawing it from a radiator, passing it through a filter that is a part of the withdrawal and return line for the antifreeze, and returning it to the radiator through the return line.

Closed-loop recycling must meet criteria outlined in the slide to qualify for the exclusion from the solid waste definition.

## What is *Not* A Solid Waste? (cont.)

- Irrigation return flows
- Materials from in-situ mining techniques
- Pulping liquors that are reclaimed
- Spent sulfuric acid used to produce virgin acid
- Reclaimed wood preserving solutions/wastewaters
- Recycled wastes from the coke by-product process
- Nonwastewater splash condenser dross residue
- Recovered oil from petroleum refining, exploration, production, and transportation thereto

EPA has crafted additional exclusions from the definition of solid waste. These exclusions address materials that would otherwise qualify as solid and hazardous waste but that are typically managed in a manner that is protective of human health and the environment (e.g., a material's recycling operation more closely resembles a manufacturing operation than a reclamation process).

The bullets listed above identify specific materials that are excluded from the definition of solid waste. If these materials are handled in any manner other than that specified in the regulations, they may be regulated as solid and/or hazardous waste.

## What is *Not* A Solid Waste? (cont.)

Effective August 11, 1997

- **Excluded scrap metal being recycled, which includes:**
  - processed scrap metal,
  - unprocessed home scrap metal, and
  - unprocessed prompt scrap metal.
- **Shredded circuit boards being recycled, provided they are:**
  - stored in containers sufficient to prevent release
  - free of mercury switches/relays and nickel-cadmium batteries

In a May 12, 1997, FR notice (62 FR 25998), EPA implemented solid waste exclusions for certain scrap metal and shredded circuit boards. These exclusions, effective August 17, 1997, are based on the high probability of safely reclaiming metals from these items.

Amended 40 CFR 261.1(c) (62 FR 26018) definitions include the following:

“(10) ‘Processed scrap metal’ is scrap metal which has been manually or physically altered to either separate it into distinct materials to enhance economic value or to improve the handling of materials. Processed scrap metal includes, but is not limited to scrap metal which has been baled, shredded, sheared, chopped, crushed, flattened, cut, melted, or separated by metal type (i.e., sorted), and, fines, drosses and related materials which have been agglomerated. (Note: shredded circuit boards being sent for recycling are not considered processed scrap metal.

They are covered under the exclusion from the definition of solid waste for shredded circuit boards being recycled (Sec. 261.4(a)(13)).

(11) ‘Home scrap metal’ is scrap metal as generated by steel mills, foundries, and refineries such as turnings, cuttings, punchings, and borings.

(12) ‘Prompt scrap metal’ is scrap metal as generated by the metal working/fabrication industries and includes such scrap metal as turnings, cuttings, punchings, and borings. Prompt scrap is also known as industrial or new scrap metal.”

## What Is *Not* A Solid Waste? Wastes Granted A Variance

**Regulators may grant variances from the definition of solid waste for materials that:**

- **are accumulated speculatively without sufficient amounts being recycled**
- **are reclaimed and then reused within the original production process in which they were generated**
- **have been reclaimed but must be reclaimed further before the materials are completely recovered**

An EPA Regional Administrator (or authorized state representative under state regulation) may grant variances from the definition of solid waste under 260.30 and 260.31.

For materials accumulated speculatively (i.e., accumulated with intent of recycling without recycling, by the end of the year, 75% of quantity stored on-site at the beginning of the year), EPA considers:

- manner of recycling,
- reason for accumulation without recycling,
- quantity accumulated, and
- extent to which handling minimizes losses.

For materials reclaimed and reused within the original process, EPA considers:

- economic viability of process using virgin materials,
- industry practice,
- extent to which handling minimizes losses,
- amount of time until waste is returned to the process,
- location of the reclamation process, and
- purpose and form of material in the process.

For materials that must be reclaimed, EPA considers:

- degree of processing material has undergone,
- value of material after reclamation,
- similarity of reclaimed material to raw material,
- market for the reclaimed material, and
- extent to which handling minimizes losses.

How Do We Determine Which  
Recyclables Are Solid Waste?

**Recyclable Materials *May Or May  
Not Be Solid Waste, Depending On  
The Specific Material And Method  
Of Recycling***



## What Do We Know For Sure? Materials Are Solid Wastes When *Recycled* Through:

- **Uses constituting disposal (i.e., applying to land or adding to other materials that are applied to land)**
- **Burning for energy recovery**
- **Reclaiming (processing to recover usable product)**
- **Speculatively accumulating before recycling**

As stated previously, wastes recycled as outlined on the slide are solid wastes. These wastes must be managed as hazardous wastes if they meet hazardous waste criteria.

