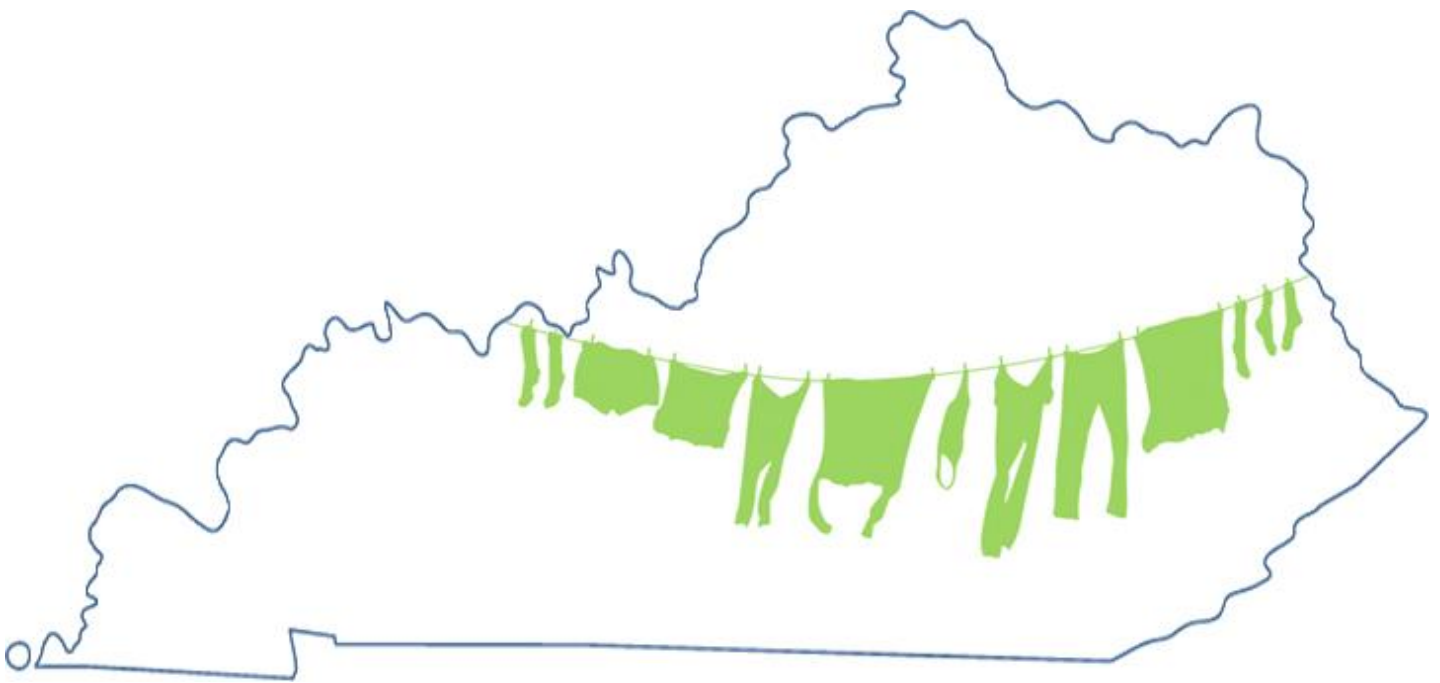


# **Kentucky Dry Cleaning**

**Environmental Compliance Workbook  
2016**



**Kentucky Division of Compliance Assistance  
Environmental Compliance Assistance Program  
300 Sower Boulevard  
Frankfort, KY 40601  
502-564-0323**

**The Kentucky Department for Environmental Protection gratefully acknowledges the following organizations in the development of this manual:**

**Kentucky Environmental Compliance Assistance Program  
Michigan Department for Environmental Quality  
National Pollution Prevention Roundtable**

The information in this manual is offered only as guidance. Specific requirements may vary with individual processes and/or businesses. Business owners are responsible for obtaining complete information about all applicable regulations. The Kentucky Division of Compliance Assistance (DCA) is not authorized to relieve any person from any requirement of federal regulations or Kentucky law through this workbook.

**The Kentucky Energy and Environment Cabinet will not discriminate against any individual or group on the basis of race, sex, religion, age, national origin, color, marital status, disability or political beliefs. Questions should be directed to the Division of Compliance Assistance, Environmental Compliance Assistance Program,  
300 Sower Boulevard, Frankfort, KY 40601.**

# INTRODUCTION

Small business owners know that environmental laws and regulations are complex and difficult to understand. Most regulations are not written for any one particular industry. Rather, they are written to apply to a diverse group of businesses and industries. As a result, dry cleaners must understand and comply with the same rules as large corporations. The problem is, most large corporations have staff trained specifically to work in compliance matters, and most small businesses, like dry cleaners, do not.

This workbook was written to help Kentucky dry cleaners understand their regulatory obligations. The regulations discussed in this book have been written in plain English, making them easier to understand and implement.

The workbook is one of a two-part compliance assistance package.

## **Part 1: *Kentucky Environmental Compliance Assessment Workbook***

This checklist contains a series of compliance questions, which generally require “yes” or “no” answers about whether or not your facility is following the applicable environmental requirements. You will use the workbook to help you answer these questions. After completing the checklist, you’ll know your facility’s compliance status with environmental regulations.

## **Part 2: *Kentucky Dry Cleaner Environmental Compliance Workbook (this workbook)***

This workbook explains the environmental protection standards that apply to your business and also includes best management practices and pollution prevention techniques that go beyond what is required by regulations. These practices and techniques can help your business minimize health risks and environmental impacts while saving money. This workbook should be used in conjunction with the accompanying Environmental Compliance Assessment Workbook and as a reference for your facility.

## WHERE TO GO FOR HELP

Questions or requests for additional information about the regulations discussed in this workbook should be directed to the following agencies:

- **Kentucky Division of Compliance Assistance (DCA)**  
Environmental Compliance Assistance Program  
300 Sower Boulevard  
Frankfort, KY 40601  
[www.dca.ky.gov](http://www.dca.ky.gov)  
800-926-8111
- **Kentucky Division for Air Quality**  
300 Sower Boulevard  
Frankfort, KY 40601  
[www.air.ky.gov](http://www.air.ky.gov)  
502-564-3999
- **Louisville Metro Air Pollution Control District**  
850 Barret Avenue  
Louisville, KY 40204  
[www.louisvilleky.gov/APCD/](http://www.louisvilleky.gov/APCD/)  
502-574-6000
- **Kentucky Division of Waste Management**  
300 Sower Boulevard  
Frankfort, KY 40601  
[www.waste.ky.gov](http://www.waste.ky.gov)  
502-564-6716
- **Kentucky Division of Water**  
300 Sower Boulevard  
Frankfort, KY 40601  
[www.water.ky.gov](http://www.water.ky.gov)  
502-564-3410
- **Kentucky Division of Emergency Management, SARA Title III**  
100 Minuteman Parkway  
Frankfort, KY 40601  
[www.kyem.ky.gov](http://www.kyem.ky.gov)  
800-255-2587
- **Kentucky State Fire Marshal**  
101 Sea Hero Road  
Suite 100  
Frankfort, KY 40601  
[www.dhbc.ky.gov/sfm](http://www.dhbc.ky.gov/sfm)  
502-573-0382

## WHERE TO GO FOR HELP (cont)

- **Kentucky Pollution Prevention Center**  
310 N. Whittington Parkway  
Burhans Hall, Room 206  
Louisville, KY 40222
- **Kentucky Small Business Development Center**  
330 East Main Street, Suite 210  
Lexington, KY 40507  
[www.ksbdc.org](http://www.ksbdc.org)  
888-475-SBDC (7232)
- **Kentucky Transportation of Hazardous Material**  
Kentucky State Police – Division of Commercial Vehicle Enforcement  
919 Versailles Road  
Frankfort, KY 40601  
[www.kentuckystatepolice.org/cve/index.html](http://www.kentuckystatepolice.org/cve/index.html)  
502-782-1800
- **Hazardous Materials Information Center**  
U.S. Department of Transportation  
[www.phmsa.dot.gov](http://www.phmsa.dot.gov)  
800-467-4972

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# CHAPTER 1: Air Quality Regulations


The dry cleaning industry operates equipment that emits air contaminants. Perchloroethylene (perc) dry-to-dry and transfer machines, petroleum machines, stills, and boilers all have the potential to emit air contaminants. Although some of this equipment may not directly discharge air contaminants to the ambient air (e.g., nonvented dry-to-dry machines), they do release air contaminants that eventually escape the building and enter the ambient air. This chapter discusses the air quality regulations to which your dry cleaning establishment may be subject.



## 1.1 NESHAP for Perchloroethylene Dry Cleaners

The ***National Emission Standard for Hazardous Air Pollutants (NESHAP) for Perchloroethylene Dry Cleaning Facilities*** is a federal regulation that was established to control air emissions of perchloroethylene (perc) from dry cleaners.

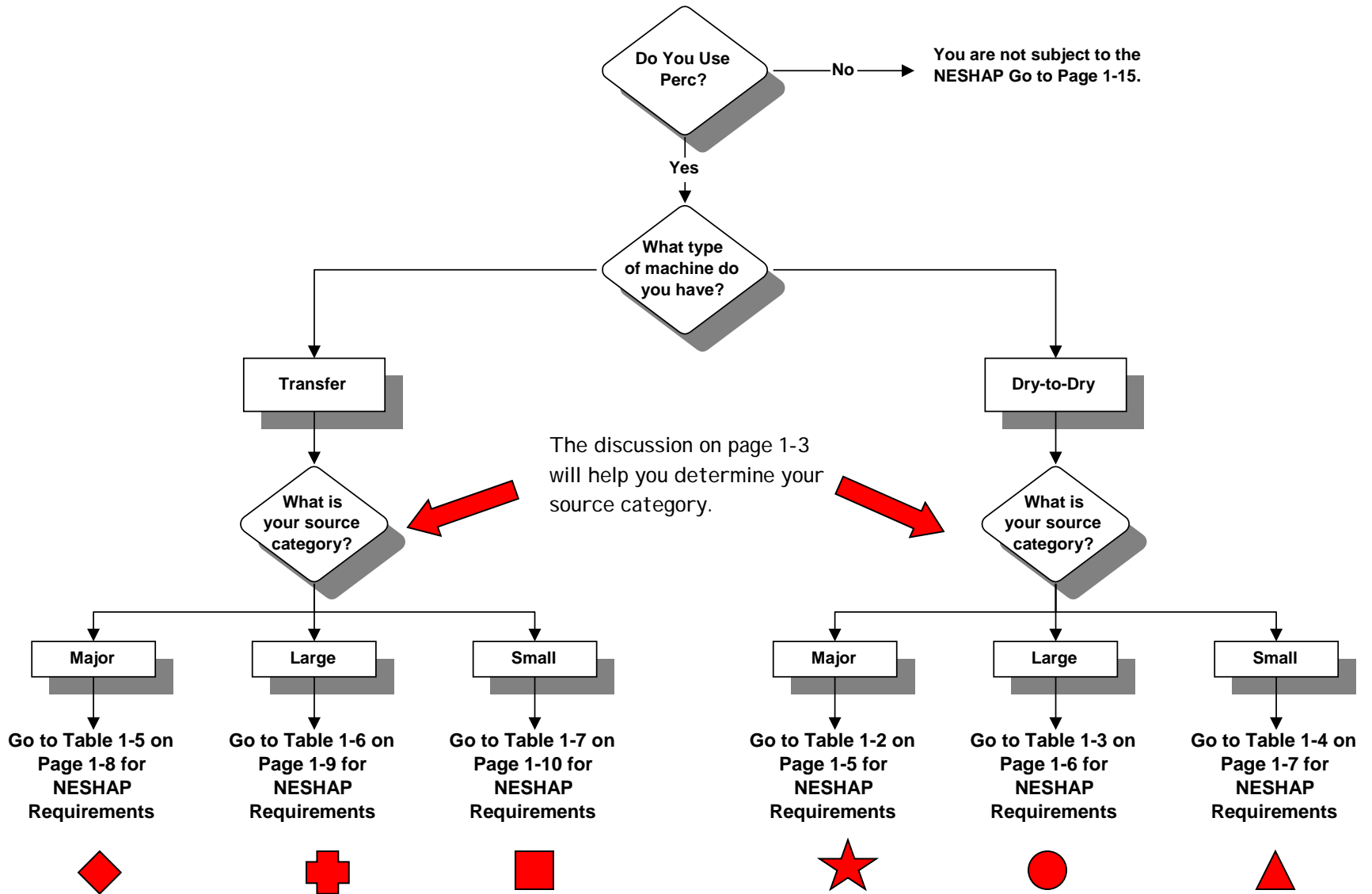
**ALL commercial and industrial dry cleaning facilities that use perchloroethylene are subject to some or all of the NESHAP requirements.**

	<b>AUDIT QUESTION A1</b> Does your facility use perchloroethylene?	.. YES .. NO - Skip to Section 1.3 (page 1-15)
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**Use the flow chart on the following page to determine what requirements you are subject to under NESHAP. The flow chart will direct you to a table that contains the requirements to which your facility is subject.**



# To What NESHAP Requirements Am I Subject?



**AUDIT QUESTION A2**

To what NESHAP requirements are you subject? (select from the list below)

- .. If you have a **dry-to-dry machine** and are a **“major”** source, go to Table 1-2.
- .. If you have a **dry-to-dry machine** and are a **“large”** source, go to Table 1-3.
- .. If you have a **dry-to-dry machine** and are a **“small”** source, go to Table 1-4.
- .. If you have a **transfer machine system** and are a **“major”** source, go to Table 1-5.
- .. If you have a **transfer machine system** and are a **“large”** source, go to Table 1-6.
- .. If you have a **transfer machine system** and are a **“small”** source, go to Table 1-7.

### DETERMINING YOUR FACILITY’S SOURCE CATEGORY

The NESHAP separates dry cleaning facilities into three source categories: **small area**, **large area** and **major**. Table 1-1 defines the source categories, which are based on your consumption of perc (gallons purchased per year). If you are unsure how to calculate your perc consumption, review the discussion below in Table 1-1.

**TABLE 1-1: SOURCE CATEGORIES**

Type of Dry Cleaning Machine(s)	Small Area Source	Large Area Source	Major Source
	Purchased less than:	Purchased between:	Purchased more than:
Only Dry-to-Dry Machines	140 gal perc/ 12-month period	140-2,100 gal perc/ 12-month period	2,100 gal perc/ 12-month period
Only Transfer Machine Systems	200 gal perc/ 12-month period	200-1,800 gal perc/ 12-month period	1,800 gal perc/ 12-month period
Both Dry-to-Dry and Transfer Machines	140 gal perc/ 12-month period	140-1,800 gal perc/ 12-month period	1,800 gal perc/ 12-month period

#### **How to Calculate Your Perc Usage?**

On the first business day of each month, calculate the amount of perc purchased in the previous month and compute a rolling total of consumption for the past 12 months. An example of how to calculate your first yearly perc consumption, and consequently your source category, is found on the following page. Use the Environmental Recordkeeping Calendar for Dry Cleaning Facilities as your Kentucky recordkeeping method for compliance.

If you move to a different source category, **you have 180 days to comply with the additional requirements**. Once you have moved to a higher source category, you will always be at that higher source category. For example, once a small area source facility moves up to a large area source facility, it cannot go back down to a small area source.

**Keep all receipts and a log of perc purchases on-site for a minimum of five years.**

Exceedances of the consumption levels in Table 1-1 will not create a change in source category if the exceedances are considered “episodic” (i.e., the exceedances are not repeated on a frequent basis). Any exceedance that occurs at least three years after the most recent prior exceedance would be considered episodic. For example, if a facility purchases a new machine and consequently had to purchase 200 gallons of perc to fill the storage tank, this increase in the purchase of perc would move the facility into the next higher source category. However, if the facility has not had any other exceedances in the last three years, then this “fill-up” could be considered episodic, and the facility would remain in its current source category.

