

Characterizing Hazardous and Liquid Industrial Wastes

OVERVIEW

Regulation 347 (Reg. 347) under the *Environmental Protection Act* (EPA) requires that waste generators determine the types of waste they generate and characterize.

This fact sheet is designed to guide you through the process of determining whether you generate hazardous or liquid industrial wastes. It focuses on simple waste streams and does not address all of the potential complexities associated with characterizing complex waste streams. It does not replace the *Registration Guidance Manual for Generators of Liquid Industrial and Hazardous Waste* ("Manual") which should be used as the primary guidance document for identifying the characterization requirements.

This fact sheet only addresses characterizing requirements of waste. All other requirements under Reg. 347 that may be applicable to the management of these wastes (e.g., registration, manifesting, storage, and record keeping) also apply, including any requirements that are in a Certificate of Approval (CofA) held by the generator, carrier, waste receiver or land disposal site.

Completing the following steps for each waste stream you generate will assist you to:

1. determine if the waste is a hazardous or liquid industrial waste; and
2. identify all the associated characterizations.

The steps have been designed to walk you through the various decisions required in a linear process corresponding to key decisions in the waste characterization.

1 GETTING STARTED – COLLECTING INFORMATION

1.1 *DO I HAVE ACCESS TO THE FOLLOWING USEFUL RESOURCES?*

Resource	Documents available through the following web links or through resources noted
Reg. 347	http://www.ene.gov.on.ca/envision/land/hazardousWaste.htm
<i>Registration Guidance Manual for Generators of Liquid Industrial and Hazardous Waste</i> ("Manual") – Draft	
<i>LDR Handbook – Draft</i>	
Ministry fact sheets	
Generator Registration Report (GRR)	

Resource	Documents available through the following web links or through resources noted
HWIN (Hazardous Waste Information Network)Registration Guide	https://www.hwin.ca/hwin/index.jsp
HWIN List of Recycling Facilities	https://www.hwin.ca/hwin/index.jsp
MSDS	Contact the Chemical Supplier

1.2 CAN I ANSWER THE FOLLOWING QUESTIONS?

- ✓ How is my waste generated (i.e., what process produces the waste)?
- ✓ What are the chemical products/substances I use in my process that could end up in my waste streams?
- ✓ What are the physical and chemical properties of the waste (i.e., ignitable, corrosive, reactive, leachate toxic, solid or liquid, chemical constituents etc.) based on MSDS information, process knowledge or analytical testing?
- ✓ How much of each waste stream is generated each month?
- ✓ What is the maximum quantity of each waste stream stored at any one time?
- ✓ How are each of my waste streams managed; are they treated, disposed or recycled?

2 IS MY WASTE A HAZARDOUS OR LIQUID INDUSTRIAL WASTE?

2.1 *DOES MY WASTE MEET ONE OR MORE OF THE WASTE CHARACTERIZATIONS IN TABLE 1 FOUND AT THE END OF THIS FACT SHEET?*

If No: Fact sheet does not apply. Waste classification not required.

TIP: Hazardous wastes are either defined in Reg. 347 (i.e., pathological or PCB wastes), listed through schedules in Reg. 347 (listed wastes) or identified through analytical tests (characteristic wastes) specified in Reg. 347. Wastes from industrial, commercial or institutional sources that are not hazardous, but are liquid, are defined as liquid industrial waste in Reg. 347.

TIP: Use the figure entitled Waste Characterization Flowchart and associated explanations found in the Manual when answering these questions.

TIP: Reg. 347 has mixing, blending, bulking or intermingling restrictions for hazardous waste. See fact sheet *PIBS 5540 - Waste Storage, Mixing and Processing Requirements Effective March 31, 2006* for information on these restrictions.

TIP: The waste characterization that appears **first** in the Waste Characterization Flowchart is the **primary characterization** for the waste which is to be entered in Part 2A of the Generator Registration Report (GRR). This also applies if it is a mixed hazardous waste with more than one waste characterization. For example, if the waste is considered an industrial hazardous waste, even though it may have properties that make it ignitable, corrosive, or reactive, the industrial hazardous waste characterization will be the primary characterization. The other properties that make it ignitable, corrosive or reactive will be the secondary characterizations and should be recorded in the registration.