## What Do We Know For Sure? Materials Are Not Solid Waste When Recycled IF They Are

- **Used or reused as ingredients in an industrial process to make a product, provided they are not being reclaimed**
- **Used or reused as substitutes for commercial products**
- **Returned to the original process from which they are generated without first being reclaimed or land disposed (must substitute for raw material feedstock in a process that uses mainly raw materials as feedstocks)**

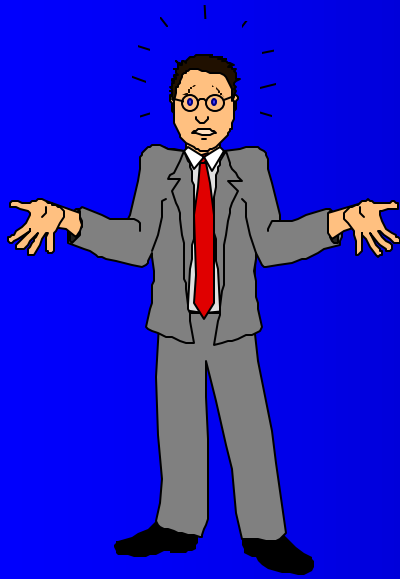
The recycling methods in the slide have one feature in common, the secondary material that is recycled can be reused directly without first processing it to obtain a usable product [40 CFR 261.2(e)].

Also note, the materials used, reused, or returned to the original process remain solid wastes if one of the following applies:

- the material is used in a manner constituting disposal or used to produce a product that is applied to the land;
- the material is burned for energy recovery, used to produce a fuel, or contained in a fuel;
- the material is accumulated speculatively; or
- the material is inherently waste-like (e.g., dioxin-containing wastes that are always solid wastes, no matter how they are recycled).

If, however, the material in question is used in a manner consistent with its intended use (e.g., the material is normally applied to ground as a fertilizer), the material remains a product rather than a waste.

Are You Confused?



How Do We Sort Out  
Which Other Recyclable  
Materials Are Solid  
Wastes?

Table 1, 40 CFR 261.2,  
has some answers

## Table 1 Addresses The Following Wastes That May Be Beneficially Reused:

- spent materials
- sludges
- by-products
- commercial chemical products
- scrap metal

The application of the RCRA definition of solid waste to recycled materials depends on the types of materials *and* the type of recycling. 40 CFR 261.2, Table 1, addresses the following recyclable materials:

**Spent material:** Any material that has been used and, as a result of contamination, can no longer serve the purpose for which it was produced without processing [40 CFR 261.1(c)(1)].

**Sludge:** Solid, semi-solid, or liquid waste generated from a municipal, commercial, or industrial wastewater treatment plant, water supply treatment plant, or air pollution control facility exclusive of the treated effluent from a wastewater treatment plant. (40 CFR 260.10)

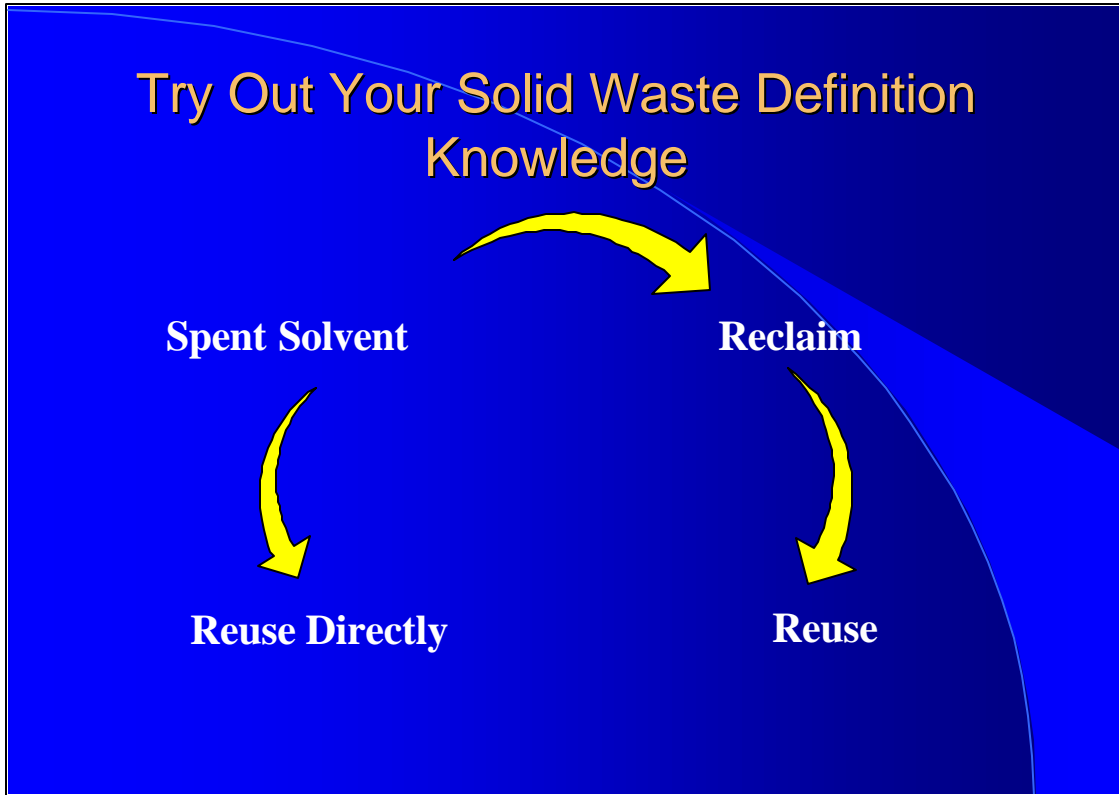
**By products:** A material that is not one of the primary products of a production process and is not solely or separately produced by the production process. Examples include process residues such as slags or distillation column bottoms. The term does not include a co-product that is produced for the general public's use and is ordinarily used in the form it is produced by the process [40 CFR 261.1(c)(3)].