### SAMPLE PERC PURCHASE RECORD

Month and Year	Quantity of Perc Purchased (GAL)	12-Month Running Total (GAL)	Notes
June 2014	50		
July 2014	0		
August 2014	20		
September 2014	20		
October 2014	0		
November 2014	50		
December 2014	40		
January 2015	20		
February 2015	0		
March 2015	20		
April 2015	40		
May 2015	40	300	
June 2015	20	270	$300 + 20 - 50 = 270$
July 2015	40	310	$270 + 40 - 0 = 310$

The 12-month running total = (the running total of the previous month) + (the current month's quantity) - (the quantity recorded 12 months ago).

$$300 + 20 - 50 = 270$$

$$270 + 40 - 0 = 310$$



**TABLE 1-2: NESHAP REQUIREMENTS FOR “MAJOR” SOURCE WITH DRY-TO-DRY MACHINE**

<p align="center"><b>New Machine Installed or Reconstructed On or After Dec. 9, 1991</b></p>	<p align="center"><b>Existing Machine Installed Before Dec. 9, 1991</b></p>
<p>“ Refrigerated condenser required</p> <ul style="list-style-type: none"> <li>· The air-perc stream shall not be vented to the atmosphere while the dry cleaning drum rotates.</li> <li>· The temperature of the air-perc stream on the outlet of the refrigerated condenser shall be measured weekly to determine that it is equal to or less than 45° F (±2° F) or 7.2° C (±1.1° C).</li> <li>· The date and temperature sensor monitoring results shall be maintained in a log for a period of five years.</li> <li>· A diverter valve shall be installed.</li> <li>· Make necessary repairs.</li> </ul> <p>“ The air-perc stream remaining in the machine at the end of the dry cleaning cycle shall be vented to a supplemental carbon adsorber before door opening.</p> <ul style="list-style-type: none"> <li>· The carbon adsorber shall not be bypassed or the air-perc stream shall not be released to the atmosphere at any time.</li> <li>· The concentration of perc in the dry cleaning machine drum at the end of the dry cleaning cycle shall be measured weekly to ensure that the concentration of perc is less than 300 parts per million per volume. A colorimetric detector tube shall be used to take the measurements.</li> <li>· The date and colorimetric detector tube monitoring results shall be maintained in a log for five years.</li> <li>· Make necessary repairs.</li> </ul> <p>“ Subject to Pollution Prevention, Recordkeeping and Reporting Requirements Identified in Tables 1-8, 1-9 and 1-10.</p>	<p>“ Refrigerated condenser or carbon adsorber required. (A carbon adsorber is satisfactory only if it was installed prior to Sept. 22, 1993.)</p> <p><b>For Refrigerated Condenser:</b></p> <ul style="list-style-type: none"> <li>· The air-perc stream shall not be vented to the atmosphere while the dry cleaning drum rotates.</li> <li>· The temperature of the air-perc stream on the outlet of the refrigerated condenser shall be measured weekly to determine that it is equal to or less than 45° F (±2° F) or 7.2° C (±1.1° C).</li> <li>· The date and temperature sensor monitoring results shall be maintained in a log for a period of five years.</li> <li>· A diverter valve shall be installed.</li> <li>· Make necessary repairs.</li> </ul> <p><b>For Carbon Adsorber:</b></p> <ul style="list-style-type: none"> <li>· The carbon adsorber shall not be bypassed to the vent or the air-perc stream shall not be released to the atmosphere at any time.</li> <li>· The concentration of perc in the exhaust of the carbon adsorber shall be measured weekly to determine that the concentration of perc is less than 100 parts per million per volume. A colorimetric detector tube shall be used to take the measurements.</li> <li>· The date and colorimetric detector tube monitoring results shall be maintained in a log for five years.</li> <li>· Make necessary repairs.</li> </ul> <p>“ Subject to Pollution Prevention, Recordkeeping and Reporting Requirements Identified in Tables 1-8, 1-9 and 1-10.</p>



**TABLE 1-3: NESHAP REQUIREMENTS FOR “LARGE” SOURCE WITH DRY-TO-DRY MACHINE**

<p align="center"><b>New Machine Installed or Reconstructed On or After Dec. 9, 1991</b></p>	<p align="center"><b>Existing Machine Installed Before Dec. 9, 1991</b></p>
<p>“ Refrigerated condenser required</p> <ul style="list-style-type: none"> <li>· The air-perc stream shall not be vented to the atmosphere while the dry cleaning drum rotates.</li> <li>· The temperature of the air-perc stream on the outlet of the refrigerated condenser shall be measured weekly to determine that it is equal to or less than 45° F (±2° F) or 7.2° C (±1.1° C).</li> <li>· The date and temperature sensor monitoring results shall be maintained in a log for a period of five years.</li> <li>· A diverter valve shall be installed.</li> <li>· Make necessary repairs.</li> </ul> <p>“ Subject to Pollution Prevention, Recordkeeping and Reporting Requirements Identified in Tables 1-8, 1-9 and 1-10.</p>	<p>“ Refrigerated condenser or carbon adsorber required. (A carbon adsorber is satisfactory only if it was installed prior to Sept. 22, 1993.)</p> <p><b>For Refrigerated Condenser:</b></p> <ul style="list-style-type: none"> <li>· The air-perc stream shall not be vented to the atmosphere while the dry cleaning drum rotates.</li> <li>· The temperature of the air-perc stream on the outlet of the refrigerated condenser shall be measured weekly to determine that it is equal to or less than 45° F (±2° F) or 7.2° C (±1.1° C).</li> <li>· The date and temperature sensor monitoring results shall be maintained in a log for a period of five years.</li> <li>· A diverter valve shall be installed.</li> <li>· Make necessary repairs.</li> </ul> <p><b>For Carbon Adsorber:</b></p> <ul style="list-style-type: none"> <li>· The carbon adsorber shall not be bypassed to the vent or the air-perc stream shall not be released to the atmosphere at any time.</li> <li>· The concentration of perc in the exhaust of the carbon adsorber shall be measured weekly to determine that the concentration of perc is less than 100 parts per million per volume. A colorimetric detector tube shall be used to take the measurements.</li> <li>· The date and colorimetric detector tube monitoring results shall be maintained in a log for five years.</li> <li>· Make necessary repairs.</li> </ul> <p>“ Subject to Pollution Prevention, Recordkeeping and Reporting Requirements Identified in Tables 1-8, 1-9 and 1-10.</p>



**TABLE 1-4: NESHAP REQUIREMENTS FOR “SMALL” SOURCE WITH DRY-TO-DRY MACHINE**

<b>New Machine Installed or Reconstructed On or After Dec. 9, 1991</b>	<b>Existing Machine Installed Before Dec. 9, 1991</b>
<p>“ Refrigerated condenser required</p> <ul style="list-style-type: none"> <li>· The temperature of the air-perc stream on the outlet of the refrigerated condenser shall be measured weekly to determine that it is equal to or less than 45° F (<math>\pm 2^\circ</math> F) or 7.2° C (<math>\pm 1.1^\circ</math> C).</li> <li>· The date and temperature sensor monitoring results shall be maintained in a log for a period of five years.</li> <li>· A diverter valve shall be installed.</li> <li>· Make necessary repairs.</li> </ul> <p>“ Subject to Pollution Prevention, Recordkeeping and Reporting Requirements Identified in Tables 1-8, 1-9 and 1-10.</p>	<p>“ Subject to Pollution Prevention, Recordkeeping and Reporting Requirements Identified in Tables 1-8, 1-9 and 1-10.</p>



**TABLE 1-5: NESHAP REQUIREMENTS FOR “MAJOR” SOURCE WITH TRANSFER MACHINE**

<p align="center"><b>New Machine Installed or Reconstructed On or After Dec. 9, 1991</b></p>	<p align="center"><b>Existing Machine Installed Before Dec. 9, 1991</b></p>
<p align="center"><b>NEW TRANSFER MACHINE SYSTEMS ARE PROHIBITED AFTER SEPT. 22, 1993.</b></p> <p><b>For transfer systems installed before Sept. 22, 1993:</b></p> <ul style="list-style-type: none"> <li>** Refrigerated condenser required                             <ul style="list-style-type: none"> <li>· The air-perc stream inside the washer shall not be vented to the atmosphere until the washer door is opened.</li> <li>· The difference between the temperature of the air-perc stream entering the refrigerated condenser and the stream exiting the refrigerated condenser on the washer shall be measured weekly to determine that the difference is equal to or greater than 20° F (11.1° C).</li> <li>· The date and temperature sensor monitoring results shall be maintained in a log for a period of five years.</li> <li>· The refrigerated condenser coil on the washer must be separate from the one on a dry-to-dry machine, dryer or reclaimer (they cannot share the coil).</li> <li>· Make necessary repairs.</li> </ul> </li> <li>** The washer and dryer must also be contained in an enclosure maintained under negative pressure and controlled by a separate carbon adsorber.                             <ul style="list-style-type: none"> <li>· The carbon adsorber shall not be bypassed to the vent or the air-perc stream shall not be released to the atmosphere at any time.</li> <li>· The concentration of perc in the exhaust of the carbon adsorber shall be measured weekly to determine that the concentration of perc is less than 100 parts per million per volume. A colorimetric detector tube shall be used to take the measurements.</li> <li>· The date and colorimetric detector tube monitoring results shall be maintained in a log for five years.</li> <li>· Make necessary repairs.</li> </ul> </li> <li>** Subject to Pollution Prevention, Recordkeeping and Reporting Requirements Identified in Tables 1-8, 1-9 and 1-10.</li> </ul>	<ul style="list-style-type: none"> <li>** Refrigerated condenser or carbon adsorber required. (A carbon adsorber is satisfactory only if it was installed prior to Sept. 22, 1993.)                             <ul style="list-style-type: none"> <li>· The air-perc stream inside the washer shall not be vented to the atmosphere until the washer door is opened.</li> <li>· The difference between the temperature of the air-perc stream entering the refrigerated condenser and the stream exiting the refrigerated condenser on the washer shall be measured weekly to determine that the difference is equal to or greater than 20° F (11.1° C).</li> <li>· The date and temperature sensor monitoring results shall be maintained in a log for a period of five years.</li> <li>· The refrigerated condenser coil on the washer must be separate from the one on a dry-to-dry machine, dryer or reclaimer (they cannot share the coil).</li> <li>· Make necessary repairs.</li> </ul> </li> <li>** The washer and dryer must also be contained in an enclosure maintained under negative pressure and controlled by a separate carbon adsorber.                             <ul style="list-style-type: none"> <li>· The carbon adsorber shall not be bypassed to the vent or the air-perc stream shall not be released to the atmosphere at any time.</li> <li>· The concentration of perc in the exhaust of the carbon adsorber shall be measured weekly to determine that the concentration of perc is less than 100 parts per million per volume. A colorimetric detector tube shall be used to take the measurements.</li> <li>· The date and colorimetric detector tube monitoring results shall be maintained in a log for five years.</li> <li>· Make necessary repairs.</li> </ul> </li> <li>** Subject to Pollution Prevention, Recordkeeping and Reporting Requirements Identified in Tables 1-8, 1-9 and 1-10.</li> </ul>


**TABLE 1-6: NESHAP REQUIREMENTS FOR “LARGE” SOURCE WITH TRANSFER MACHINE**

<b>New Machine</b> <b>Installed or Reconstructed On or After</b> <b>Dec. 9, 1991</b>	<b>Existing Machine</b> <b>Installed Before Dec. 9, 1991</b>
<p><b>NEW TRANSFER MACHINE SYSTEMS ARE PROHIBITED AFTER SEPT. 22, 1993.</b></p> <p><b>If new transfer systems installed before Sept. 22, 1993:</b></p> <ul style="list-style-type: none"> <li>“ Refrigerated condenser required           <ul style="list-style-type: none"> <li>· The air-perc stream inside the washer shall not be vented to the atmosphere until the washer door is opened.</li> <li>· The difference between the temperature of the air-perc stream entering the refrigerated condenser and the stream exiting the refrigerated condenser on the washer shall be measured weekly to determine that the difference is equal to or greater than 20° F (11.1° C).</li> <li>· The date and temperature sensor monitoring results shall be maintained in a log for a period of five years.</li> <li>· The refrigerated condenser coil on the washer must be separate from the one on a dry-to-dry machine, dryer or reclaimer (they cannot share the coil).</li> <li>· Make necessary repairs.</li> </ul> </li> <li>“ Subject to Pollution Prevention, Recordkeeping and Reporting Requirements Identified in Tables 1-8, 1-9 and 1-10.</li> </ul>	<ul style="list-style-type: none"> <li>“ Refrigerated condenser or carbon adsorber required. (A carbon adsorber is satisfactory only if it was installed prior to Sept. 22, 1993.)</li> </ul> <p><b>For Refrigerated Condenser:</b></p> <ul style="list-style-type: none"> <li>· The air-perc stream inside the washer shall not be vented to the atmosphere until the washer door is opened.</li> <li>· The difference between the temperature of the air-perc stream entering the refrigerated condenser and the stream exiting the refrigerated condenser on the washer shall be measured weekly to determine that the difference is equal to or greater than 20° F (11.1° C).</li> <li>· The date and temperature sensor monitoring results shall be maintained in a log for a period of five years.</li> <li>· The refrigerated condenser coil on the washer must be separate from the one on a dry-to-dry machine, dryer or reclaimer (they cannot share the coil).</li> <li>· Make necessary repairs.</li> </ul> <p><b>For Carbon Adsorber:</b></p> <ul style="list-style-type: none"> <li>· The carbon adsorber shall not be bypassed to the vent or the air-perc stream shall not be released to the atmosphere at any time.</li> <li>· The concentration of perc in the exhaust of the carbon adsorber shall be measured weekly to determine that the concentration of perc is less than 100 parts per million per volume. A colorimetric detector tube shall be used to take the measurements.</li> <li>· The date and colorimetric detector tube monitoring results shall be maintained in a log for five years.</li> <li>· Make necessary repairs.</li> </ul> <ul style="list-style-type: none"> <li>“ Subject to Pollution Prevention, Recordkeeping and Reporting Requirements Identified in Tables 1-8, 1-9 and 1-10.</li> </ul>





**TABLE 1-7: NESHAP REQUIREMENTS FOR “SMALL” SOURCE WITH TRANSFER MACHINE**

<p align="center"><b>New Machine Installed or Reconstructed On or After Dec. 9, 1991</b></p>	<p align="center"><b>Existing Machine Installed Before Dec. 9, 1991</b></p>
<p><b>NEW TRANSFER MACHINE SYSTEMS ARE PROHIBITED AFTER SEPT. 22, 1993.</b></p> <p><b>If new transfer systems installed before Sept. 22, 1993:</b></p> <ul style="list-style-type: none"> <li>.. Refrigerated condenser required                             <ul style="list-style-type: none"> <li>· The air-perc stream inside the washer shall not be vented to the atmosphere until the washer door is opened.</li> <li>· The difference between the temperature of the air-perc stream entering the refrigerated condenser and the stream exiting the refrigerated condenser on the washer shall be measured weekly to determine that the difference is equal to or greater than 20° F (11.1° C).</li> <li>· The date and temperature sensor monitoring results shall be maintained in a log for a period of five years.</li> <li>· The refrigerated condenser coil on the washer must be separate from the one on a dry-to-dry machine, dryer or reclaimer (they cannot share the coil).</li> <li>· Make necessary repairs.</li> </ul> </li> <li>.. Subject to Pollution Prevention, Recordkeeping and Reporting Requirements Identified in Tables 1-8, 1-9 and 1-10.</li> </ul>	<ul style="list-style-type: none"> <li>.. Subject to Pollution Prevention, Recordkeeping and Reporting Requirements Identified in Tables 1-8, 1-9 and 1-10.</li> </ul>



**AUDIT QUESTION A3**

Are you complying with the requirements in:

- Table 1-2 if you are a Major Source with dry-to dry machine
- Table 1-3 if you are a Large Source with dry-to dry machine
- Table 1-4 if you are a Small Source with dry-to dry machine
- Table 1-5 if you are a Major Source with transfer machine
- Table 1-6 if you are a Large Source with transfer machine
- Table 1-7 if you are a Small Source with transfer machine

.. **YES - Go to Table 1-8 (page 1-11)**

.. **NO - Out of Compliance**

**TABLE 1-8: NESHAP POLLUTION PREVENTION REQUIREMENTS**

**All commercial and industrial dry cleaning facilities, regardless of their source category, must comply with the pollution prevention requirements identified below.**

- .. Keep dry cleaning machine door closed, except for loading and unloading.
- .. Operate according to manufacturers' specifications.
- .. Drain cartridge filters for 24 hours before removal from the facility.
- .. Store waste in nonleaking, covered solvent tanks or solvent containers.
- .. Conduct a weekly (or biweekly if the dry cleaning facility is a small area source) leak detection program according to EPA Method 21. Area sources should conduct the inspections using a halogenated hydrocarbon detector or PCE gas analyzer that is operated according to the manufacturer's instructions. Major sources shall conduct the inspections using a PCE gas analyzer.
- .. During the inspection, the operator shall place the probe inlet at the surface of each component interface where leakage could occur and move it slowly along the interface periphery. The leak inspection must include:

- ü All hose and pipe connections, fittings, couplings and valves
- ü Door gaskets
- ü Filter gaskets
- ü Pumps
- ü Solvent tanks and containers
- ü Muck cookers, stills
- ü Water separator
- ü Exhaust dampers
- ü Diverter valves
- ü Cartridge filter housing



**Keep Door Closed!**

***If leaks are detected:***

- ü All leaks must be repaired within 24 hours.
- ü If repairs are required, parts must be ordered within two working days.
- ü All parts received must be installed within five working days.
- ü A written log must be kept of all repairs made.