TIP: The liquid industrial waste (L) characterization only applies if none of the hazardous characterizations apply and the waste meets the definition of a liquid industrial waste.

TIP: Listed hazardous wastes that are mixed with any other waste or material, or a waste that is derived from listed hazardous wastes have their own rules regarding characterization. See the Manual for more information.

2.2 DO I GENERATE OR STORE MORE THAN THE SMALL QUANTITY EXEMPTION (SQE) SPECIFIED IN TABLE 1?

If No: *Fact sheet may not apply. See Question 3.3 regarding empty containers. Waste characterization not required for SQE waste.*

TIP: It is advisable to document and periodically evaluate wastes exempted through small quantities to ensure that the exemptions still apply.

2.3 ARE MY EMPTY CONTAINERS OR LINERS EXEMPT (SEE TABLE 1)?

If Yes: *Fact sheet does not apply to empty containers or liners. Waste characterizations are not required for empty containers or liners.*

TIP: If your empty containers or liners are not exempt, the containers or liners must be characterized as separate waste streams. Empty containers would be classified as **solid** waste, regardless of whether the waste it contained was a liquid or solid.

3 DO I NEED TO REGISTER MY HAZARDOUS OR LIQUID INDUSTRIAL WASTE?

3.1 DOES MY WASTE MEET THE REQUIREMENTS IN SECTION 3 OF REG. 347 AND IS THEREFORE EXEMPT FROM REG. 347?

If Yes: *Fact sheet does not apply. Waste characterization not required.*

TIP: Section 3 lists a number of different types of wastes that are exempted from Reg. 347 and the EPA if they are identified or managed according to the requirements in this section. An example of one such waste that may be exempted is a waste (other than used, shredded or chipped tires) that is transferred by a generator for **direct transportation** to a site, to be wholly used as a raw material at another facility without any need for processing prior to entry into the process and used principally for functions other than waste management. Also, the process or operation cannot involve combustion or land application of the waste. Consult the Manual for more details.

TIP: It is advisable to document why wastes are considered exempt and the rationale for the exemption. The onus is on the generator of the waste to provide enough documentation that supports the Section 3 exemption.

3.2 DO ANY OF THE FOLLOWING ACTIVITIES APPLY TO MY WASTE?

- a) Ship hazardous or liquid industrial waste off-site, including to a recycling facility on the HWIN List of Recycling Facilities;
- b) Land dispose, thermally destruct or use waste as a waste derived fuel on-site;
- c) Process listed or characteristic waste (hazardous waste) on-site that is subject to LDR requirements;

- d) Discharge hazardous waste to municipal sanitary sewers;
- e) Store hazardous or liquid wastes on-site; or
- f) Discharge hazardous waste only to the final stage of the OWRA treatment process.

If No: Registration may not be required.

TIP: Refer to the figure entitled Overview of Waste Streams Requiring Generator Registration and associated explanations in the Manual.

4 WHERE DO I REGISTER MY HAZARDOUS OR LIQUID INDUSTRIAL WASTE?

Generators may register wastes on-line using the Hazardous Waste Information Network (HWIN) at <http://www.hwin.ca> or by paper submission of a Generator Registration Report (GRR). A copy of the GRR may be downloaded from the Ministry's hazardous waste website at <http://www.ene.gov.on.ca/envision/land/hazardouswaste.htm>, along with instructions.

TIP: An HWIN Registration Guide is available at <https://www.hwin.ca/hwin/index.jsp>.

5 WHAT INFORMATION IS REQUIRED FOR REGISTRATION?

TIP: For registration purposes, both HWIN and the GRR paper form require information on:

- waste class;
- primary and secondary characterizations;
- waste number;
- hazardous waste number;
- waste type;
- description of waste;
- type of process generating the waste;
- physical state; and
- specific gravity (for liquids only).

TIP: Each waste stream must be registered individually. This may mean that the same waste class is used multiple times (e.g., once for liquid waste, once for empty containers subject to registration).

