



Minnesota
Pollution
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This fact sheet gives guidelines to businesses for evaluating waste and determining hazardous waste generator size. It is the first in the “10 Steps to Compliance” series.

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Step 1: Evaluate Waste; Determine Generator Size

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Environmental concerns

Mismanaged waste – especially hazardous waste – can pollute air, land, and water and threaten human health. To know how your waste should be managed, you must determine if it is hazardous; this process is called evaluation. Waste that is evaluated as hazardous has specific requirements to ensure safe handling and disposal.

What is a “waste”?

A **waste** is a material that you no longer need, want, or use; it is something that is unusable or is intended to be discarded, such as spent solvent.

A **waste is not** something that you can and will use, such as leftover paint that will be used on another project.

Minnesota requires anyone who produces or manages a waste in Minnesota to evaluate the waste. Evaluation will determine whether the waste is nonhazardous, exempt from hazardous waste rules, or hazardous for either of the following reasons:

1. It is “listed” – its chemical name appears on one of four lists in the Minnesota Hazardous Waste Rules, or it contains 50 parts per million (ppm) or greater of polychlorinated biphenyls (PCBs); or
2. It is “characteristic” – it displays any of six hazardous characteristics.

What is a “generator”?

A “generator” is a business or other entity that first causes a material to be a waste. Households not performing commercial activity are not regulated as hazardous

waste generators in Minnesota, but are strongly encouraged to take hazardous wastes to their county’s household hazardous waste collection site.

Before you evaluate

Make a list of all your wastes. What does your business actually discard? Include all areas of your business on your list. Talk to purchasing, production, and maintenance personnel, tour production and non-production areas, and inspect storage areas and dumpsters. Don’t forget to include sewered and recycled waste. You should also check incoming materials and talk to your vendors to make sure all potential wastes have been identified. Products that have become unusable through damage, contamination, or age are also wastes, even though they have not been used.

Reducing waste and preventing pollution can pay

Consider waste to be a sign of inefficiency. Expired products are particularly wasteful – you paid to purchase the product and will have to pay to dispose of it even though you didn’t use it.

As you review your wastes you will gain an accurate picture of the types and amounts of wastes you generate. This is a good time to consider whether you can reduce or even eliminate some of those wastes. Consider using nonhazardous or less hazardous materials, or implement these good operating practices, which can help you reduce waste generation:

- Buy only what you need.
- Use materials in a “first in/first out” manner.

- Track material use as well as waste generation to identify inefficiencies.
- Label raw materials as well as wastes to prevent “unknowns” in your inventory.
- Make sure equipment is working properly and efficiently.
- Prevent leaks and spills by inspecting containers regularly, using pumps or spigots to dispense materials, and training employees to handle materials and wastes properly.
- Separate different types of wastes to facilitate recycling.

Reduced waste generation results in reduced disposal expenses, and may also lead to lower licensing fees and reduced regulatory requirements. For assistance evaluating substitute products or alternate processes, contact the Minnesota Technical Assistance Program (MnTAP) at the telephone number on page six or visit their Web site at www.mntap.umn.edu.

Evaluating waste

First, check to see whether any wastes are exempt from hazardous waste regulation. Refer to Table 1 for a list of common exempt wastes. A complete list of exempt wastes may be found in Minn. R. pts. 7045.0120 and 7045.0125. A waste that is exempt from hazardous waste regulation may still be regulated as an industrial solid waste, wastewater discharge, spill, or air emission.

Next, gather information about each nonexempt waste.

Material Safety Data Sheets (MSDS) provide information about the unused products that will eventually become waste. However, product ingredients are only required to be listed in an MSDS if they exceed Occupational Safety and Health Administration (OSHA) reporting thresholds, which are much higher than any of the hazardous waste thresholds. Products may therefore contain hazardous constituents that are not listed on the MSDS.

Additionally, an MSDS only gives information about the product *before* use; products can be contaminated or changed chemically or physically through use to become hazardous. Examine how the product is used and identify whether the waste may have been changed from the unused product.

Some manufacturers may be willing to certify that their product is nonhazardous. If you rely on a manufacturer certification, you must verify that the manufacturer applied the correct hazardous waste evaluation standard when they evaluated the product.

Table 1: Common exempt wastes

- Non-commercial household waste
- Food handling and preparation waste
- Vegetative yard and farm waste
- Samples sent to a testing laboratory until returned
- Recycled scrap metal
- Demolition debris
- Hazardous waste generated in manufacturing equipment, storage tanks, transport vehicles, or pipelines until it leaves these units or is stored following the shutdown of those units
- Waste discharged to surface waters under a National Pollution Discharge Elimination System (NPDES) permit
- Air emissions permitted by the MPCA
- Mining overburden and certain wastes from processing ores
- Fly ash and related waste from burning of fossil fuels
- Waste from emergency spill cleanups approved by the MPCA commissioner
- Certain wastes containing only trivalent chromium

Finally, review the information and determine

whether the waste is nonhazardous or hazardous by answering the following questions.