**AUDIT QUESTION A4**

Are you in compliance with the NESHAP Pollution Prevention Requirements identified in Table 1-8?

- .. YES
- .. NO - Out of Compliance

**TABLE 1-9: NESHAP RECORDKEEPING REQUIREMENTS**

**All commercial and industrial dry cleaning facilities, regardless of their source category, must comply with the recordkeeping requirements identified below.**

- Keep operating manuals on-site.
- Keep a log of the following information for five years:
  - The volume of perc purchased each month (use the Kentucky Dry Cleaning Compliance Calendar for recordkeeping).
  - A 12-month running total of perc purchases calculated on the first working day of each month (see the “Sample Perc Purchase Record” on pages 1-4).
  - Dates of inspections and identification of components leaking.
  - Monitoring date and results if process vent control is required (i.e., temperature or colorimetric tube).
  - Dates of repairs.



**AUDIT QUESTION A5**

Are you in compliance with the NESHAP recordkeeping requirements identified in Table 1-9?

•• YES

•• NO - Out of Compliance

**TABLE 1-10: NESHAP REPORTING REQUIREMENTS**

**All commercial and industrial perc dry cleaning facilities, regardless of their source category, must complete the Initial Notification Report form.** Most dry cleaning facilities submitted this information in 1994 after the NESHAP was promulgated. This report form can be obtained by calling the Division for Compliance Assistance at 502-564-0323, Division for Air Quality, Technical Service Branch at 502-564-3999, or the Regional Air Quality Office (see end of chapter for regional phone offices).

- **The Initial Notification Report** – requires dry cleaners to acknowledge they are subject to the NESHAP and to declare their source category based on their perc purchases.
- **The Compliance Report for Pollution Prevention** – requires dry cleaners to certify compliance with the pollution prevention standards of the NESHAP.
- **The Compliance Report for Control Requirements** – requires dry cleaners to certify their perc consumption and whether or not it is in compliance with the process vent control standards. For new dry cleaning machines, the report must be submitted within 30 days after the machine is installed.

**AUDIT QUESTION A6**

Did you submit the following reports?

- Initial Notification Report
- Compliance Report for Pollution Prevention
- Compliance Report for Control Requirements

- YES
- NO - Out of Compliance

## 1.2 National Perchloroethylene Air Emission Standards for Dry Cleaning Facilities

The U.S. Environmental Protection Agency (EPA) promulgated revised standards to limit emissions of perc from existing and new dry cleaning facilities. These standards are in addition to the requirements described in the previous section.

### RULE REQUIREMENTS

The final rule affects three types of dry cleaners that use perc—large industrial and commercial dry cleaners, smaller “typical” dry cleaners (often found in shopping centers) and smaller dry cleaners located in residential buildings.

#### Large Industrial and Commercial Dry Cleaners

Large industrial and commercial dry cleaners are classified as “major sources,” meaning they emit more than 10 tons of perc a year. The final rule requires new and existing large industrial and commercial perc dry cleaners to use state-of-the-art equipment to detect perc leaks from the machines, repair the leaks and maintain records.

### **Small ‘Typical’ Dry Cleaners**

Typical dry cleaners are the type of dry cleaner you might see in a shopping center or as a stand-alone building. These dry cleaners are classified as “area sources,” which means they emit less than 10 tons of perc each year. These smaller dry cleaners are regulated by emissions standards known as generally available control technology (GACT) standards, issued in 1993. There are about 27,000 typical dry cleaners in the United States.

The final rule requires existing typical area source dry cleaners to:

- Eliminate all emissions from machines requiring the movement of wet clothes from one machine to another for drying (called transfer machines). Transfer machines are considered the highest-emitting type of dry cleaning equipment.
- Use specialized equipment monthly to detect perc leaks, repair such leaks and maintain records.
- New typical area source dry cleaners:
  - ü Are not permitted to install transfer machines.
  - ü Must add carbon adsorbers (devices that reduce perc vapors exiting the dry cleaning machine as the machine door is opened) to the closed-loop machines with refrigerated condensers that are required under the 1993 rule.
  - ü Must use the same type of specialized equipment as existing typical dry cleaners to monthly detect perc leaks, repair such leaks and maintain records.

### **Small Dry Cleaners in Apartment Buildings**

Like typical small dry cleaners, these co-residential cleaners are covered by emissions standards known as generally available control technology (GACT) standards, issued in 1993.

- Because residences in these co-residential buildings are located very close to these dry cleaners, residents’ exposures and their estimated cancer risks can be much higher than for typical area sources. The final rules eliminate perc emissions from co-residential dry cleaners.
- The requirements for existing co-residential dry cleaners are
  - ü To eliminate transfer machines and meet the same monitoring, leak detection and repair and recordkeeping requirements as typical small dry cleaners; and
  - ü To phase-out perc machines as those units wear out. This requirement will eliminate the use of perc by dry cleaners in residential buildings. All existing perc machines must be removed from residential buildings by Dec. 21, 2020. These dry cleaners may replace worn-out perc machines with newer available non-perc technology.
- In addition, new dry cleaning machines in residential buildings are not allowed to use perc. They must use an alternative cleaning method or locate in a nonresidential building.

### 1.3 New Source Performance Standard (NSPS) for Petroleum Dry Cleaners

This is a federal regulation that was established to limit the emission of volatile organic compounds (VOCs) from petroleum dry cleaners. This regulation applies to transfer machines, but not to dry-to-dry single unit machines.



#### AUDIT QUESTION A7

Does your facility use petroleum solvents in transfer machines?

.. YES

.. NO - Skip to Section 1.4  
(page 1-17)

#### ***Are You Subject to the NSPS?***

A petroleum dry cleaning facility is subject to the NSPS if

1. The TOTAL manufacturers' rated dryer capacity for the entire facility is equal to or greater than 84 pounds (38 kilograms)

#### **AND**

2. The equipment was installed after Dec. 14, 1982.

*If the dryer was installed between Dec. 14, 1982 and Sept. 21, 1984, in a facility with an annual solvent consumption level of less than 4,700 gallons (17,791 liters), the facility is not subject to the NSPS requirements.*

**Manufacturer's rated dryer capacity** is the dryer's rated capacity of articles, in pounds or kilograms of clothing articles per load, dry basis that is typically found on each dryer on the manufacturer's nameplate or in the manufacturer's equipment specifications. If the manufacturer's rated dryer capacity for all the dryers at the facility combined is equal to or greater than 84 pounds, then the source is subject to the NSPS.



#### AUDIT QUESTION A8

Are you subject to the NSPS for Petroleum Dry Cleaners?

.. YES

.. NO - Skip to Section 1.4  
(page 1-17)

Petroleum dry cleaning establishments that are subject to the NSPS must comply with the requirements identified in Table 1-11.

**TABLE 1-11: NSPS REQUIREMENTS**

<ul style="list-style-type: none"> <li>.. The dryer must be a solvent recovery dryer.</li> <li>.. The filter must be a cartridge filter.</li> <li>.. You must drain the cartridge filters in their sealed housings for at least eight hours prior to their removal.</li> <li>.. The manufacturer of the petroleum solvent dryer should have included leak inspection and leak repair cycle information in the operating manual and on a clearly visible label posted on the dryer.</li> <li>.. You must perform an initial test to verify that the flow rate of recovered solvent from the solvent recovery dryer at the termination of the recovery cycle is no greater than 0.05 liters per minute. This test shall be conducted for a period of no less than two weeks, during which no less than 50 percent of the dry loads shall be monitored for their final recovered solvent flow rate (see instructions for testing on next page).</li> <li>.. You need to maintain a copy of the initial performance test (see below).</li> </ul>
--

**Initial Performance Test**

The suggested point for measuring the flow rate of recovered solvent is the outlet of the solvent-water separator. Near the end of the recovery cycle, the entire flow of recovered solvent should be diverted to a graduated cylinder. As the recovered solvent collects in the graduated cylinder, the elapsed time is monitored and recorded in periods of greater than or equal to one minute. At the same time, the volume of solvent in the graduated cylinder is monitored and recorded to determine the volume of recovered solvent that is collected during each time period. The recovered solvent flow rate is calculated by dividing the volume of solvent collected per period by the length of time elapsed during the period and converting the result with appropriate factors into units of liters per minute. The recovery cycle and monitoring procedure should continue until the flow rate of solvent is less than or equal to 0.05 liters (16.9 ounces) per minute. The type of articles cleaned and total length of the cycle should then be recorded.



**AUDIT QUESTION A9**

Are you in compliance with the NSPS requirements identified in Table 1-11?

- .. YES
- .. NO - Out of Compliance

## 1.4 Permitting Prior to Installation

In addition to the Initial Notification Report discussed in 1.1, establishments that emit other air pollution sources in addition to dry cleaning equipment (i.e. boilers) may require a permit issued by the Kentucky Division for Air Quality (DAQ). Before a facility can legally install, relocate, modify or reconstruct equipment that emits air contaminants, it may have to apply for and receive an approved air quality permit prior to installation and operation from DAQ's Permit Review Branch (see Table 1-12). The facility's air quality permit will contain a list of conditions that you must comply with. [Jefferson County Facilities Only: Contact Louisville Metro Air Pollution Control District 502-574-6000].



**TABLE 1-12: PERMIT TO INSTALL REQUIREMENTS**

Dry cleaning establishments should obtain an air quality permit prior to installation and operation if the following dry cleaning and laundering equipment apply:

- .. Boilers that burn only natural gas and have a heat input capacity of 10,000,000 BTU/hr or greater.
- .. Coal-fired indirect heat exchangers or water heaters rated equal to or greater than 220,000 BTU/hr or the sulfur content is equal to or greater than 3.3 percent by weight.
- .. Oil-fired boilers that have a heat input of more than 2,000,000 BTU/hr or that burn oil containing 0.50 percent or greater sulfur by weight.
- .. Perc or petroleum dry cleaning machines with a capacity of over 100 pounds of clothes.
- .. Solvent distillation equipment that has a rated batch capacity of more than 55 gallons.



### AUDIT QUESTION A10


Does any of the equipment at your facility exceed the following thresholds?

- .. Boiler that burns only natural gas and has a heat input capacity equal to or greater than 10,000,000 BTU/hr.
- .. Coal-fired boiler or heater that has a heat input of 220,000 BTU/hr or greater or the sulfur content equal to or greater than 3.3 percent by weight.
- .. Oil-fired boiler that has a heat input of more than 2,000,000 BTU/hr or that burns oil containing 0.50 percent or greater sulfur by weight.
- .. Perc or petroleum dry cleaning machine with a capacity of over 100 pounds of clothes.
- .. Solvent distillation equipment that has a rated batch capacity of more than 55 gallons.

.. YES

.. NO - Go to  
Chapter 2  
(page 2-1)




	<p><b>AUDIT QUESTION A11</b></p> <p>Have you obtained an air quality permit prior to installation or operation of the equipment from the Division for Air Quality?</p>	<ul style="list-style-type: none"> <li>.. YES - Go to Chapter 2</li> <li>.. NO - Out of Compliance</li> </ul>
---	--	---

**TABLE 1-13: PERMIT APPLICATION REQUIREMENTS**

Dry cleaning establishments should complete at a minimum all three forms from Table 1-10 (page 1-13) and if equipment in Table 1-12 (page 1-17) applies, forms DEP7007AI, DEP7007A, DEP7007N, DEP7007P and DEP7007DD (if applicable). DEP forms can be found at <https://eec.ky.gov/Environmental-Protection/resources/Pages/Forms-Library.aspx> (select "Filter", "Air Quality", and then "Close").

**Jefferson County businesses need to contact Louisville Metro Air Pollution Control District for specific air requirements in that county.**

- .. All applicable DEP 7007 series forms must be provided to DAQ in triplicate.
- .. Mailing address for completed forms:  
 Kentucky Division for Air Quality  
 Permit Review Branch  
 300 Sower Boulevard  
 Frankfort, KY 40601  
 502-564-3999
- .. Additional help: Kentucky Division of Compliance Assistance (DCA) 502-782-6189.  
<https://eec.ky.gov/Environmental-Protection/resources/Pages/Forms-Library.aspx>
- .. Louisville Metro Air Pollution Control District [JEFFERSON COUNTY ONLY]  
 701 West Ormsby Avenue, Suite 303  
 Louisville, KY 40203  
 502-574-6000  
<http://www.louisvilleky.gov/APCD/>

	<p><b>AUDIT QUESTION A12</b></p> <p>Have you received your air quality permit from the Division for Air Quality?</p>	<ul style="list-style-type: none"> <li>.. YES - Go to Chapter 2</li> <li>.. NO - WAIT until you receive your permit before construction, modification or operation.</li> </ul>
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## 1.5 Where to Go for Help

<b>SUBJECT</b>	<b>State and Federal Air Quality Regulations</b>
<b>CONTACT</b>	Kentucky Division for Air Quality
<b>TELEPHONE</b>	502-564-3999
<b>WEBSITE</b>	<a href="https://eec.ky.gov/Environmental-Protection/Air/Pages/default.aspx">https://eec.ky.gov/Environmental-Protection/Air/Pages/default.aspx</a>
<b>SUBJECT</b>	<b>State and Federal Air Quality Questions and Assistance</b>
<b>CONTACT</b>	Kentucky Division of Compliance Assistance
<b>TELEPHONE</b>	502-564-0323
<b>WEBSITE</b>	<a href="https://eec.ky.gov/Environmental-Protection/Compliance-Assistance/Pages/default.aspx">https://eec.ky.gov/Environmental-Protection/Compliance-Assistance/Pages/default.aspx</a>
<b>SUBJECT</b>	<b>Federal Air Quality Regulations</b>
<b>CONTACT</b>	U.S. Environmental Protection Agency, Office of Air and Radiation
<b>WEBSITE</b>	<a href="http://www.epa.gov/air">http://www.epa.gov/air</a>
<b>SUBJECT</b>	<b>Kentucky Small Business Ombudsman</b>
<b>TELEPHONE</b>	502-564-0323
<b>WEBSITE</b>	<a href="https://eec.ky.gov/Environmental-Protection/Compliance-Assistance/Pages/default.aspx">https://eec.ky.gov/Environmental-Protection/Compliance-Assistance/Pages/default.aspx</a>
<b>SUBJECT</b>	<b>Louisville Metro Air Pollution Control District</b>
<b>TELEPHONE</b>	502-574-6000
<b>WEBSITE</b>	<a href="http://www.louisvilleky.gov/APCD/">http://www.louisvilleky.gov/APCD/</a>
<b>SUBJECT</b>	<b>Kentucky Small Business Development Center</b>
<b>TELEPHONE</b>	Call 1-888-475-SBDC (7232) or visit the website for the center near you
<b>WEBSITE</b>	<a href="http://www.ksbdc.org/">http://www.ksbdc.org/</a>

## Division for Air Quality Regional Offices

<p><b>Ashland Air Quality Regional Office</b></p> <p>1550 Wolohan Drive, Suite 1 Ashland, KY 4112-8942 <b>Phone:</b> 606- 929-5285 <b>Counties:</b> Bath, Boyd, Bracken, Carter, Elliott, Fleming, Greenup, Lawrence, Lewis, Mason, Menifee, Montgomery, Morgan, Robertson and Rowan</p>
<p><b>Bowling Green Air Quality Regional Office</b></p> <p>2642 Russellville Road Bowling Green, KY 42104 <b>Phone:</b> 270-746-7475 <b>Counties:</b> Adair, Allen, Barren, Butler, Cumberland, Edmonson, Green, Hart, Larue, Logan, Marion, Metcalfe, Monroe, Simpson, Taylor, Todd and Warren</p>
<p><b>Florence Air Quality Regional Office</b></p> <p>8020 Veterans Memorial Drive, Suite 110 Florence, KY 41042 <b>Phone:</b> 859-525-4923 <b>Counties:</b> Boone, Campbell, Carroll, Gallatin, Grant, Harrison, Henry, Kenton, Nicholas, Owen, Pendleton and Trimble</p>
<p><b>Frankfort Air Quality Regional Office</b></p> <p>300 Sowers Boulevard Frankfort, KY 40601 <b>Phone:</b> 502-564-3358 <b>Counties:</b> Anderson, Bourbon, Bullitt, Clark, Estill, Fayette, Franklin, Garrard, Hardin, Jessamine, Madison, Mercer, Nelson, Oldham, Powell, Scott, Shelby, Spencer, Washington and Woodford</p>
<p><b>Hazard Air Quality Regional Office</b></p> <p>1332 S KY Hwy 13, Suite 100 Hazard, KY 41701 <b>Phone:</b> 606-435-6022 <b>Counties:</b> Breathitt, Floyd, Johnson, Knott, Lee, Leslie, Letcher, Magoffin, Martin, Owsley, Perry, Pike and Wolfe</p>
<p><b>London Air Quality Regional Office</b></p> <p>875 South Main Street London, KY 40741 <b>Phone:</b> 606-330-2080 <b>Counties:</b> Bell, Boyle, Casey, Clay, Clinton, Jackson, Knox, Laurel, Lincoln, McCreary, Pulaski, Rockcastle, Russell, Wayne and Whitley</p>

**Louisville Metro Air Pollution Control District (Jefferson County only)**

701 West Ormsby Avenue, Suite 303  
Louisville, KY 40203  
**Phone:** 502-574-6000  
**Counties:** Jefferson

**Owensboro Air Quality Regional Office**

3032 Alvey Park Drive West, Suite 700  
Owensboro, KY 42303  
**Phone:** 270-687-7304  
**Counties:** Breckinridge, Daviess, Grayson, Hancock, Henderson, Hopkins, Meade, McLean, Muhlenberg, Ohio, Union and Webster

**Paducah Air Quality Regional Office**

130 Eagle Nest Drive  
Paducah, KY 42003  
**Phone:** 270-898-8468  
**Counties:** Ballard, Caldwell, Calloway, Carlisle, Christian, Crittenden, Fulton, Graves, Hickman, Livingston, Lyon, McCracken, Marshall and Trigg

# CHAPTER 2: Waste Management Regulations

Kentucky dry cleaners may generate three types of waste – solid, universal or hazardous. Your legal responsibility as a generator of any quantity of hazardous waste extends from "cradle to grave." It covers the time from when the waste was first generated through its ultimate disposal. This chapter discusses the regulations pertaining to the disposal of these wastes.