5.1 *WHAT IS THE WASTE CLASS?*

A **Waste Class** is a three-digit number from the list of Ontario Waste Classes provided as an Appendix in the Manual which is found on the Ministry's Hazardous Waste website at: <http://www.ene.gov.on.ca/envision/land/hazardousWaste.htm>.

With each three digit waste class number is a generic description of that waste class. The generator should choose the waste class that best describes the waste (e.g., Waste Class 131).

5.2 *WHAT IS THE APPROPRIATE CHARACTERIZATION?*

See question 2.1 above.

5.3 *WHAT IS THE WASTE NUMBER?*

The combination of the three digit waste class and the single letter waste characterization is referred to as the **Waste Number** (e.g., 131H).

5.4 *WHAT IS THE HAZARDOUS WASTE NUMBER?*

A **Hazardous Waste Number** is a unique 4-digit code (a letter followed by 3 numbers) used to identify individual listed and characteristic wastes in Column 1 of Schedules 1, 2A, 2B, 3, and 5 of Reg. 347. The hazardous waste number will be chosen as you identify the primary and secondary characterizations of your waste stream. Each of these Schedules assigns the following letter to each waste in the Schedule:

- Schedule 1: the letters F and K
- Schedule 2A: the letter P
- Schedule 2B: the letter U
- Schedule 3: the letter S
- Schedule 5: the letters D and E.

For example, in Schedule 1 (Hazardous Industrial Waste) of Reg. 347 the unique hazardous waste number K018 is assigned for a listed waste stream generated from the heavy ends from the fractionation column in ethyl chloride production. The K018 listing also includes all the regulated constituents under this listing and the land disposal treatment requirements for the constituents. And, for example, in Schedule 5 (Land Disposal Requirements for Characteristic Wastes) of Reg. 347 the unique hazardous waste number D008 is assigned to a characteristic waste stream that is leachate toxic for lead. The D008 would also list the regulated constituents (in this case lead) and the land disposal treatment requirements for the constituents.

There are no hazardous waste numbers associated with liquid industrial, PCB and pathological wastes.

5.5 *WHAT IS THE WASTE TYPE?*

A **Waste Type** is a general or broad description of your waste stream. When you select a waste class, a predefined waste type or description associated with that waste class can be found on a pull down menu in HWIN.

5.6 *WHAT INFORMATION IS REQUIRED IN THE DESCRIPTION OF WASTE AND TYPE OF PROCESS?*

A **waste description** (e.g., spent baghouse filters) and the **type of process generating the waste** (e.g., Melt furnace #1) allows both the generator and Ministry inspectors to readily identify the individual waste streams and their origin. This information should also differentiate between two processes in a facility where the waste streams are managed separately but registered with the same waste number.

5.7 *COMPLETING THE QUESTIONNAIRE IN THE REGISTRATION*

Part 2A of the GRR paper form or the on-line form in HWIN includes a questionnaire designed to determine if you are required to complete the LDR Notification Form (Part 2B of the GRR) as part of your registration. You must answer these questions for each hazardous waste stream registered except for PCBs (D), Pathological (P) and Liquid Industrial Wastes (L) which are not subject to the LDR requirements.

If the questionnaire indicates no LDR notification is needed, then the waste registration for this waste stream is complete.

6 WHAT ADDITIONAL INFORMATION IS NEEDED FOR THE LAND DISPOSAL RESTRICTIONS REQUIREMENTS?

6.1 *IS MY WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS (LDR) NOTIFICATION REQUIREMENTS?*

The LDR program includes notification requirements that ensure that the appropriate information about the nature of the wastes and the type and status of treatment of the wastes is recorded and transferred to the receivers. The LDR Notification Form, which is part of the GRR (Part 2B), contains the information that needs to be transferred to the receiver for LDR purposes.

The questionnaire in Part 2A of the GRR (Declaration of Waste Streams Subject to Land Disposal Restrictions) will indicate if a LDR Notification Form (Part 2B of the GRR) is required to be completed.

TIP: If the generator does not know if the generated waste stream is being land disposed, then the generator must assume it is being land disposed and complete the LDR Notification Form (Part 2B of GRR) as part of the registration.