1. **Is the waste listed?** A “listed” waste is one that appears on one of four lists – F, K, P, or U – or that contains 50 ppm or greater PCBs. For the complete lists, see Minn. R. pt. 7045.0135 or Hazardous Waste Fact Sheets #2.00 (F List), #2.01 (K List), #2.02 (P List), and #2.03 (U List), all available on the Minnesota Pollution Control Agency (MPCA) Web site at www.pca.state.mn.us/waste/pubs/business.html. Use the MSDS, product label, and product technical documentation to identify the chemical components in the product. You will then need to:
 - Compare your products and manufacturing process to the definitions on the **F list**. Waste solvents appearing on the F list (F001 - F005) are the most common listed wastes. Examples of F-listed waste include many paint and lacquer thinners, brake and carburetor cleaners, and vapor degreasing and dry cleaning solvents, as well as solvent distillation bottoms and electroplating sludges.
 - Check the **K list** to determine whether your waste is regulated as a result of being generated by specific industry processes, such as those

used by the wood preserving or petroleum refining industries.

- If you must dispose of unused or unusable chemical products or spill residues, verify that the active ingredients of those products are not listed on the **P and U lists**.
- Determine whether your waste might contain **PCBs**. PCBs may be found in a wide variety of materials manufactured before 1979, including electrical power control equipment, capacitors, fluorescent lamp ballasts, hydraulic oil, and sealant materials such as caulks and putties.

Any waste that is **mixed with or derived from** a listed waste is also considered listed – and is therefore hazardous. An example of “mixed with” is mixing a listed brake cleaner with parts washer solvent or used oil. An example of “derived from” is distillation bottoms from reclaiming listed solvents.

2. Does the waste display a hazardous

characteristic? A ‘characteristic’ waste displays one or more of the following six characteristics. For complete characteristic definitions, see Minn. R. pt. 7045.0131 or Hazardous Waste Fact Sheet #2.04 (Characteristic Wastes), available on the MPCA Web site at www.pca.state.mn.us/waste/pubs/business.html.

- **Ignitable:** A liquid with a flash point below 140°F, or a nonliquid able to ignite through friction, moisture absorption, or spontaneous chemical change and which burns persistently. Examples of ignitable waste include mineral spirits, degreasing solvent blends, and aluminum powder. An MSDS will often provide the flash point of an unused liquid product. Consider whether the product could be contaminated during use with substances that lower the flash point sufficient to render the waste an ignitable hazardous waste.
- **Oxidizer:** A substance that supplies oxygen to a reaction in the absence of air. Examples include organic peroxides, chlorates, and most nitrates. An MSDS will often state whether the unused product is an oxidizer. Because most oxidizers are used to provide oxygen to a process, waste consisting of a used oxidizer will often no longer display this characteristic and may be nonhazardous.
- **Corrosive:** A liquid with a pH of 2 or less, 12.5 or more, or which corrodes steel at a rate greater than 1/4 inch per year. Examples include strong

acids and bases, such as battery acid and radiator boil-out tanks. An MSDS will often give the pH of an unused product. Diluting the product before use and actual use of the product may change the pH enough that the resulting waste is nonhazardous. Some corrosive wastes may be able to be neutralized and discharged to a sanitary sewer; check with your wastewater treatment plant operator for details.

- **Reactive:** A waste that is unstable, or can react violently, produce toxic gases, or form potentially explosive mixtures when mixed with water. Examples include explosives and some cyanide-bearing wastes. The Reactivity Hazard Data section of an MSDS will often indicate whether the unused product is reactive. Some products may be rendered non-reactive during use. Generators must either evaluate whether the waste from use of a reactive product is still reactive or must manage it as a hazardous waste.
- **Lethal:** A waste that can cause severe health effects when ingested, inhaled, or absorbed through the skin. Examples include wastes containing cyanide and some pesticide wastes. The Health Hazard Data section of an MSDS may contain toxicological information relevant to the waste’s lethality. Detailed guidance on evaluating waste for lethality can be found in MPCA Hazardous Waste Fact Sheet #2.05 (Characteristic of Lethality), available on the MPCA Web site at www.pca.state.mn.us/waste/pubs/business.html.
- **Toxic:** A waste that will leach hazardous contaminants above the maximum allowable concentrations specified in Table 2. Examples include used photo fixer (silver), sludges from parts washers (lead, chromium, benzene), and automotive paint-related wastes (chromium, cadmium, barium). Remember that contaminants introduced during use of a nonhazardous product may render the waste hazardous. Also remember that most toxic contaminants are unlikely to be listed in an MSDS even when present in the unused product due to the relatively high OSHA threshold for mandatory inclusion in an MSDS.