## IN THIS CHAPTER...

- 2.1 Solid Waste
- 2.2 Universal Waste
- 2.3 Hazardous Waste
  - 2.3.1 CESQG Requirements
  - 2.3.2 SQG Requirements
  - 2.3.3 Selecting a Transporter and TSD
- 2.4 Frequently Found Violations
- 2.5 What Is "Treatment"
- 2.6 Where to Go for Help

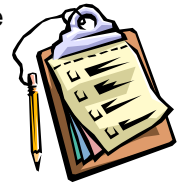
You might find it difficult to understand which waste regulations apply specifically to your business. If so, contact the Division of Compliance Assistance, Division of Waste Management (DWM) main office, one of the regional Waste Management offices or an environmental consultant for help after reading this chapter.

## BEST MANAGEMENT PRACTICES – WASTE REDUCTION OPPORTUNITIES

*Not required, but recommended*

You can conduct a waste survey to properly identify many types and quantities of waste and determine how to reduce waste generation. When you conduct your waste survey:

1. Tour your whole facility and ask your employees questions about what is being done and what is being generated as waste. Ask for their suggestions about how waste could be reduced. Consider the wastes likely being generated from activities such as:
  - Cleaning processes (using perc, petroleum solvents, spot removers)
  - Building and grounds maintenance (such as cleaning sludge from tanks; replacing disposable filters; painting buildings; changing light bulbs and using floor cleaners, pesticides and insecticides)
  - Office activities (such as changing toner cartridges used in your copiers and computer printers)
2. Trace all chemical purchases for each step of every process or activity of your business. Consider whether you could substitute materials that would generate less or no hazardous waste.
3. Identify where in-house recovery and reuse of hazardous waste are possible. If you are interested in recycling on-site, check the regulations or discuss it with your DWM regional office to be sure you will not need to be permitted as a hazardous waste treatment facility. Also check with your Division for Air Quality regional office (see page 1-21) to see if an air quality permit is necessary for your proposed recycling unit.



### BEST MANAGEMENT PRACTICES FOR WASTE MANAGEMENT *(continued)*

4. Observe if employees are creating more hazardous waste by mixing other materials with known hazardous waste. For example, your business could reduce the volume of hazardous waste by avoiding placement of nonhazardous waste in the same container as one holding waste solvents.
5. Determine if different nonhazardous wastes are being mixed together. Doing so will usually make recycling difficult, if not impossible, and disposal more expensive.
6. Develop and maintain an accurate inventory control of all products. This will help eliminate excessive inventory. Buying in bulk or ordering on a schedule will not save you money if you have to dispose of the product because its shelf life expired.

Once you know where your wastes are being generated, you may be able to reduce your disposal costs by implementing waste reduction and recycling programs at your business. Not only will you save money on disposal costs, you might save money by purchasing less material and even earn money from selling the collected materials.

**Waste reduction** involves implementing activities that result in less waste being generated. These activities include the following:

- .. Change dry cleaning equipment, solvents, and processes so that less waste is created.
- .. Purchase supplies that have less packaging.
- .. Have materials shipped in returnable and reusable containers.
- .. Use materials on a “first-in, first-out” basis so products do not become too old to use.
- .. Replace disposable materials with reusable and recyclable materials.
- .. Establish an incentive program that encourages workers to suggest ways to reduce waste.
- .. Train employees in waste reduction methods.



Some solvents can be carefully collected and reused rather than discarded as waste, such as using condensate water containing perc as part of the prespotting solution.



**AUDIT QUESTION B1**

Have you reviewed the “Best Management Practices - Waste Reduction Opportunities?”

- .. YES
- .. NO - Recommended



**AUDIT QUESTION B2**

Have you implemented any measures to reduce the amount of waste generated at your facility?

- .. YES
- .. NO - Recommended

## 2.1 Is Your Waste a Solid Waste?

You must determine if your waste is a solid waste according to **40 CFR 261.2**. Solid waste includes garbage, refuse, sludge or other discarded material (including solids, semi-solids, liquids and contained gaseous materials).




Examples of solid waste that might require disposal include:

- Nonrecyclable office paper
- Breakroom waste, such as discarded food
- Packaging materials such as nonrecyclable empty containers

**TABLE 2-1: SOLID WASTE DISPOSAL REQUIREMENTS**


<p>.. Haul solid waste to a legal disposal facility:</p> <ul style="list-style-type: none"> <li>· Landfill</li> <li>· Incinerator</li> <li>· Transfer/processing facility</li> </ul> <p><i>Solid waste can be hauled by yourself or a solid waste hauler. Please check with your local city or county for any additional requirements.</i></p> <p>.. Store solid waste in leak-proof covered containers.</p> <p>.. Local ordinances may require that your dumpster be enclosed in a fenced area.</p> <p>.. Except for disposal in permitted landfills, open dumping of waste is prohibited</p> <p>.. If you ship your solid waste out of your county to another Kentucky county, check with your county planning agency or with your local DWM regional office (list on page 2-45) to make sure it will be going to a disposal facility listed in the solid waste management plan for your county (KRS 224.43-345(m))</p> <p>.. If you are uncertain if a solid waste would be considered a hazardous waste or how to properly manage it, contact your DWM regional office to discuss your disposal options.</p> <p>.. <b>Open burning of business waste is prohibited.</b> On-site incineration of some waste may be allowed if the proper equipment and controls are in place and a permit is obtained from the Division for Air Quality. For more details on incineration, contact the Division for Air Quality, Permit Review Branch at 502-564-3999.</p>
---

<p><b>AUDIT QUESTION B3</b></p>	
<p> Is the solid waste generated at your facility stored and discarded according to the guidelines identified in Table 2-1?</p>	<p>.. YES</p> <p>.. NO - Out of Compliance</p>



**TABLE 2-2: BEST MANAGEMENT PRACTICES FOR SOLID WASTE MANAGEMENT**

<b>BEST MANAGEMENT PRACTICES - <i>Not required, but recommended</i></b>
<p>The removal of these and other bulky items from the trash can significantly lower solid waste disposal costs because your dumpster will not fill up as fast. You might also want to determine if you generate enough other materials to make collection of those items worthwhile. For more information, contact the DWM Recycling and Local Assistance Branch at 502-564-6716.</p> <p><b>Reduce or Recycle or Reuse.</b> Consider collecting:</p> <ul style="list-style-type: none"> <li>ü Office paper</li> <li>ü Corrugated cardboard</li> <li>ü Hangers</li> <li>ü Plastic film, like garment bags and shrink wrap</li> <li>ü Wood pallets</li> <li>ü 55-gallon drums</li> <li>ü Other containers</li> <li>ü Solvents recovered through distillation</li> </ul>

	<p><b>AUDIT QUESTION B4</b></p> <p>Have you instituted any of the best management practices for solid waste management identified in Table 2-2?</p>	<ul style="list-style-type: none"> <li>.. YES</li> <li>.. NO - Recommended</li> </ul>
---	---	---

The following dry cleaner waste solvents have a flash point over 140° F, and therefore may be managed as solid waste **as long as they are not mixed with other wastes**:

- GreenEarth
- Drylene 800
- Rynex
- DF-2000.

All other solvents should be managed as a hazardous waste.

## 2.2 Is Your Solid Waste a Universal Waste?

This section discusses the general requirements regarding universal waste disposal. The extent to which you are regulated depends on the amount of universal waste you generate within a specific time period. Follow Steps 1 and 2 on the following pages.



- Step 1. Determine if you generate universal waste**
- Step 2. Determine if you are in compliance with the universal waste requirement**


Once you have completed these steps you will be able to identify the universal waste requirements that apply to your business. This section separates out the requirements by generator status category. If you have any questions about universal management, call the Division of Compliance Assistance or your DWM regional office to discuss your requirements.

### STEP 1: Determine If You Generate Universal Waste

Businesses have the choice of handling specific wastes as a **“universal waste”** instead of managing them as a hazardous waste. If wastes that can be considered universal wastes are not handled as such, then they must be treated as hazardous wastes. The following items may be handled as universal waste:



- Electric lamps, including fluorescent, high-intensity discharge, sodium vapor, mercury vapor, neon, and incandescent bulbs.
- Batteries, including lead acid and dry cell types, as long as they are undamaged and not leaking.
- Thermostats that contain mercury
- Some pesticides, including certain suspended, canceled or unused pesticides.

	<b>AUDIT QUESTION B5</b>	
	Do you generate any of following “universal” wastes?	.. YES
	.. Electric lamps, including spent fluorescent tubes, high-intensity discharge, sodium vapor, mercury vapor, neon and incandescent bulbs.	.. NO – Skip to Section 2.3
	.. Batteries, including lead acid and dry cell types	(page 2-8)
	.. Thermostats that contain mercury	
	.. Pesticides	

**Advantages of Handling Wastes as a Universal Waste:**

- ü If you choose to manage these waste streams as a universal waste, you do not include this quantity in determining your generator status. This may allow you to reduce your generator status level. For example, a large-quantity generator that manages part of its hazardous waste stream as a universal waste may be able to become a small-quantity generator.
- ü Facilities can store universal wastes up to one year. This is a longer storage time than allowed for small-quantity and large-quantity generators of hazardous waste.
- ü There is less labeling required for storage of universal waste than what is required for hazardous waste. The labeling is specific to the waste.
- ü A hazardous waste manifest and the use of registered hazardous waste transporter are not

**STEP 2: Determine If You Are in Compliance with the Universal Waste Requirements**

The requirements for handling your universal waste will depend on if you are a small- or large-quantity handler.

- ∅ If you accumulate **fewer than 11,000 pounds** of universal wastes at any one time, you are a **“small-quantity handler”** of universal waste.
- ∅ If you accumulate **11,000 pounds or more** of these wastes at any one time, you are a **“large-quantity handler”** of universal waste. This workbook is not intended for large-quantity handlers. Contact your inspector, DWM regional office (list on page 2-45), or the DWM main office at 502-564-6716 for information about the requirements that apply to your business.

**TABLE 2-4: UNIVERSAL WASTE REQUIREMENTS**

***Recordkeeping***

As a **Small-Quantity Handler**, you are not required to keep a record of their universal waste shipments. However, the DWM recommends records be kept to verify proper management.

***Accumulation Time Limits***

Universal waste handlers can store universal waste for up to **one year** after generation or after receiving the waste from another handler. A longer storage time may be allowed if it is proven that it is necessary to accumulate enough universal waste to facilitate proper recovery, treatment or disposal.

**UNIVERSAL WASTE REQUIREMENTS (continued)**

- .. You must be able to show how long you have had the waste. This can be done by one of the following:
  - Labeling the container with the first date universal waste was put into it or when the container was received.
  - Labeling the individual item with the date it was considered a waste or received as a universal waste.
  - Placing the universal waste in a specific storage area and identifying the earliest date that any universal waste was put in that area.
  - Using any other method that clearly demonstrates how long the universal waste has been accumulated.

**Container**

- .. Universal waste must be stored in a way that prevents any spills or releases. Containers must be kept closed, in good condition and be compatible with the type of universal waste stored in the containers.

**Labeling**

- .. You must label the individual universal waste (such as each thermostat) or the container holding the waste with the following:
  - Electric lamps: the words “*Universal Waste—Lamp(s)*,” or “*Waste Lamp(s)*,” or “*Used Lamp(s)*”. Batteries: the words “*Universal Waste—Battery(ies)*,” or “*Waste Battery(ies)*,” or “*Used Battery(ies)*.”
  - Mercury thermostats: the words “*Universal Waste—Mercury Thermostat(s)*,” “*Waste Mercury Thermostat(s)*,” or “*Used Mercury Thermostat(s)*.”
  - Pesticides: include the legible label that was on or accompanied the original product and the “*Universal Waste-Pesticide(s)*” or “*Waste-Pesticide(s)*.” If the pesticide label is not legible, then use the appropriate label as required by the U.S. Department of Transportation (DOT).

**Emergency Training**

- .. Inform employees who handle or have responsibility for managing universal waste about the proper handling and emergency procedures relative to their responsibilities and appropriate for the type of universal waste handled at that facility.

**AUDIT QUESTION B6**

Are you managing your universal waste according to the universal waste requirements identified in Table 2-4?

.. YES

.. NO - If not treated as universal waste, these wastes must be managed as hazardous wastes. See Section 2.3 (page 2-8).

## 2.3 Is Your Solid Waste a Hazardous Waste?

This section discusses the many requirements regarding hazardous wastes in the dry cleaning industry and the proper disposal procedures. The extent to which you are regulated depends on the amount of hazardous waste you generate within a specific time period. Follow Steps 1-3 on the following pages.

- Step 1. Determine if you generate hazardous waste**
- Step 2. Determine how much hazardous waste you generate**
- Step 3. Determine your “generator status”**



Once you have completed these steps, you will be able to identify the hazardous waste requirements that apply to your business. This section separates the requirements by generator status category. If you have any questions about hazardous waste management or requirements for large-quantity generators (LQG), call the Division of Compliance Assistance or your DWM regional office.

**Note: This workbook does not discuss in detail nor is it intended for LQGs.**

### Hazardous Waste and Dry Cleaners

Some of the most commonly used solvents in the dry cleaning industry are:

- Perchloroethylene (also known as tetrachloroethylene or "perc")
- Valclene® Solvent or Fluorocarbon 113
- Petroleum solvents
- Trichloroethane

During the cleaning, extraction and drying process, dry cleaners may produce one or more of the following wastes:

- Filters and filter media
- Separator water
- Spent solvents and solvent containing rags (from spill cleanup)
- Spent carbon and cartridges from carbon absorbers
- Cook powder residues
- Still residues from distillation units
- Spot cleaner

#### Examples

*Hazardous wastes from perchloroethylene plants include:*

- Still bottoms from solvent distillation (the entire weight)
- Spent filter cartridges (total weight of the cartridge and remaining solvent after draining)
- Cooked powder residue (the total weight of drained powder residues from diatomaceous or other powder filter systems after heating to remove excess solvent)

*Hazardous wastes from Valclene® plants include:*

- Still bottoms from solvent distillation (the entire weight)
- Spent filter cartridges (total weight of the cartridge and remaining solvent after draining)

*Hazardous wastes from petroleum solvent plants include:*

- Still bottoms from solvent distillation (the entire weight)

Most dry cleaners generate hazardous waste. Hazardous wastes are classified in two ways according to the regulations. To be a regulated hazardous waste, the material must either be **listed** as a hazardous waste (**401 KAR 31:040**) or exhibit **one or more of the four hazardous waste characteristics**: ignitable, corrosive, reactive and toxic (**401 KAR 31:030**).

Listed hazardous wastes are listed by name or process in the Kentucky Administrative Regulations (KARs), specifically in 401 KAR 31:040. For example, perchloroethylene or perc used in dry cleaning is a listed hazardous waste with a hazardous waste code of F002 when it becomes a waste or is spent. However, perc has the waste code U210 as a pure commercial chemical product if discarded prior to use or if there are discarded residues from the original manufacture container. Also, spill residues from the cleanup of perc product spills are also considered to be U210 hazardous waste. Another example of a listed waste is Valclene® (trichlorotrifluoroethane), which is identified with the EPA waste code F002.