6.2 *WHAT ADDITIONAL INFORMATION IS REQUIRED ON AN LDR NOTIFICATION FORM?*

Land disposal treatment requirements are identified through the **Hazardous Waste Number**. For **each** hazardous waste number, **all** associated regulated constituents must be identified on the LDR Notification Form as part of the registration.

Note that during the determination of waste characterization (see Question 2.1), multiple characterizations may have been identified for a waste stream (e.g., listed waste which also exhibits corrosivity). You will need to ensure that you add to the LDR Notification Form, all applicable secondary characterizations, their corresponding hazardous waste numbers and the regulated constituents associated with the secondary characterization.

Commencing in January 2009, **all** underlying hazardous constituents (e.g., the regulated constituents listed in Schedule 6 of Reg. 347) that are present in a characteristic waste (i.e., corrosive, ignitable, leachate toxic and reactive) must also be identified on the LDR Notification Form as required for generators, transfer stations and processing facilities. For more information on completing this form please see the Manual.

Wastes that are subject to the LDR notification requirements must be identified on the form as being aqueous (contains less than 1 per cent total organic carbon by weight and less than 1 per cent total suspended solids by weight) or non-aqueous. The land disposal treatment requirement for a waste is different based on whether the waste is aqueous or non-aqueous.

TIP: The hazardous waste numbers for listed waste streams will start with the letters F, K, P, U or S. A waste stream will never have two hazardous waste numbers starting with the letters F, K, P, U or S unless the waste stream is a mixture of more than one listed waste.

If a listed waste is also a characteristic waste, all hazardous waste numbers must be identified in the LDR Notification Form, unless the treatment requirement for the listed waste contains the regulated constituents that caused the waste to be defined as characteristic waste. In this case, only the hazardous waste number for the listed waste has to be identified in the LDR Notification Form (i.e., hazardous waste numbers in schedule 5 would not need to be identified).

For example, the regulated constituents for the listed waste with the hazardous waste number K002 are chromium and lead. If a K002 waste exhibits a characteristic for a contaminant other than chromium and lead (i.e., cyanide), it is also a characteristic waste and the hazardous waste number (i.e., E006 for cyanide) must be identified. The hazardous waste numbers for chromium (D007) and lead (D008) do not apply since these regulated constituents are in the K002 listing.

TIP: For wastes that are subject to the LDR requirements, generator knowledge may not be sufficient to fully characterize wastes and additional analytical testing may be necessary to identify the regulated constituents and underlying hazardous constituents that must be treated.

6.3 IS THERE ANY OTHER INFORMATION REQUIRED FOR THE LDR NOTIFICATION FORM?

Yes. The LDR program allows for certain variances (see program reference documents noted in the *TIP* below). If one of these is applicable, this information must be provided.

For each waste, the treatment status must also be identified. Drop down menus have been provided in HWIN to simplify this process.

TIP: The Manual, LDR Handbook and Ministry fact sheets provide additional guidance on LDR program requirements.

7 WHEN DO I NEED TO UPDATE MY REGISTRATION?

7.1 *WHEN IS THE ANNUAL REGISTRATION REQUIRED?*

Reg. 347 under the *EPA* requires that generators of liquid industrial and hazardous waste register their waste generation facilities with the Ministry annually. Beginning on January 1 of each year, generators are able to renew their registration in HWIN or by sending in the completed GRR form. To maintain compliance with the regulation, generators must complete renewal prior to February 15.

7.2 WHEN DO I NEED TO UPDATE MY REGISTRATION?

You must also update your registration if there is any change from the information previously submitted. This must be done within 15 days of the change occurring.

This guide is for informational purposes only and is not intended to provide specific advice or recommendations in any circumstances. Moreover, this guide is not, and should not be construed as, legal advice. Please review Part V of the *Environmental Protection Act* and Regulation 347 (General – Waste Management) and, if you have any questions about the application or interpretation of these regulations or have other legal questions, you should consult a lawyer.