If you cannot classify the waste based on the information you have gathered and your knowledge of the waste, you must either test a sample to get the information you need or you must assume the waste is hazardous. If you coordinate testing directly with your intended disposal facility, the test results can also be

used for waste acceptance approval. Retesting of a waste is not required unless product or process changes would alter the makeup of the waste. If you choose to use an independent commercial testing laboratory, there is no specific Minnesota accreditation or licensure needed by the laboratory, though a voluntary laboratory certification program is administered by the Minnesota Department of Health (MDH). If you would like assistance finding an MDH-certified laboratory, please contact the MDH or MPCA.

If you have determined, through knowledge or testing, that a waste is not listed, or mixed with or derived from a listed waste, and does not display a hazardous characteristic, then the waste is nonhazardous.

However, simply because a waste is nonhazardous does not mean it can go into a dumpster or down the drain. Nonhazardous wastes are still subject to industrial solid waste, wastewater, air emission, and spill rules. Do not place industrial waste – even nonhazardous waste – in a septic system. Coordinate the disposal of your non-hazardous waste with the operator of the landfill, industrial burner or wastewater treatment plant that you intend to use.

If you have determined that a waste is hazardous, you must determine your generator size and learn how to properly manage and dispose of the waste.

Document your evaluation

Keep documentation of waste evaluations for all your wastes, whether the results are hazardous or nonhazardous, on the site of generation. Maintain access to any reference materials you used in the documentation. If your evaluation was performed by a third party, such as a consultant or transporter, you must have the documented rationale they used to evaluate the waste – the final conclusion alone is not sufficient.

If your waste was evaluated by laboratory analysis, be sure you have documentation of the quality control and analytical specifications used by the lab when testing your waste. This documentation is usually contained in the analytical packet returned to you by a competent laboratory.

Determine generator size

All hazardous waste generators have basic rules to follow. There are additional requirements and certain rules become more restrictive as the amount of hazardous waste generated per month increases. Determining your generator size will help you know which rules and requirements apply to you.

Table 2: TCLP contaminants

Hazardous waste number	Contaminant	CAS number	Concentration milligrams/liter
D004	Arsenic	7440-38-2	5.0
D005	Barium	7440-39-3	100.0
D018	Benzene	71-43-2	0.5
D006	Cadmium	7440-43-9	1.0
D019	Carbon tetrachloride	56-23-5	0.5
D020	Chlordane	57-74-9	0.03
D021	Chlorobenzene	108-90-7	100.0
D022	Chloroform	67-66-3	6.0
D007	Chromium	7440-47-3	5.0
D023	o-Cresol	95-48-7	*200.0
D024	m-Cresol	108-39-4	*200.0
D025	p-Cresol	106-44-5	*200.0
D026	Cresol		*200.0
D016	2,4-D	94-75-7	10.0
D027	1,4-Dichlorobenzene	106-46-7	7.5
D028	1,2-Dichloroethane	107-06-2	0.5
D029	1,1-Dichloroethylene	75-35-4	0.7
D030	2,4-Dinitrotoluene	1221-14-2	0.13
D012	Endrin	72-20-8	0.02
D031	Heptachlor (and its epoxide)	76-44-8	0.008
D032	Hexachlorobenzene	118-74-1	0.13
D033	Hexachlorobutadiene	87-68-3	0.5
D034	Hexachloroethane	67-72-1	3.0
D008	Lead	7439-92-1	5.0
D013	Lindane	58-89-9	0.4
D009	Mercury	7439-97-6	0.2
D014	Methoxychlor	72-43-5	10.0
D035	Methyl ethyl ketone	78-93-3	200.0
D036	Nitrobenzene	98-95-3	2.0
D037	Pentachlorophenol	87-86-5	100.0
D038	Pyridine	110-86-1	5.0
D010	Selenium	7782-49-2	1.0
D011	Silver	7440-22-4	5.0
D039	Tetrachloroethylene	127-18-4	0.7
D015	Toxaphene	8001-35-2	0.5
D040	Trichloroethylene	79-01-6	0.5
D041	2,4,5-Trichlorophenol	95-95-4	400.0
D042	2,4,6-Trichlorophenol	88-06-2	2.0
D017	2,4,5-TP (Silvex)	93-72-1	1.0
D043	Vinyl chloride	75-01-4	0.2

** If o-, m-, and p-cresol concentrations cannot be differentiated, the total cresol (D026) concentration is used. The regulatory level of total cresol is 200 milligrams per liter.*

Generator size is determined by the **maximum monthly hazardous waste generated** at a site, including hazardous waste discharged to a sewer or treated on site. You may not average your monthly generation to calculate your generator size, and should not use the amount of waste shipped to calculate the amount generated. For a company that owns several separate sites, the amount of hazardous waste generated is counted separately for each licensed site of generation, not totaled collectively.