Any other waste coming in contact with a listed waste also becomes a listed waste by virtue of what is known as the "mixture rule." This includes wastes such as filters, filter media, sludge and any other material that comes into contact with listed wastes. For example, if perc is spilled on concrete, whether once or many times, removal of the concrete may be required to prevent subsequent contamination of the property.

A characteristic waste exhibits one or more of the four hazardous characteristics (ignitability, reactivity, corrosivity and toxicity) as defined in 401 KAR 31:030. For example, a waste solvent exhibits the characteristic of ignitability if it has a flashpoint below 140 °F.

Perchloroethylene, or perc, is a listed hazardous waste (EPA Hazardous Waste Number D039) due to its toxicity. The characteristic of toxicity is determined by use of the Toxicity Characteristic Leaching Procedure (TCLP). This analytical test simulates the acidic conditions found in a landfill and determines how much of certain regulated substance would leach from the waste if placed in a landfill.

**Note: If you use a petroleum solvent (like Stoddard Solvent), you should check with your sales representative to determine the scientific names of the chemicals used in the formulation. Once you know the scientific names of the chemicals, you can contact the Division of Compliance Assistance to help you find the correct EPA waste number. Almost all dry cleaning solvents are listed and use the F002 EPA waste code.**

## STEP 1: Determine If You Generate Hazardous Waste



Federal and state regulations (**401 KAR 31:010 Section 3, 40 C.F.R. 261.3**) define wastes as hazardous if they are either characteristic or listed wastes, as described on page 2-9. Hazardous wastes may have more than one specific code due to origination from different processes or uses. The reason for this is that the difference may make the waste a different threat to human health or the environment. Depending on the waste, you may have some waste to which several waste numbers apply. For example perc waste may have F002 or U210 waste codes.

All waste generators, except households, are required by law to determine if any of their waste is hazardous waste. Your business must keep records of its waste evaluations and other information used to determine what type of waste you have. These records must be kept at least three years after the waste was shipped for treatment, storage or disposal.



Use the descriptions and examples provided below to determine if you generate hazardous wastes that are listed or characteristic. If you cannot determine if your solid waste is hazardous or cannot find the solid waste generated in the following lists or characteristics, then you should have the material tested by an approved testing facility or a consulting service for hazardous properties.

### Listed Waste

Listed waste includes waste materials listed by name or generation sources on the federal and Kentucky lists of hazardous waste. Table 2-5 identifies many of the listed wastes that may be found at dry cleaning establishments.

**TABLE 2-5: LISTED WASTES**

List	Description	Common Examples
"F" list	Waste from listed nonspecific sources.	Spent solvents, cooked powder residue (from perc plants), still residues and spent cartridge filters containing perc that have a hazardous waste number of F002 and xylene, which has a waste number of F003.
"K" list	Waste from listed specific sources. These are wastes from specifically identified industries.	Dry cleaning facilities typically do not generate these hazardous wastes.
"P" & "U" lists	Discarded commercial chemical products.	Unused perc, which has a hazardous waste number of U210, xylene with a waste number of U239, toluene with a waste number of U220 and other spotters with waste numbers to be determined (e.g., trichloro acetic acid [TCA] and trichloroethylene [TCE]).

**Characteristic Waste**

Even if your waste does not appear on one of the hazardous waste lists, it still might be regulated as hazardous waste if it exhibits one or more of the characteristics in Table 2-6.

**TABLE 2-6: CHARACTERISTIC WASTES**

Characteristic	Common Examples
<b>Ignitable</b> - Starts burning easily; liquid with a flash point below 140° F, solid that spontaneously ignites or oxidizing material. These wastes have a hazardous waste number of D001.	Stoddard solvent, isopropanol, naphtha, methyl isobutyl ketone, mineral spirits, still residues containing petroleum solvents, solvent-soaked rags and oxidizers (e.g., bleach, nitrates and peroxides)
<b>Corrosive</b> - Dissolves metals or burns skin; pH less than or equal to 2.0 or greater than or equal to 12.5. These wastes have a hazardous waste number of D002.	Caustics like alkaline cleaners and ammonia solutions
<b>Reactive</b> - Undergoes rapid or violent chemical reaction and necessitates special handling requirements. These wastes have a hazardous waste number of D003.	Organic peroxides, perchlorates, acetylene chloride (Also cyanides, sulfides and explosives, but these are not anticipated at dry cleaning facilities)
<b>Toxic</b> - Poisonous to humans and other living organisms. These are sometimes called TCLP wastes. Hazardous waste numbers are assigned to specific materials and include D004 through D043.	Perc (can be both a listed and characteristic waste), fluorescent lamps, dry cell batteries, various metal-bearing solutions, some pesticides and other organic chemicals

**AUDIT QUESTION B7**

Do you generate any listed or characteristic hazardous wastes? (review the examples in Tables 2-5 and 2-6)

.. YES

.. NO - Go to Chapter 3 (page 3-1)

**AUDIT QUESTION B8**

Have you kept the records, test results, MSDSs or other documentation used for your waste determinations for at least three years from the last date your hazardous waste was sent to a disposal facility?

.. YES

.. NO - Out of Compliance



## STEP 2: Determine How Much Hazardous Waste You Generate

### Counting Your Waste

All wastes are considered generated as soon as you remove them from use. This means that filters are counted when they are removed from the cleaning machine. Still bottoms are counted when they exit the distillation unit. Dirty liquid solvents are counted as described below. In addition, products can become subject to the waste management regulations if you quit operating the dry cleaning equipment for more than 90 days.

If you remove dirty liquid solvent from the cleaning machine and transfer it by hand to a distillation unit, the entire weight of the solvent must be counted as generated hazardous waste. In addition, you must register with the Hazardous Waste Branch (HWB) as a recycler.

If your dry cleaning equipment and distillation unit are combined (hard-piped), you will only need to count the still bottoms that exit the cleaning unit as generated hazardous waste. In addition, you won't need to register as a recycler. As long as the liquid solvent remains in your dry cleaning equipment, then it is considered to be a product in use and is not regulated as a waste.

If your business uses perchloroethylene or Valclene®, then you must count the weight of the dirty filter cartridge as generated F002 hazardous waste. In addition, still bottoms are regulated as generated F002 hazardous waste.

Well-drained filter cartridges or drained filter muck are considered solids. If you use a petroleum solvent, it is likely to meet the criteria for ignitable solids; therefore, they are usually hazardous wastes. If you are unsure if the waste is hazardous, have the material tested by an approved testing facility or a consulting service.

It is recommended that when you count your hazardous waste, you attempt to identify the largest amount you will ever generate in a calendar month. For instance, you may wish to use the months of October or November to determine how much waste your business would likely produce since those are traditionally the busiest months for dry cleaners.

The easiest way to determine your monthly waste is to use your manifests from the hazardous waste facility. **You can also estimate your monthly waste by using the following rule of thumb:**

- One 55-gallon drum can hold approximately 740 lbs. (337 kg) of perc.
- One 15-gallon drum can hold approximately 200 lbs. (92 kg) of perc.

### Rules on Mixing Hazardous Wastes

Neither characteristic nor listed wastes cannot be diluted. For example, when a listed waste comes into contact with non-listed filter cartridges (for example), the entire contaminated filter cartridge becomes a listed hazardous waste. Thus, the weight of both the filter and the spent perchloroethylene it contains are counted as the generated hazardous waste F002.

It is important to know that attempting to mix any hazardous waste after it is generated to make it non-hazardous is considered treatment and treatment requires prior approval from the Division of Waste Management.

Use the worksheet below to calculate how many pounds of hazardous waste your facility generates in one calendar month. *Note: A facility CANNOT AVERAGE MONTHLY AMOUNTS. A facility must use ACTUAL totals of waste generated in each calendar month to determine its generator status.*

**HAZARDOUS WASTE WORKSHEET**

Hazardous Waste		Monthly Generation		
		Gallons	lbs/gallon*	Pounds
Spent solvent ( <i>do not include spent solvents that are reclaimed and returned to the dry cleaning process for reuse---provided the entire process is enclosed</i> )	.. Perc		x 13.54 =	
	.. Petroleum solvents (flash point below 140° F)**		x 7 =	
	.. Other solvents (flash point below 140° F)**		x 8 =	
Unused products that are to be discarded	.. Perc		x 13.54 =	
	.. Petroleum solvents (flash point below 140° F)**		x 7 =	
	.. Other unused <i>liquids</i> that are hazardous		x 8 =	
	.. Other unused <i>solids</i> that are hazardous			
Water contaminated with cleaning solvent that is stored on-site			x 8.34 =	
Spent filter cartridges				
Cooked powder residue				
Still residues from solvent distillation (solids)				
Solvent-soaked disposable wipes (if facility is not operating under exemption variance from 401 KAR 31:010, Section 4 until Kentucky formally adopts the solvent wipe rule decision effective Jan. 31, 2014, under 40 CFR Part 261.)				
Universal wastes that are <b>not</b> being managed according to the universal waste requirements (see Step 2)				
			<b>TOTAL:</b>	

\* Multiply the number of gallons generated by this number to determine the number of pounds generated.

\*\*Solvents with a flash point above 140° F (e.g., Green Earth, Drylene 800, DR-2000, Rynex) are not considered hazardous wastes if not mixed with a hazardous waste.

Use this number to determine your generator status in Step 3.

### STEP 3: Determine Your Hazardous Waste Generator Status

Your company's generator status is determined by the amount of hazardous waste you produce in each calendar month of the year. Waste amounts cannot be averaged, and generator status can change from month to month. There are three categories of hazardous waste generators; Conditionally Exempt Small Quantity Generator (CESQG), Small Quantity Generator (SQG) and Large Quantity Generator (LQG). To determine your hazardous waste generator status, use the total from the hazardous waste worksheet in Step 2.

<b>Generator Category</b>	<b>Monthly Hazardous Waste Generation Rate</b>	<b>Maximum Amount of Hazardous Waste That Can Be Accumulated On-site</b>
Conditionally Exempt Small Quantity Generator (CESQG)	220 pounds (100 kg) or less in a calendar month	2,200 pounds (1,000 kg) No time limit
Small Quantity Generator (SQG)	Greater than 220 pounds (100 kg), but less than 2,200 pounds (1,000 kg) in a calendar month	13,200 pounds (6,000 kg) 180 days or 270 days (if transporting greater than 200 miles)
Large Quantity Generator (LQG)	2,200 pounds (1,000 kg) or more in a calendar month	No maximum amount 90 days

HAZARDOUS WASTE COUNTING				
Type of Hazardous Waste	Dry Cleaner A (Waste)	Does This Count?	Dry Cleaner B (Waste)	Does This Count?
Lint	3 pounds	Yes	10 pounds	Yes
Water from water separator	10 gal @ 8.34 pounds per gal equals 83.4 pounds	Yes	30 gallons @ 8.34 pounds per gallon, equals 150.2 pounds	Yes
Aerosol cans	2 pounds	Yes	0	Yes
Fluorescent lamps/tubes	2 pounds	Yes	2 pounds	Yes
Spent solvents and solvent containing rags (from spill cleanup)	1 pound	Yes	2 pounds	Yes
Unused solvents and cleaning products that will be thrown away	5 pounds	Yes	4 pounds	Yes
Paint and solvent from building maintenance	5 pounds	Yes	5 pounds	Yes
Spill debris containing solvents	2 pounds	Yes	5 pounds	Yes
Sludge containing perc	2 pounds	Yes	20 pounds	Yes
Filters containing perc	1 pound	Yes	6 pounds	Yes
Sludge from evaporator	2 pounds	Yes	25 pounds	Yes
<b>Total of hazardous waste generated during that one month</b>	108.4 pounds	CESQG (Generator Category)	245.8 pounds	SQG (Generator Category)

The rest of this chapter provides the requirements that apply to each generator category.

- ∅ If you are a **Conditionally Exempt Small Quantity Generator (CESQG)**, go to Section 2.3.1, which starts on the next page, to find the requirements that apply to your business.
- ∅ If you are a **Small Quantity Generator (SQG)**, go to Section 2.3.2, which starts on page 2-27, to find the requirements that apply to your business.
- ∅ If you are a **Large Quantity Generator (LQG)**, it is recommended that you contact your DWM regional office. This workbook is not intended for LQGs. Your DWM regional inspector or the Division of Compliance Assistance can provide you with appropriate information and assistance for complying with the hazardous waste regulations.

#### AUDIT QUESTION B9

What is your generator status?



- ∅ Conditionally Exempt Small Quantity Generator (CESQG) - Go to page 2-17
- ∅ Small Quantity Generator (SQG) - Go to page 2-27
- ∅ Large Quantity Generator (LQG) - Contact your DWM Regional Office (list on page 2-45)

## 2.3.1 Conditionally Exempt Small Quantity Generator (CESQG) Requirements

### CESQG Identification Numbers

CESQGs are not required by the Kentucky Division of Waste Management, Hazardous Waste Branch, to register or to obtain an EPA identification number. However, some hazardous waste transporters require an identification number before they will accept shipment. Additionally, should a CESQG want to have an identification number, the DWM will provide an EPA ID number. The number is used on the shipping manifests, which are discussed later.

To obtain a complimentary generator identification number, complete, sign and submit the **Registration of Hazardous Waste Activity Form DEP7037**. The form and instructions may be downloaded off the Internet at <https://eec.ky.gov/Environmental-Protection/Waste/hazardous-waste/Pages/hazardous-waste-forms.aspx> or you may call 502-564-6716 to obtain a printed copy. There is no fee for CESQGs to obtain a number.

#### ***Do I need to get a new identification number if I already have an EPA or Kentucky identification number?***


No. However, if your facility changes its generator status or makes other changes that may affect the requirements to which you are subject, you need to contact the Division of Compliance Assistance at 502-564-0323 or the DWM's Hazardous Waste Branch at 502-564-6716.

	<b>AUDIT QUESTION B10</b>	.. YES
	Does your CESQG facility have a site identification number?	.. NO - Recommended for ease of shipping and tracking, but not required in Kentucky.

### CESQG Accumulation

CESQGs may accumulate up to 2,200 pounds (1,000 kg.) of hazardous waste on-site. However, a facility may wish to send waste off-site long before approaching this threshold. This limit was set so that a small business could accumulate enough hazardous waste to make shipping and disposal more economical.

Hazardous waste must be properly stored at your facility to prevent contamination of the environment. It is recommended that you keep a log to document when waste was generated.

	<b>AUDIT QUESTION B11</b>	.. YES
	Is there less than 2,200 pounds of hazardous waste on-site?	.. NO - Out of Compliance


## CESQG Container Management

Hazardous waste is commonly stored in either portable containers, such as pails, 55-gallon or 15-gallon drums, totes or in aboveground storage tanks. Contact your DWM regional office for information regarding specific hazardous waste storage requirements. Chapter 4 provides more information on regulations affecting storage tanks. In addition, the aboveground storage of flammable and combustible liquids may also be regulated by the **KYOSHA General Industry Safety Standards, Part 1910.106, Flammable and Combustible Liquids and Part 1910.39, Fire Prevention Plans** and your local municipality's fire prevention code.



**TABLE 2-8: BEST MANAGEMENT PRACTICES FOR CESQG CONTAINER MANAGEMENT**

<b>BEST MANAGEMENT PRACTICES - Recommended</b>	
<b>Container Management</b>	
<ul style="list-style-type: none"> <li>“ Keep containers of wastes that could react with each other separated by a physical barrier, like a dike, berm, or wall, or by a safe distance.</li> <li>“ Store hazardous waste containers on a surface that prevents spills and leaks to the environment. The surface should not allow any material to leak through, and it should have no cracks or gaps. The surface should also prevent spills and leaks from running over the edge onto the ground. A sealed concrete pad with a sealed curb around it, overpack drum or a spill control pallet is recommended.</li> <li>“ Store containers on a raised platform off the ground to prevent flooding or mixing with wash water.</li> </ul>	
<b>Container Inspections and Record Keeping</b>	
<ul style="list-style-type: none"> <li>“ Check all containers at least once a week to ensure that they are not leaking or rusting and that they have no bulges.</li> <li>“ Know how much waste you have stored. Make sure you do not meet or exceed the 2,200-pound limit (just under 3 full drums of perc).</li> <li>“ Keep a record of the results of your weekly container inspections, including:                             <ul style="list-style-type: none"> <li>• Date and time of the inspection,</li> <li>• Name of the person who inspected the containers,</li> <li>• Total number of containers,</li> <li>• Condition of the containers,</li> <li>• Any notes or observations about the containers and</li> <li>• Date and nature of any repairs or corrective actions.</li> </ul> </li> </ul> <p><b><i>In compliance with weekly required hazardous waste maintenance, the “Dry Cleaner Compliance Calendar” may be used for monitoring and record keeping; however, you are not required to use this form.</i></b></p> <ul style="list-style-type: none"> <li>“ Keep the records of your container inspections at your shop for three years.</li> </ul>	
<b>Container Spill Control</b>	
<ul style="list-style-type: none"> <li>“ When you are opening, handling or storing containers, be very careful to avoid rupturing the containers or causing them to leak or spill.</li> <li>“ If you have a leak or spill, you should stop immediately, contain the leak and repair or replace the container.</li> <li>“ Maintain a spill kit for the accumulation area.</li> </ul>	

	<p><b>AUDIT QUESTION B12</b></p> <p>Have you instituted any of the best management practices for container management identified in Table 2-8?</p>	<ul style="list-style-type: none"> <li>“ YES</li> <li>“ NO - Recommended</li> </ul>
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## CESQG Labeling Requirements

The proper labeling of waste helps to ensure that it is not mismanaged. All employees should be aware of labeling procedures, but it is a good idea to put one person in charge of making sure the wastes are correctly identified and labeled. Labeling also helps to protect the workers. If the contents of drums are not known, the chances of a worker being exposed to hazards or being injured are great. Reactions could occur if wastes that are incompatible are accidentally mixed.