For more information contact:
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TABLE 1 – SUMMARY OF WASTE CHARACTERIZATION CRITERIA

Column 1	Column 2	Column 3	Column 4
Waste Characterization	My waste has the Waste Characterization identified in Column 1 if it meets the following criteria:	Small Quantity Exemption	Empty⁽¹⁾ Containers & Liners Hazardous
Severely Toxic (S)	Waste contains any one or more of the contaminants listed in Schedule 3 of Regulation 347 at a concentration greater than 1 part per million. Note: Characterization is based on <i>contaminants in waste</i> . Process knowledge (i.e., can these contaminants be present) and testing of the waste are key considerations in characterization.	None	Yes
Pathological Waste (P)	Waste meets definition of “pathological waste” in Section 1 of Regulation 347. Note: Characterization is based on <i>meeting a definition</i> . Knowledge of the waste is a key consideration in characterization.	None	Yes ⁽²⁾
PCB Waste (D)	Waste meets definition of PCB waste in Ontario Regulation 362. Generally, wastes that contain PCBs at concentrations greater than 50 parts per million (ppm) by weight, are PCB wastes. Note: Characterization is based on <i>meeting a definition</i> . Knowledge (i.e., can PCBs be present) and testing of the waste are key considerations in characterization.	See Reg. 362	Yes ⁽³⁾
Acute Hazardous Waste Chemicals (A)	Acute Hazardous Waste Chemicals and Hazardous Waste Chemicals are <i>commercial chemical products</i> or manufacturing intermediates that from time to time are off-specification, or otherwise unacceptable for use and become waste. The definition of commercial waste chemical includes materials such as pharmaceutical or pesticide waste products that contain active ingredients from Schedule 2 Part A and Schedule 2 Part B of Reg. 347. Active ingredients are chemical constituents that have been included in a formulated product for an intended effect. It is important to note that Schedules 2A and 2B are not lists of contaminants that, if present in a waste stream, make the waste stream hazardous. MSDS can serve as a key source of information for the characterization of these wastes.	1 kg/month	Yes ⁽⁴⁾
Hazardous Waste Chemicals (B)		5 kg/month	No
Industrial Hazardous Waste (H)	Waste meets a generic or process-specific description listed in Schedule 1 of Regulation 347. Note: Characterization is based on <i>generic and process-specific waste stream descriptions (i.e., a description of the waste or how the waste was generated)</i> . Process knowledge (and MSDS for F001 to F005 solvent wastes) is a key consideration in characterization. Most generators that are not in the chemical or heavy industrial sectors would have hazardous waste numbers in the range of F001 to F012.	5 kg/month	No
Ignitable (I), Corrosive (C) or Reactive (R)	Waste exhibits the properties of ignitability, corrosivity, or reactivity as defined in Section 1 of Regulation 347. Note: Characterization is based on <i>chemical properties</i> . MSDS, TDG classification and testing are key considerations in characterization.	5 kg/month	No
Leachate Toxic (T)	Waste produces a leachate containing any of the contaminants listed in Schedule 4 of Regulation 347 at a concentration equal to or in excess of the specified concentration. Note: Characterization is based on <i>results of the toxicity characteristic leaching procedure (TCLP)</i> and applies to both solids and liquids . Process knowledge (i.e., can contaminants be present) and testing are key considerations in characterization	5 kg/month	No
Liquid Industrial Waste (L)	Waste is liquid waste from industrial, commercial, manufacturing, research or experimental activities and is an obvious liquid or is a sludge that fails the slump test included in Schedule 9 of Regulation 347. Note: Characterization applies based on <i>physical properties</i> . For sludges, physical testing is a key consideration in characterization.	25 L/month	No

- (1) “Empty container” is defined in the regulation and means a container from which wastes and other materials have been removed using common removal practices such as pumping or pouring and that contain less than 2.5 centimetres of material on the bottom of the container.
- (2) Unless container is incinerated, autoclaved or otherwise sterilized.
- (3) Unless container is decontaminated pursuant to guidelines issued by the Ministry of the Environment or instructions issued by the Director.
- (4) For containers with a capacity in excess of 20 L or for inner liners weighing more than 10 kg that contained Schedule 2 Part A products, unless triple rinsed using appropriate solvent.