Depending upon how they are managed, some hazardous wastes are not counted toward your generator size calculation. See Table 3 for a list of these wastes.

After you have calculated your maximum monthly hazardous waste generation, refer to Table 4 to determine your generator size. For additional guidance, see the fact sheets for Steps 2 through 10 in the hazardous waste “10 Steps to Compliance” series located on the MPCA Web site at www.pca.state.mn.us/waste/pubs/business.html.

Counting recycled hazardous wastes

Certain hazardous wastes that are recycled and reused, either on or off site, may be eligible for whole or partial exemption from your generator size calculation. Whether and how recycled wastes will count is determined separately for each waste. Guidance is available in MPCA Hazardous Waste Fact Sheets #2.42 (Recycling Hazardous Waste) and #7.12 (Recycled Hazardous Waste Report Form), both available on the MPCA Web site at www.pca.state.mn.us/waste/pubs/business.html.

If you have waste products that are unused or could be reused, consider contacting the Minnesota Materials Exchange, which provides a business reuse network, at www.mnexchange.org.

Table 3: Hazardous wastes that don't count toward generator size

- Cathode ray tubes managed equivalent to universal wastes
- Circuit boards managed equivalent to universal wastes
- Infectious wastes that are not also listed or characteristic
- Sewered hazardous waste pretreated to remove at least 80% of its hazardous constituents
- Used oil and used oil-containing wastes, if recycled
- Universal wastes, which include
 - batteries
 - fluorescent and high-intensity-discharge lamps
 - mercury-containing devices
 - pretreated mercury-containing dental wastewater
 - dental mercury-containing amalgam, if recycled
- Pesticides collected by the Department of Agriculture

Changes in waste generation and generator size

If the amount of waste you generate increases from one month to the next by enough to put you in a larger generator size category, you must meet all the requirements for the larger generator size. Requirements may include employee training, emergency preparedness and planning, and more restrictive hazardous waste accumulation time limits.

For guidance relating to changes in generator size and licensing at sites located in a metropolitan county, contact the appropriate county program. See contact information on page six.

For outstate sites, if the increased generation is due to temporary circumstances, lasts for only one month, and occurs only once in a calendar year, your facility may be eligible to be ‘resized’ back down to its original generator size, either automatically or upon request. To

request that your facility be resized, submit a written letter to the MPCA describing the reason for the over-generation and the specific steps you have taken to ensure it does not recur. Even if your facility is eligible for resizing, you must meet the increased generator requirements during the one month that you over-generate.

Paying close attention to the wastes you generate and following the best management practices detailed in the section of this fact sheet called *Reducing waste and preventing pollution pays* can help you avoid over-generating.

Table 4: Generator size determination

If you generate:	Then your size is:
<ul style="list-style-type: none"> • 220 pounds or less of hazardous waste per month (about 1/2 drum liquid or less) 	VSQG (Very Small Quantity Generator)
<ul style="list-style-type: none"> • More than 220 pounds but less than 2200 pounds of hazardous waste per month (about 1/2 to 4 drums liquid) 	SQG (Small Quantity Generator)
<ul style="list-style-type: none"> • 2200 pounds or more of hazardous waste per month (about 4 drums liquid) or • More than 2.2 pounds of acute hazardous waste per month 	LQG (Large Quantity Generator)

More Information

Metropolitan counties and the Minnesota Pollution Control Agency have staff available to answer waste management questions, including questions about evaluating wastes and determining hazardous waste generator size. For more information, contact your metropolitan county hazardous waste office or the MPCA office closest to your county.

The Minnesota Technical Assistance Program (MnTAP) has staff who are able to help you find ways to improve efficiency and reduce waste.

Metro County Hazardous Waste Offices

Anoka	763-422-7093
Carver	952-361-1800
Dakota	952-891-7557
Hennepin	612-348-3777
Ramsey	651-266-1199
Scott County	952-496-8475
Washington County	651-430-6655
Web sites	www.co.[county].mn.us

Minnesota Pollution Control Agency

Toll free (all offices)	1-800-657-3864
Brainerd	218-828-2492
Detroit Lakes	218-847-1519
Duluth	218-723-4660
Mankato	507-389-5977
Marshall	507-537-7146
Rochester	507-285-7343
St. Paul	651-296-6300
Willmar	320-214-3786
Web site	www.pca.state.mn.us

Minnesota Technical Assistance Program

Toll-free	1-800-247-0015
Metro area	612-624-1300
Web site	www.mntap.umn.edu