CESQGs are not required to use any specific label. However, it is a good practice that the container is labeled as a hazardous waste and includes what is being stored in the container (e.g., “spent perc” or “spent solvent”). Information can be stenciled on the containers or commercially prepared labels can be purchased. You may also use the shipping label as long as the information is filled out. Make sure the label you use does not become unreadable or dissolve if exposed to the weather or hazardous waste. This can be a problem with containers holding solvents. Containers with unknown contents are bad from an employee risk standpoint and from a DWM enforcement standpoint.



### AUDIT QUESTION B13

Is the CESQG hazardous waste that is stored in accumulation areas labeled?

- .. YES
- .. NO - Out of Compliance

### TABLE 2-9: CESQG LABELING REQUIREMENTS FOR HAZARDOUS WASTE SHIPMENT

Hazardous waste must be shipped in containers acceptable for transportation and properly labeled according to the U.S. DOT requirements.

A container must have the headings “*Generator Name and Address*” and “*Manifest Document Number,*” with that information provided. This label and others are available from commercial firms including mail-order companies. Properly labeled containers also include:

- .. Labels clearly identifying the type of waste and its hazards in that particular container.
- .. Words or symbols for characteristics, such as “flammable” and “corrosive” that are clear and understandable to employees.
- .. Protection of the label from solvents and weather. This can be done by covering the label with varnish or clear packing tape and keeping the container under roof cover.

Your hazardous waste hauler should be able to assist you in properly labeling the containers for transport. Contact the Kentucky State Police Division of Commercial Vehicle Enforcement at 502-782-1800 or see the website at <http://kentuckystatepolice.org/commercial-vehicle-enforcement/> for additional transportation requirements.





**AUDIT QUESTION B14**

Is hazardous waste that is being shipped off-site in compliance with the labeling requirements identified in Table 2-9?

.. YES

.. NO - Out of Compliance

## **CESQG Employee Emergency Training**

CESQGs do not have specific training requirements under the hazardous waste regulations; however, it is recommended that you familiarize employees with emergency procedures; emergency equipment; emergency systems (such as communication or alarm systems, response to fires or explosions, shutdown of operations, response to unplanned sudden or non-sudden releases of hazardous waste) and their roles in implementing any such contingency plan relevant to their positions.

**TABLE 2-10: BEST MANAGEMENT PRACTICES FOR CESQG EMERGENCY TRAINING****BEST MANAGEMENT PRACTICES - Recommended****TRAINING**

**A good employee training program should teach your shop's staff how to**

- .. Identify hazardous waste. After being trained, your employees should
  - Know which materials and wastes in your shop are hazardous, and their proper EPA codes
  - Be able to tell when a new product or waste might be hazardous,
  - Know how to read and use Material Safety Data Sheets (MSDSs) and
  - Understand warning labels on hazardous products.
- .. Inspect and handle hazardous wastes. After being trained, your employees should
  - Avoid spills (for example, by using funnels, drip pans and absorbent materials);
  - Use equipment to protect themselves (such as gloves and respirators);
  - Keep hazardous wastes separate from one another and from other materials;
  - Store materials and wastes correctly (such as labeling waste containers and marking the date when you first place waste into an empty container) and
  - Avoid improper disposal of waste (by not dumping hazardous waste on the ground, in drains, or dumpsters; by not burning hazardous waste or letting it evaporate; and by not mixing hazardous waste with non-hazardous waste).
- .. Follow Emergency Response Procedures. After being trained, your employees should know how to
  - Respond to spills or other accidents,
  - Respond to communications and alarm systems,
  - Contact emergency responders (fire, police and ambulance),
  - Find emergency equipment,
  - Extinguish a small fire and when to try to do so,
  - Contain and clean up a waste spill,
  - Follow your shop's emergency plan and
  - Use evacuation plans and routes.
- .. Prevent Pollution. After being trained, your employees should:
  - Know how to reduce the amount of hazardous waste they generate by carefully managing inventories, substituting less toxic materials where possible and recovering and recycling waste.
  - Keep waste containers closed except as otherwise necessary.
- .. You should provide training to all new employees within six months of hiring them. You should provide refresher training every year.

**AUDIT QUESTION B15**

Have you instituted any of the best management practices for employee emergency training identified in Table 2-10?


- .. YES
- .. NO - Recommended

## CESQG HAZARDOUS WASTE DISPOSAL

CESQGs are not required to hire a registered hazardous waste transporter or dispose of their solid hazardous waste at a permitted hazardous waste disposal facility. However, it is recommended that you use a permitted hazardous waste disposal facility or recycle your waste. A list of local recycling sites is available at <https://eec.ky.gov/Environmental-Protection/Waste/recycling-and-local-assistance/recycling/Pages/default.aspx> (This page contains links to lists of recyclers by county or commodity.)


**TABLE 2-11: CESQG SOLID WASTE DISPOSAL REQUIREMENTS**

<ul style="list-style-type: none"> <li>.. Your waste that is <b>NOT</b> considered a hazardous waste can be disposed of at a sanitary landfill if the landfill authority will accept it. Check with your local solid waste provider for any specific questions.</li> <li>.. Do not treat your hazardous waste at your shop by burning it or allowing it to evaporate into the air.</li> </ul>
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	<p><b>AUDIT QUESTION B16</b> Are you complying with hazardous waste disposal requirements identified in Table 2-11?</p>	<ul style="list-style-type: none"> <li>.. YES</li> <li>.. NO - Out of Compliance</li> </ul>
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**TABLE 2-12: BEST MANAGEMENT PRACTICES FOR CESQG WASTE DISPOSAL**

<b>BEST MANAGEMENT PRACTICES - <i>Not Required but Recommended</i></b>	
<b>Disposal</b>	
<ul style="list-style-type: none"> <li>.. Dispose of your hazardous wastes that are solids in one of the following ways:                             <ul style="list-style-type: none"> <li>· Ship the hazardous waste to a permitted recycling, treatment, storage or disposal facility.</li> </ul> </li> <li>.. Do not dispose of your solid hazardous wastes in a solid waste landfill, municipal waste incinerator or in a dumpster.</li> </ul>	

	<p><b>AUDIT QUESTION B17</b> Have you instituted any of the best management practices for waste disposal identified in Table 2-12?</p>	<ul style="list-style-type: none"> <li>.. YES</li> <li>.. NO - Recommended</li> </ul>
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## CESQG Manifests

The multicopy manifest forms are designed to track hazardous waste shipments from their point of generation to their final destination. Specific requirements depend on the type of waste shipped. **CESQGs are not required to manifest hazardous waste shipments in Kentucky. However, many hazardous waste transporters require manifests for hazardous waste traceability.**

### ***When Are Manifests Not Required?***

For the majority of CESQG generators, manifesting will be required. However, manifesting is not required if the following applies.

CESQGs haul their own **hazardous waste** in amounts of 55 gallons or less to a designated facility if the following conditions are met:

- ü A record of the source and quantity of waste and where the waste is being transported to accompanies the waste shipment.
- ü The generator obtains a signature from the designated facility acknowledging receipt of the waste and provides a copy of the record to that facility.
- ü The generator keeps a copy of the shipment records for at least three years.
- ü The designated facility is managed according to the hazardous waste regulations.

It is advised that you discuss this manifest exemption with your DWM regional office.



#### **AUDIT QUESTION B18**


Are you required to manifest your hazardous wastes?

.. YES

.. NO - Go to Chapter 3  
(page 3-1)

**TABLE 2-13: MANIFEST RECOMMENDATIONS FOR CESQGs**

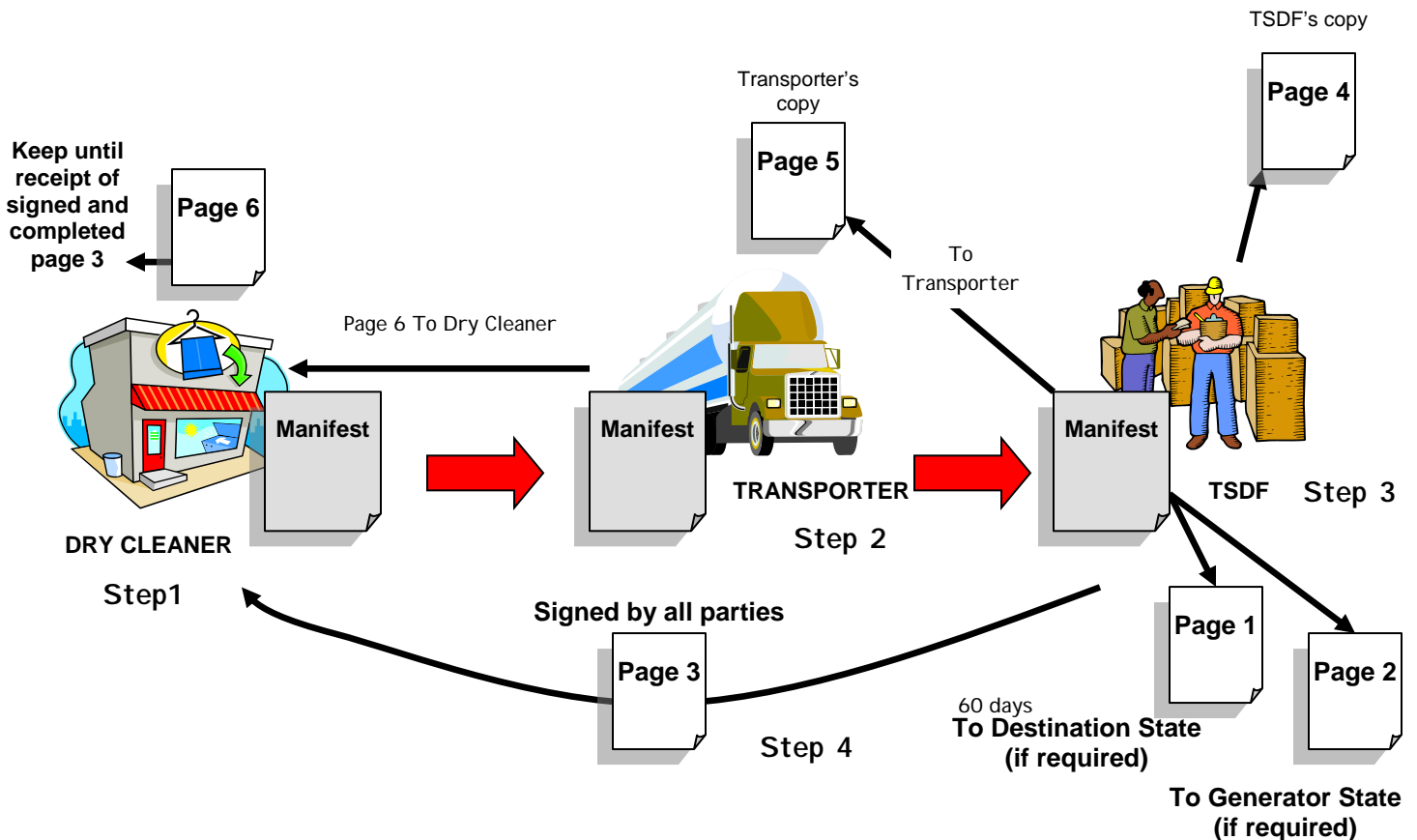
- .. CESQGs are not required to manifest hazardous waste shipments in Kentucky. However, many hazardous waste transporters require manifests for hazardous waste traceability unless exempt (see “When Are Manifests Not Required” on the previous page).
- .. Use the manifest form instructions to properly list your wastes on the manifest form.
- .. The generator of the waste, transporter and disposal facility that receives the waste must each sign and keep a copy of the manifest as they handle the waste (review the diagram on the next page).
- .. Keep a copy signed by the hauler and disposal facility on file for at least three years.

	<p><b>AUDIT QUESTION B19</b></p> <p>Are you complying with the manifest requirements identified in Table 2-13?</p>	<ul style="list-style-type: none"> <li>.. YES</li> <li>.. NO - Out of Compliance</li> </ul>
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***Where Can I Get Manifests?***

Usually, your waste transporter will provide you with the proper manifest. However, you can also obtain blank copies from the EPA and U.S. DOT. Information and instructions are posted on the EPA website <http://www.epa.gov/hwgenerators/hazardous-waste-manifest-system>. If you have further questions, contact the Division of Waste Management, Hazardous Waste Branch, at 505-564-6716 or Division of Compliance Assistance at 502-564-0323

## MANIFEST PROCEDURE FOR SHIPMENTS WITHIN KENTUCKY



1. Complete the manifest forms using the instructions provided.
2. Your transporter will sign the manifest forms and provide you with one copy (page 6). Page 6 should be kept in your records until you receive a completed copy of the manifest (page 3) from your treatment, storage or disposal facility (TSDF) in Step 4.
3. The disposal facility will sign the manifest forms and provide the transporter with a copy (page 5).
4. The disposal facility will send you a copy of the manifest form with the transporter and disposal facility signature within 30 days. When you receive the blue copy, you can dispose of the gold copy you received from the transporter in Step 2.

**NOTE:** If the waste was shipped out of state, you must

- a. Meet the receiving state's requirements and
- b. Submit a copy (page 1) of the manifest to the destination state (your disposal facility (TSDF) may provide this service for you).

### **What Should I Do If I Don't Receive My Copy of the Manifest from My Disposal Facility?**

- If you are a Conditionally Exempt Small Quantity Generator and have not received a copy of the manifest from your disposal facility within 35 days, contact the transporter and disposal facility operator to determine what happened with your shipment. No exception reports are needed by the DWM for CESQGs.

## 2.3.2 Small Quantity Generator (SQG) Requirements

### SQG Registration Requirements and Identification Numbers

All small quantity generators of hazardous waste must obtain an EPA identification number. These numbers are used to track hazardous wastes. The number is used on the shipping manifests, which are discussed later.

To obtain a generator identification number, complete, sign and submit the “**Registration of Hazardous Waste Activity Form DEP7037.**” The form and instructions may be downloaded from the Internet at <https://eec.ky.gov/Environmental-Protection/Waste/hazardous-waste/Pages/hazardous-waste-forms.aspx> or you may call 502-564-6716 to obtain a printed copy. There is a minimum \$300 annual registration fee to obtain a number. An annual handler user charge may also be assessed for certain hazardous waste activities.

The registration fee shall be made payable to the Kentucky State Treasurer. See Schedule 1 of the registration instructions to find out what your total registration fee is.

#### ***Do I Need to Get a New Identification Number If I Already Have An EPA or Kentucky Identification Number?***

No. However, if your facility changes its generator status or makes other changes that may affect the requirements that you are subject to, a Registration of Hazardous Waste Activity form must be submitted to the DWM’s Hazardous Waste Branch. The form must be completed in its entirety, as each registration **supersedes** the previous one. SQGs must pay a modification fee (minimum \$50). The facility is required to submit a modification registration form not later than 30 days following the change(s) (**401 KAR 32:010, Section 3**). For additional questions, contact the Division of Compliance Assistance at 502-564-0323 or the DWM’s Hazardous Waste Branch.



#### **AUDIT QUESTION B20**

Does your facility have a site identification number?

.. YES

.. NO - Out of Compliance

### SQG Land Disposal Restrictions

You must send a one-time written notice with the initial shipment of hazardous waste to your disposal facility containing specific language advising the disposal facility whether or not the hazardous waste shipment is prohibited from land disposal. A new notification must be sent when there is a waste or facility change. This is called a land ban notification, also known as a land disposal restriction (LDR). Refer to 40 CFR 268.7(a) for more information.

Keep copies of the land ban notifications and certifications for at least three years after the last shipment of that waste.

Discuss your specific LDR requirements with your disposal facility or DWM regional office. Many disposal facilities have preprinted the specific statements on forms that you can use to meet this requirement and will help you properly fill out the information.

**AUDIT QUESTION B21**

Have you submitted a land ban notification (land disposal restriction) to your disposal facility?