**Commercial chemical products:** EPA does not define the term but instead refers to 40 CFR 261.33, the list of discarded commercial chemical products. EPA, however, views the list as more expansive than 40 CFR 261.33. In 50 FR 14219, EPA clarifies that discarded commercial chemicals also include discarded products not identified in 261.33. EPA has interpreted that items such as batteries and printed circuit boards are commercial chemical products.

**Scrap metal:** This category includes scrap metal not excluded under 40 CFR 261.4 (see SW-14). Scrap metal is bits and pieces of metal parts (e.g., bars, turnings, rods, sheets, wire) or metal pieces that may be combined together with bolts or soldering (e.g., radiators, scrap automobiles, railroad box cars), which when worn or superfluous can be recycled [40 CFR 261.1(c)(6)].

**Table 1, 40 CFR 261.2(c) defines how recyclable materials generated from one process are regulated when they are reused elsewhere. “Yes” means the recyclable material is regulated as solid waste, and “No” means it is not.**

<b>Recyclable Material</b>	<b>Used In Manner Constituting Disposal</b>	<b>Burned for Energy Recovery</b>	<b>Reclaimed</b>	<b>Speculatively Accumulated</b>
Spent Materials	Yes	Yes	Yes	Yes
Listed Sludges	Yes	Yes	Yes	Yes
Characteristic Hazardous Sludges	Yes	Yes	No	Yes
Listed By-Products	Yes	Yes	Yes	Yes
Characteristic Hazardous By-Products	Yes	Yes	No	Yes
Commercial Chemical Products	Yes	Yes	No	No
Scrap Metal	Yes	Yes	Yes	Yes

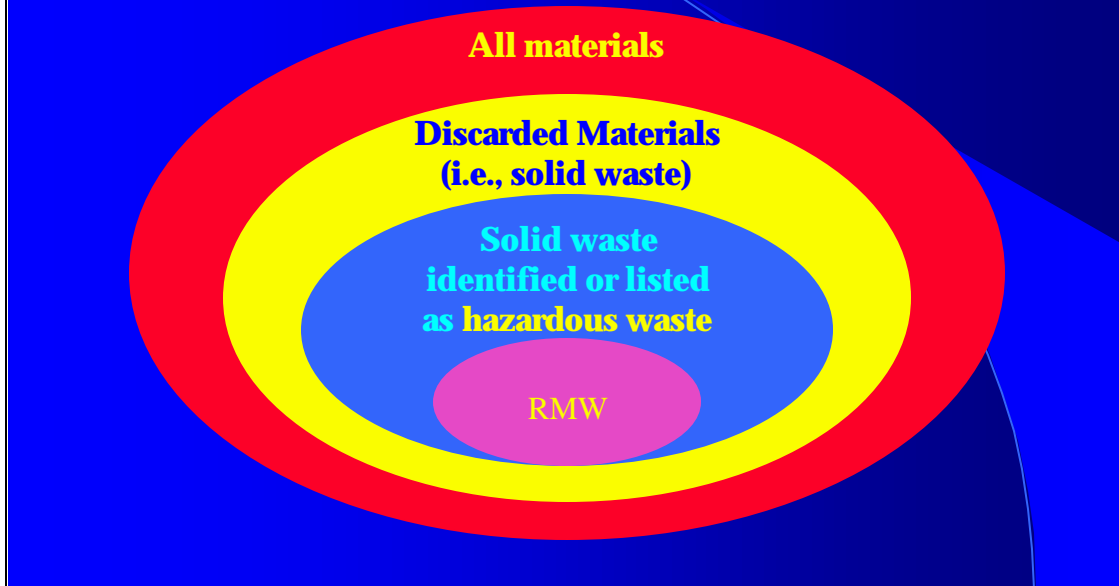


Let's look at a few examples.

## Summary Of The Solid Waste Definition

- **Solid wastes are discarded materials that are not specifically excluded from the definition by regulation or a variance**
- **Recyclable materials are often solid wastes**
- **Solid wastes must be properly managed by either:**
  - **determining that they are hazardous wastes and managing them accordingly or**
  - **verifying they are solid wastes and managing them according to solid waste management requirements**

## Definition of Hazardous Waste



RCRA's hazardous waste management requirements only apply to materials that have served their original intended purpose and are, therefore, discarded from their immediate use (i.e., solid wastes).