

Form 2A: Waste Composition

Name of Operation (complete a separate form for each operation):

Include each material produced in this operation that is currently being disposed of as waste. Do not include materials that are recycled currently.

To indicate whether entries are measured or estimated, precede each weight entry by:

- “M” for measurements
- “E” for estimates

Material	Weight: tonnes/month	% of Total Waste
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Basic Employee Waste		
Beverage/food containers		
Metal/glass/plastic		
Newspaper		
Washroom (paper)		
Cafeteria/lunchroom (organics)		

Basic Non-Process Waste		
Corrugated cardboard		
Office paper		
Pallets/woodwork		
Gypsum/drywall		
Scrap metals		
Appliances, white		
Tires		
Yard waste		

Industry-Specific Process Waste		

Total Weight in Tonnes/Month _____

Form 2B: Waste Composition

To develop options for reducing or recycling, you'll need to know about how much of each recyclable material is present in the waste stream from each operation. As noted on Form 2A, these amounts can be either measured ("M") or estimated ("E"). Amounts can be: 1) measured directly; 2) calculated from a sample of mixed waste; 3) estimated visually; or 4) estimated from the process.

1) Measured Directly

Where a representative weight can be obtained, simply enter that weight in the appropriate blank (Weight in Tonnes/Month). As an example, old corrugated containers (OCC) generated in a receiving room can be weighed for a month when business is operating at an average level.

2) Calculated from a Sample of Mixed Waste

Wastes are often mixed together in their generation process. In this case, you may have to do a simple composition study using a representative sample. Firstly, weigh the sample. Secondly, sort and weigh all recyclables in the sample separately. These weights will give the fraction by weight of each material in the waste stream.

$$\frac{\text{Weight of a particular material in the waste stream}}{\text{Total weight of the sample}} = \text{Fraction by weight of each material in waste stream}$$

If the weight of the total waste stream is known, the weight to be recorded is the fraction of the material multiplied by the total weight of waste per month.

$$\text{Fraction of the material} \times \text{total weight of waste per month} = \text{Recorded weight}$$

If the weight of the total waste stream is not known, you can determine that number by: a) calculating the monthly waste volume, and then, b) converting volume estimates to weight estimates.

a) Calculating monthly waste volumes

The volume of a waste stream can be calculated from the information reported in Form 4. Take the number of dumpsters you have and multiply by the dumpster size and the number of times they are emptied each month. If a dumpster is not full when it is removed, multiply the average fraction of capacity that is filled when it is removed.

Example:

<i>Two X 5-cubic yard dumpsters</i>	<i>10 cubic yards of waste</i>
<i>Collected eight times monthly</i>	<i>8 X 10 cu. yd. = 80 cu. yd.</i>
<i>Average fraction filled when collected (0.9)</i>	<i>0.9 X 80 cu. yd./mo. = 72 cu. yd./mo.</i>

b) Converting volume estimates to weight estimates

To convert your volume estimate of 72 cu. yd./month to a weight estimate, you would use the following formula:

$$\text{Weight of sample} \times \text{Volume/month} = \text{Total weight/month}$$

If, for example, one cubic yard of waste weighs 400 pounds and your business generates 72 cubic yards of waste each month, then:

$$400 \text{ pounds} \times 72 \text{ cu. yd./month} = 28,800 \text{ pounds or about 15 tonnes/month}$$

If your waste is compacted, the result of a calculation based on compactor size must be multiplied by the compaction ratio (usually 4:1) to the uncompacted volume.

$$8 \text{ cu. yd. of compacted waste} \times 4 = 32 \text{ cu. yd. of uncompacted waste}$$

3) Estimated Visually

A quick way to get an approximate idea of waste composition is to make a visual inspection of the waste stream and to estimate volume percentages of each material. This method will be useful only to give a preliminary approximation of composition and then, only in cases where there are only a few components in the waste stream. For example, visual inspection of an open roll-off from a construction job suggests it is filled with 50% corrugated, 40% scrap wood, and 10% scrap drywall. These percentages can be used with the total volume of the waste and with the densities to calculate the weights of individual materials.

Form 2B: Waste Composition (cont.)

Example:

32 uncompact cu. yd. of mixed waste with 50% corrugated cardboard:

cu. yd. x 0.5 = 16 cu. yd. of corrugated cardboard

4) Estimated from Process

In some cases, the amount of a particular waste can be estimated by examining the process that creates it. For example, several studies have reported that the “average” office worker produces between four and seven kilograms of waste office paper per week. This number can be used to give a preliminary estimate of the total office paper waste stream.

Materials to be Reported

Basic Employee Waste

List wastes typically generated by employees through daily business activities. For example: newspapers, beverage containers (metal, glass, plastic), cafeteria (food waste), and washroom wastes (paper towels and facial tissues).

Basic Non-Process Wastes

List the wastes which are commonly generated by businesses, regardless of the nature of the business or Manufacturing process. Some examples are corrugated cardboard, office paper, pallets, drywall, tires, etc.

Industry-Specific Process Waste

List each material, whether currently recyclable or not, that is generated as part of your production process. Make sure you include seasonally-generated waste.

Remember:

- *The weights you are entering in Form 2 are only for materials you are currently disposing of as waste.*
- *Do not include materials you are already recycling. These are reported in Form 3.*
- *Complete a separate form for each operation.*
- *If your business is subject to seasonal cycles of activity, this should be considered when performing your waste assessment, and noted where appropriate. You might want to conduct several waste assessments throughout the year to get an accurate picture of waste generation.*

Table of Standard Weights (Approximate)

Material	Weight
Pallet, hardwood	13.6 kg
Pallet, softwood	9 kg
Paper products (1 cu. yd. container, not compacted)	45 kg
Paper products (1 cu. yd. container, compacted)	91 kg
Paper products (40 cu. yd. container, not compacted)	2.26 tonnes
Drum, steel (with lid)	18 kg
Drum, fibre (with lid)	9 kg
Drum, plastic (with lid)	16 kg
Tire, car	9 kg
Tire, truck	45 kg

Conversion Factors:

1 kilogram/cubic metre = 1.6821 pounds/cubic yard

1 kilogram = 2.2 pounds

1 cubic metre = 1.3 cubic yards