- .. YES
- .. NO - Out of Compliance

## SQG Accumulation Time Limits

There are specific requirements regarding how long you can store hazardous waste before shipping. Table 2-14 explains the accumulation time limits for hazardous waste being stored in a satellite container or a designated storage area.

**TABLE 2-14: SQG ACCUMULATION TIME LIMITS**

- .. It is permissible to accumulate up to **55 gallons** of most hazardous wastes (15 gallons of perc) or one quart of acutely hazardous waste, in a labeled storage container at the point of generation as long as the operator has control of the process generating the waste (these are known as **satellite containers**). There is no limit on how long this container can be kept at its location as long as it is being used on a regular basis and the volume limit is not exceeded. Once the container volume exceeds the allowable amount, it must be dated and moved into the storage area within three days.
- .. SQGs are allowed to accumulate hazardous waste on-site for up to 180 days (or 270 days if the distance to the disposal site is over 200 miles). The total waste quantity must not exceed 13,200 pounds (6,000 kilograms) of nonacute hazardous waste or 2.2 pounds (1kilogram) of acute or severely toxic hazardous waste. If you exceed this period, you will be required to obtain an operating permit for the storage facility from the DWM.
- .. During this time period, hazardous waste must be properly stored at your facility to prevent contamination of the environment. You must comply with the state and federal regulations discussed in this chapter.

**Remember: You are responsible for any environmental contamination caused by your business.**

**AUDIT QUESTION B22**

Is the hazardous waste in compliance with the accumulation requirements identified in Table 2-14?

- .. YES
- .. NO - Out of Compliance



## SQG Container and Tank Requirements

Hazardous waste is commonly stored in either portable containers, such as pails, 55-gallon or 15-gallon drums, totes or in aboveground storage tanks. There are additional regulations for aboveground storage of flammable and combustible liquids, including waste, with a flash point of less than 200° F (see Chapter 4 for more information). The aboveground storage of flammable and combustible liquids may also be regulated by the **KYOSHA General Industry Safety Standards, Part 1910.106, Flammable and Combustible Liquids and Part 1910.39, Fire Prevention Plans**, and the local municipality's fire prevention code.




**TABLE 2-15: SQG STORAGE CONTAINER REQUIREMENTS**

<ul style="list-style-type: none"> <li>.. Containers must be maintained in good condition.</li> <li>.. Any leaking containers must be replaced or managed in some other way that is protective, like overpack drums.</li> <li>.. Containers must be kept closed except when adding or removing waste.</li> <li>.. Containers must be compatible with the type of waste being stored in them.</li> <li>.. Incompatible wastes must not be placed in the same container.</li> <li>.. All containers holding hazardous waste must be inspected weekly for signs of corrosion and leaks.</li> <li>.. Containers must be kept in an area that is at least 50 feet from property lines. Check for any local requirements that exceed state requirements.</li> <li>.. Containers must be protected from weather and fire and secure from vandalism and physical damage, such as that caused by forklifts or other equipment. Keep adequate aisle space for unobstructed movement of emergency equipment and personnel.</li> <li>.. Containers holding flammable and combustible hazardous waste must be protected to avoid fire hazards. The use of a bonding strip and ground clamps is a common method for meeting this requirement (this may be required by your fire department or insurance company). Also, KYOSHA requires containers containing flammable material that are stacked to have some barrier, like pallets between drums, to prevent sparking when the containers are moved.</li> <li>.. Meet the labeling requirements identified in Tables 2-18 and 2-19.</li> </ul>
--

Satellite accumulation areas are subject to the requirements listed in Table 2-15 with the following exceptions:

- Satellite accumulation areas do not require weekly inspections

	<p><b>AUDIT QUESTION B23</b></p> <p>Are you managing your hazardous waste containers in accordance with the requirements identified in Table 2-15?</p>	<ul style="list-style-type: none"> <li>.. YES</li> <li>.. NO - Out of Compliance</li> </ul>
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**AUDIT QUESTION B24**

Do you have over 2,200 pounds (1,000 kg) of hazardous waste on-site?

- .. YES
- .. NO - Skip to Table 2-17 (page 2-31)

**TABLE 2-16: SQG SECONDARY CONTAINMENT REQUIREMENTS**

If 2,200 pounds or more of “liquid” hazardous waste is stored in an accumulation area it must have secondary containment or be managed according to the following:

- .. The base must be free of cracks and have an impervious surface.
- .. The containment area must be constructed so that it is able to hold either 10 percent of the total liquid volume of all the containers or 100 percent of the volume of the largest container, whichever is greater. If, however, a loss from one container can lead to losses from other containers, the enclosed area must be able to contain 100 percent of the entire liquid portion stored in all the containers.
- .. The secondary containment area must be designed to prevent run-off or be designed with sufficient excess capacity to contain any rainwater or snowmelt or other precipitation that might accumulate in the storage area. Containers must be stored in areas protected from the weather.
- .. The containers must be elevated or put on a sloped base that prevents them from coming into contact with any liquid accumulating within the containment area.
- .. All spills, leaks, and precipitation must be removed in a timely manner to prevent overflow from the containment area.
- .. Have squirt protection. Be aware that pallets are not sufficient to meet the secondary containment requirements for liquid hazardous waste because they do not provide adequate protection for “squirt distance,” which is the distance a liquid would spurt out if a leak occurred.

Other solid hazardous waste in containers can be put in containment areas where the containers are not in contact with accumulated liquids including precipitation. The containers can be either:

- .. Elevated, or otherwise protected; OR
- .. Stored on a sloped surface, or the containment area can be of another design and operated to drain and remove precipitation.

The hazardous waste regulations do not specify exactly how secondary containment areas must be constructed. You can install a curb, a ramped pad, or a containment room; have structures custom-made for your situation; or use commercially available portable pallets that have a holding structure included in their design. Other design factors and regulations should also be considered when planning secondary containment. See Chapter 4 for more information about secondary containment and storage of other materials besides waste.



**AUDIT QUESTION B25**

Are you complying with the secondary containment requirements identified in Table 2-16?

- .. YES
- .. NO - Out of Compliance

**TABLE 2-17: BEST MANAGEMENT PRACTICES FOR SQG CONTAINER MANAGEMENT**

**BEST MANAGEMENT PRACTICES - Recommended**

**Container Management**

- .. Store only one type of hazardous waste per container. Do not mix different kinds of wastes. Mixing wastes can cause dangerous reactions and makes waste disposal more expensive and difficult.
- .. Avoid overfilling containers, especially if they are stored outdoors. Fifty-five gallons of some hazardous liquids can expand to 60 gallons or more when exposed to the heat and sun and may overflow.
- .. Use drip pans under the spigots of containers storing liquid materials. Make sure the drip pans are routinely emptied into the appropriate waste container.
- .. Store hazardous waste containers on a surface that prevents spills and leaks to the environment. The surface should not allow any material to leak through, and it should have no cracks or gaps. The surface should also prevent spills and leaks from running over the edge onto the ground. A sealed concrete pad with a curb around it or a spill control pallet is recommended.
- .. Keep containers with ignitable or flammable hazardous waste at least 50 feet inside your property line. Post large "No Smoking" signs near these containers.
- .. Keep a record of the results of your weekly inspections, including
  - . Date and time of inspection,
  - . Name of the person who inspected the containers,
  - . Total number of containers,
  - . Condition of the containers,
  - . Any notes or observations about the containers and
  - . Date and nature of any repairs or corrective actions.

*In compliance with weekly required hazardous waste maintenance, the Dry Cleaner Compliance Calendar may be used for monitoring and record keeping; however, you are not required to use this form.*
- .. Keep the records of container inspections at your business for at least three years.
- .. Store containers on a raised platform off the ground to prevent flooding.



**AUDIT QUESTION B26**

Have you instituted any of the best management practices for container management identified in Table 2-17?

- .. YES
- .. NO - Recommended

## SQG Labeling Requirements

Proper labeling of waste helps to ensure that it is not mismanaged. Labeling also helps to protect the workers. If the contents of drums are not known, the chances of a worker being exposed to hazards or being injured are great. An explosion could occur if wastes that are incompatible are mixed with unknown wastes in a drum. All employees should be aware of labelling procedures, but it is a good idea to put one person in charge of making sure the wastes are correctly identified and labeled. You may want to post an example of how the label should be completed above the drum's location.



**TABLE 2-18: SQG LABELING REQUIREMENTS**

When a waste is stored on-site in an **accumulation area**, each container must be labeled with the following:

- .. The words “Hazardous Waste”
- .. The hazardous waste number
- .. An accumulation date (meaning the date the container is filled to its rated capacity)

Although not required, it is helpful to also label the storage containers with the common name of the waste with which it is being filled. For example, containers might be labeled with “Perc Waste.”

**Satellite containers** must meet the following requirements:

- .. Labeled with the words “**Hazardous Waste**” and the waste number OR the chemical name of the contents
- .. Once the stored volume exceeds the allowable amount (220 lbs. for hazardous wastes, 2.2 lbs for acutely hazardous wastes), the containers must be:
  - Labeled with that date (which would be considered the accumulation date)
  - Labeled with the hazardous waste number if the chemical name was initially used on the label.
  - Moved into the accumulation area within three days.

You are not required to use any specific label to meet these requirements. You can stencil the information on the containers or you can purchase commercially-prepared labels. You may also use the shipping label as long as the above information is filled out. Make sure the label you use does not become unreadable or dissolve if exposed to the weather or hazardous waste. This can be a problem with containers holding solvents.



### AUDIT QUESTION B27

Is the hazardous waste that is stored in accumulation areas and satellite containers in compliance with the labeling requirements identified in Table 2-18?

- .. YES
- .. NO - Out of Compliance

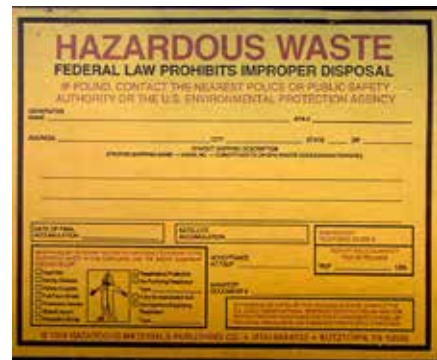
**TABLE 2-19: LABELING REQUIREMENTS FOR HAZARDOUS WASTE SHIPMENT**

Hazardous waste must be shipped in containers acceptable for transportation and properly labeled according to US DOT regulations. Each container of 110 gallons or less must have the hazardous waste number identifying the waste and the following statement:

*“Hazardous Waste - Federal Law Prohibits Improper Disposal. If found, contact the nearest police or public safety authority or the U.S. Environmental Protection Agency.”*

A container must also have the headings “Generator Name and Address” and “Manifest Document Number,” with that information provided. This label and others are available from commercial firms including mail order companies. Properly labeled containers also include:

- .. Labels clearly identifying the type of waste and its hazards in that particular container.
- .. The accumulation date.
- .. Words or symbols for characteristics such as “flammable” and “corrosive” that are clear and understandable to employees.
- .. Protection of the label from solvents and weather. This can be done by covering the label with varnish or clear packing tape and keeping the container under roof cover.



Your hazardous waste hauler should be able to assist you in properly labeling the containers for transport. Contact the Kentucky State Police Division of Commercial Vehicle Enforcement at 502-782-1800 or website at <http://kentuckystatepolice.org/commercial-vehicle-enforcement/> for additional transportation requirements.



**AUDIT QUESTION B28**

Is hazardous waste that is being shipped off-site in compliance with the labeling requirements identified in Table 2-19?

- .. YES
- .. NO - Out of Compliance

## SQG Employee Emergency Training

Training is required for all employees who are involved with hazardous waste management, such as personnel at the areas of generation, their supervisors, hi-low drivers who move the hazardous waste, shipping dock employees, emergency coordinators, or anyone else who handles the waste. You can tailor your training specifically to the hazardous waste procedures relevant to your facility and employee involvement.



**TABLE 2-20: SQG TRAINING REQUIREMENTS**

### Routine Hazardous Waste Handling

- You must train your employees in how to properly handle hazardous waste that they may generate in their normal job duties, including the chemical and physical characteristics of the hazardous wastes they handle.

### Emergency Preparedness

- You must train your employees in what to do during an emergency, including:
  - How to respond to serious spills or other accidents;
  - How to respond to communication and alarm systems;
  - How to contact emergency responders (fire, police, and ambulance);
  - Where to find emergency equipment;
  - Be able to use evacuation plans and routes;
  - How to extinguish a fire and when to try to do so;
  - How to contain and clean up a spill;
  - Who to inform if an emergency occurs; and
  - How to follow your shop's emergency plan.




**AUDIT QUESTION B29**

Is your facility in compliance with the training requirements identified in Table 2-20?

- YES
- NO - Out of Compliance

**TABLE 2-21: BEST MANAGEMENT PRACTICES FOR SQG EMPLOYEE TRAINING**

<b>BEST MANAGEMENT PRACTICES - Recommended</b>	
<b>TRAINING</b>	
<p><b>In addition to the requirements listed above, a good employee training program should teach your shop's staff how to:</b></p> <ul style="list-style-type: none"> <li>.. Identify hazardous waste. After being trained, your employees should:                             <ul style="list-style-type: none"> <li>· Know which materials and wastes in your shop are hazardous and the EPA waste codes;</li> <li>· Be able to tell when a new product or waste might be hazardous;</li> <li>· Know how to read and use Material Safety Data Sheets (MSDSs); and</li> <li>· Understand warning labels on hazardous products.</li> </ul> </li> <li>.. Inspect and handle hazardous wastes. After being trained, your employees should:                             <ul style="list-style-type: none"> <li>· Avoid spills (for example, by using funnels, drip pans, and absorbent materials);</li> <li>· Use equipment to protect themselves (such as gloves and respirators);</li> <li>· Keep hazardous wastes separate from one another and from other materials;</li> <li>· Store materials and wastes correctly (such as labeling waste containers and marking the date when you first put waste into an empty container); and</li> <li>· Avoid improper disposal of waste (by not dumping hazardous waste on the ground, in drains, or dumpsters; by not burning hazardous waste or letting it evaporate and by not mixing hazardous waste with non-hazardous waste).</li> </ul> </li> <li>.. Follow Emergency Response Procedures. After being trained, your employees should:                             <ul style="list-style-type: none"> <li>· Know how to give basic first aid.</li> </ul> </li> <li>.. Prevent Pollution. After being trained, your employees should:                             <ul style="list-style-type: none"> <li>· Know how to reduce the amount of hazardous waste they generate by carefully managing inventories, substituting less toxic materials, where possible, and recovering and recycling waste materials.</li> </ul> </li> </ul> <p><b>You should provide training to all new employees within six months of hiring them. You should provide refresher training every year.</b></p>	
<b>DOCUMENTATION</b>	
<ul style="list-style-type: none"> <li>.. It is a good practice to keep a record of your hazardous waste training. Suggested record items may include:                             <ul style="list-style-type: none"> <li>· The dates and times of the training;</li> <li>· What topics the training covered;</li> <li>· Who attended the training and their job descriptions; and</li> <li>· Who provided the training.</li> </ul> </li> </ul> <p>BMPs suggest keeping these training records at your establishment for three years.</p>	

	<p><b>AUDIT QUESTION B30</b></p> <p>Have you instituted any of the best management practices for employee training identified in Table 2-21?</p>	<ul style="list-style-type: none"> <li>.. YES</li> <li>.. NO - Recommended</li> </ul>
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## SQG Waste Disposal

Ultimately, you (as the generator), are responsible for assuring proper transportation and disposal of your waste after it leaves your business. As such, you must prepare the shipment properly and hire reputable firms to handle the waste. It is important for you to select a waste transporter and treatment, storage, and disposal (TSD) facility that you are comfortable doing business with and who provides you the best services for your particular circumstances at a reasonable price.



**TABLE 2-22: SQG HAZARDOUS WASTE DISPOSAL REQUIREMENTS**

- .. Never attempt to transport your own hazardous waste to another location, in accordance with 40 CFR 262.12.
- .. Ship your hazardous waste only to a permitted hazardous waste treatment, storage or disposal facility or a legitimate recycler.
- .. Select a hazardous waste transporter that is registered and permitted with the DWM.
- .. Do not dispose of your hazardous waste in a solid waste landfill, incinerator or dumpster.
- .. Do not dispose of your hazardous waste by flushing it into the septic tank, down the storm drain, into a stream or on the ground.
- .. Do not dispose of your hazardous waste by dumping it into the municipal sewer system unless you have received authorization from your local wastewater treatment plant (see Chapter 3).
- .. Do not treat your hazardous waste at your shop by burning it or allowing it to evaporate into the air.
- .. Prepare a hazardous waste manifest for all hazardous waste that is shipped off-site. Fill in all parts of the manifest.



### AUDIT QUESTION B31

Are you complying with the SQG hazardous waste disposal requirements identified in Table 2-22?

- .. YES
- .. NO - Out of Compliance



## SQG Manifests

The multicopy manifest forms are designed to track hazardous waste shipments from their point of generation to their final destination. **SQGs are required to manifest all hazardous wastes EXCEPT in the situations identified below.**


### ***When Are Manifests Not Required?***

For the majority of generators, manifesting will be required. However, manifests may not be required if:

The waste is being transported off-site and reclaimed under a contractual agreement and if certain procedures are followed. However, if it is determined as a hazardous waste then it must be manifested.


- ü The contract must specify the type of waste and the frequency of shipments.
- ü The vehicle used to transport the waste to the recycling facility and deliver the regenerated material back to the generator is owned and operated by the reclaimer.
- ü The generator maintains a copy of the reclamation agreement for at least three years after the contract expires.

You may want to discuss this manifest exemption with your DWM regional office.

	<p><b>AUDIT QUESTION B32</b> Are you required to manifest your hazardous waste?</p>	<p>.. YES .. NO - skip to Section 2.3.3 (page 2-40)</p>
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### **TABLE 2-23: SQG MANIFEST REQUIREMENTS**

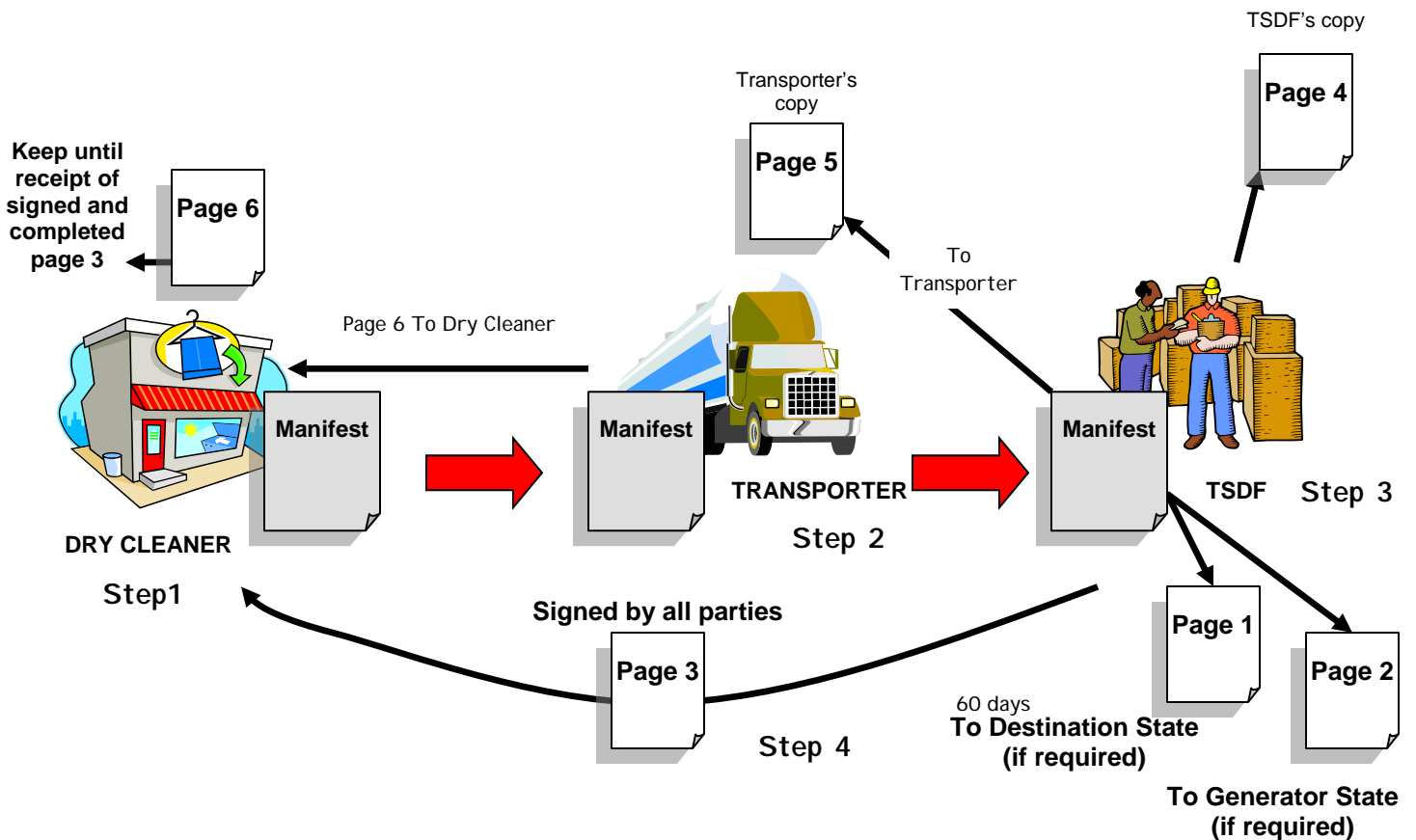
- .. List all the applicable hazardous waste numbers for each hazardous waste you ship with the manifests. The hazardous waste descriptions and numbers are included in the manifest instructions.
- .. The generator of the waste, the transporter and the TSDf that receives the waste must each sign and keep a copy of the manifest as they handle the waste (review the diagram on the next page).
- .. Keep the copy signed by the hauler and TSDf on file for at least three years.

	<p><b>AUDIT QUESTION B33</b> Are you complying with the SQG manifest requirements identified in Table 2-23?</p>	<p>.. YES .. NO - Out of Compliance</p>
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***Where Can I Get Manifests?***

Usually, your waste transporter will provide you with the proper manifest; however, you can also obtain blank copies from the EPA and US DOT. Information and instructions are posted on the EPA website <http://www.epa.gov/hwgenerators/hazardous-waste-manifest-system>. If you have further questions, contact the Division of Waste Management, Hazardous Waste Branch at 505-564-6716 or the Division of Compliance Assistance at 502-564-0323

## MANIFEST PROCEDURE FOR SHIPMENTS WITHIN KENTUCKY



1. Complete the manifest forms using the instructions provided.
2. Your transporter will sign the manifest forms and provide you with one copy (page 6). Page 6 should be kept in your records until you receive a completed copy of the manifest (page 3) from your treatment, storage or disposal facility (TSDF) in Step 4.
3. The disposal facility will sign the manifest forms and provide the transporter with a copy (page 5).
4. The disposal facility will send you a copy of the manifest form with the transporter and disposal facility signature within 30 days. When you receive the blue copy, you can dispose of the gold copy you received from the transporter in Step 2.

**NOTE:** If the waste was shipped out of state, you must meet the receiving state's requirements and submit a copy (page 1) of the manifest to the destination state (your disposal facility (TSDF) may provide this service for you).

**What Should I Do If I Don't Receive My Copy of the Manifest from My Disposal Facility?**

If you are a Small Quantity Generator, make sure that you received a manifest copy from the TSDF within 60 days after you shipped the hazardous waste. If you have not received it, send a copy of the manifest along with an explanation to the DWM and EPA Region 4 stating you have not received confirmation of the delivery from the TSDF.

<p>Exception reports to the EPA must be mailed to</p> <p>US EPA REGION 4 61 Forsyth Street SW Atlanta, GA 30303</p>	<p>Exception reports to the DWM must be mailed to</p> <p>Division of Waste Management Hazardous Waste Branch 300 Sower Boulevard Frankfort, KY 40601</p>
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### 2.3.3 Selecting a Transporter and Treatment, Storage or Disposal Facility

Transporters can assist you by reviewing the manifest for correct and complete information, providing information on disposal facility options and costs and providing for the safe and timely transport of your wastes. Transporters may be independent companies or may be affiliated with a treatment, storage or disposal facility (TSDF). A listing of registered transporters and permitted TSDFs is available via the DWM's website <https://eec.ky.gov/Environmental-Protection/Waste/hazardous-waste/Pages/default.aspx>. There are requirements for transporters transporting hazardous waste. A transporter needs to be registered to transport these wastes.

You will want to select a permitted TSDF that will be able to handle, treat and dispose of the waste you generate. A TSDF will accept only those types of wastes allowed by its permit. Special fees may be charged for small quantities of hazardous waste requiring extra handling by the facility. In addition, some facilities have their own requirements as to how they will accept waste material. For example, some companies will not accept hazardous waste in drums, even though this is a common storage and transportation method.

Because transporter and TSDF services, costs and qualifications are highly varied, you should contact and interview several facilities to obtain price estimates before making a selection. You might also want to tour the TSDF yourself to see its operations. **Remember, that as the generator you are ultimately responsible for how your waste is transported and disposed, so it is wise to choose a company on more than price.** Use the list of questions below as a starting point for your interviews and compare the companies' responses before making your selection.

### Questions to Ask Prospective Transporters and TSDFs

1. Is the waste transporter registered in Kentucky?
2. Is the hazardous waste TSDF-permitted?
3. What type and amount of insurance does the transporter or TSDF carry? Because you are ultimately responsible for the waste you generate, you should make sure that the company has insurance to cover accidents and environmental spills. To protect yourself financially, ask to see proof of the insurance.
4. If you are hiring an independent hauler, find out what TSDF the transporter uses for your type of waste. If the waste is going to a treatment facility before disposal, where is the ultimate place of disposal for the treated wastes?
5. Does the transporter or the facility offer special services for small volumes of waste? Some haulers might not service SQGs or CESQGs.
6. What must you do before your waste will be picked up by the transporter or accepted at the TSDF?
7. Does the transporter or TSDF serve other businesses similar to yours? If they do, obtain telephone numbers of these business references and contact them to evaluate the services received.
8. Does the transporter deliver waste to the TSDF on the same day that it was picked up? If not, also ask questions about the company/location where the waste will be stored. Hazardous waste must reach its final destination within 10 days.
9. What steps has the transporter or TSDF operator taken to avoid spills or leaks and minimize the facility's own legal liability? You may want to note for your records the method of temporary waste storage used at a treatment or recycling facility. If your waste is going to a hazardous waste landfill, then also ask about their leachate control and groundwater monitoring provisions. Use this information when comparing companies. A company that costs more to take your waste but practices an extensive environmental protection program may actually be cheaper in the long run than a company that initially costs less but does not practice adequate environmental protection. If contamination occurs, you can be held financially responsible for cleanup costs of the site.
10. Have any violations of state regulations occurred? Call the appropriate DWM district office to find out whether any transporter or TSDF you are considering has been subject to fines or citations for violations of state regulations. Most transporter and treatment, storage and disposal facility files are available for public review. Transporter files and TSDF inspection files are kept at the DWM district office responsible for the area where the hauling business is located. Contact the district office to confirm the appropriate office and set up an appointment. Call the DWM regional office for information regarding out-of-state haulers, for TSDF licensing information and to set up an appointment to review TSDF licensing files.
11. Will they enter into a written contract with you? It is a good idea to have a written contract for liability protection clearly identifying what specific services that company will provide. Be cautious of firms who do not want to offer a written contract for services.

9. Treat hazardous waste on-site without prior approval from the FVWB (i.e. drying out dry cleaning filters)

## 2.5 What Is Treatment?

### What is Treatment?

Treatment is defined according to 401 KAR 38:005 Section 1(287) and KRS 224.01-010 as:

*“Any method, technique, or process, including neutralization, designed to change the physical, chemical, or biological character or composition of any hazardous waste so as to neutralize such waste, or so as to recover energy or material resources from the waste, or so as to render such waste nonhazardous, or less hazardous; safer to transport, store, or dispose of; or amenable for recovery, amenable for storage, or reduce volume. Such term includes any activity or processing designed to change the physical form or chemical composition of hazardous waste so as to render it nonhazardous.”*

Some examples of treatment are

- ü Stabilization,
- ü Mixing waste,
- ü Evaporation,
- ü Wastewater treatment,
- ü Deactivation,
- ü Neutralization and
- ü Polymerization.

REMEMBER--Treatment on-site requires prior approval from the Hazardous Waste Branch of DWM, available at 502-564-6716. More information is available online at <https://eec.ky.gov/Environmental-Protection/Waste/hazardous-waste/Pages/default.aspx>

### Registration as Recycler

Establishments that use a distillation unit that is not hard-piped to their dry cleaning unit must register annually as a recycler. CESQGs are exempt from the \$300 recycler registration fee, but must register the recycling activity annually. SQG and LQG are subject to the recycler registration fee (\$300 minimum for generator registration plus \$300 for recycling).

*Establishments that operate a distillation unit that is an integral part of the dry cleaning unit are not considered “recyclers” and are not required to register as a recycler.*

### Registration for Treatment On-Site

As a generator, you are allowed to treat hazardous waste on-site if you comply with the requirements found in 401 KAR 31:030 Section 6. Also Application Requirements for Treatment On-Site Requests checklist can be found in our website <https://eec.ky.gov/Environmental-Protection/Waste/hazardous-waste/Pages/default.aspx> for additional information.

Establishments that have a treatment on-site approval from the HWB must register this activity annually and pay \$300 for this activity as part of their registration. **REMEMBER on-site treatment requires prior approval from the HWB.**

## 2.6 Where to Go for Help

<b>SUBJECT</b>	<b>Kentucky Waste Management Regulations</b> Division of Waste Management (DWM)
<b>TELEPHONE</b>	502-564-6716
<b>WEBSITE</b>	<a href="https://eec.ky.gov/Environmental-Protection/Waste/Pages/default.aspx">https://eec.ky.gov/Environmental-Protection/Waste/Pages/default.aspx</a>
<b>SUBJECT</b>	<b>Hazardous Waste</b> DWM - Hazardous Waste Branch
<b>TELEPHONE</b>	502-564-6716
<b>WEBSITE</b>	<a href="https://eec.ky.gov/Environmental-Protection/Waste/hazardous-waste/Pages/default.aspx">https://eec.ky.gov/Environmental-Protection/Waste/hazardous-waste/Pages/default.aspx</a>
<b>SUBJECT</b>	<b>Underground Storage and Secondary Containment</b> DWM - Underground Storage Tank Branch
<b>TELEPHONE</b>	502-564-5981
<b>WEBSITE</b>	<a href="https://eec.ky.gov/Environmental-Protection/Waste/underground-storage-tank/Pages/default.aspx">https://eec.ky.gov/Environmental-Protection/Waste/underground-storage-tank/Pages/default.aspx</a>
<b>SUBJECT</b>	<b>Releases, Site Cleanup</b> DWM - Superfund Branch
<b>TELEPHONE</b>	502-564-6716
<b>WEBSITE</b>	<a href="https://eec.ky.gov/Environmental-Protection/Waste/superfund/Pages/default.aspx">https://eec.ky.gov/Environmental-Protection/Waste/superfund/Pages/default.aspx</a>
<b>SUBJECT</b>	<b>Kentucky State Fire Marshal</b>
<b>TELEPHONE</b>	502-573-0382
<b>WEBSITE</b>	<a href="http://dhbc.ky.gov/sfm">http://dhbc.ky.gov/sfm</a>
<b>SUBJECT</b>	<b>U.S. Transportation of Hazardous Material</b> U.S. Department of Transportation
<b>TELEPHONE</b>	800-467-4922
<b>WEBSITE</b>	<a href="https://www.transportation.gov/">https://www.transportation.gov/</a>
<b>SUBJECT</b>	<b>Kentucky Transportation of Hazardous Material</b> Kentucky Vehicle Enforcement
<b>TELEPHONE</b>	502-564-3276
<b>WEBSITE</b>	<a href="https://kentuckystatepolice.org/commercial-vehicle-enforcement/">https://kentuckystatepolice.org/commercial-vehicle-enforcement/</a>
<b>SUBJECT</b>	<b>Kentucky Small Business Ombudsman</b>
<b>TELEPHONE</b>	502-564-0323
<b>WEBSITE</b>	<a href="https://eec.ky.gov/Environmental-Protection/Compliance-Assistance/Pages/default.aspx">https://eec.ky.gov/Environmental-Protection/Compliance-Assistance/Pages/default.aspx</a>

<b>SUBJECT</b>	<b>Louisville Metro Air Pollution Control District</b>
<b>TELEPHONE</b>	502-574-6000
<b>WEBSITE</b>	<a href="https://louisvilleky.gov/government/air-pollution-control-district">https://louisvilleky.gov/government/air-pollution-control-district</a>
<b>SUBJECT</b>	<b>Kentucky Small Business Development Center</b>
<b>TELEPHONE</b>	1-888-475-SBDC (7232)
<b>WEBSITE</b>	<a href="http://www.ksbdc.org/">http://www.ksbdc.org/</a>
<b>SUBJECT</b>	<b>Kentucky Pollution Prevention Center</b>
<b>TELEPHONE</b>	502-852-0965
<b>WEBSITE</b>	<a href="http://www.kppc.org/">http://www.kppc.org/</a>



### Division of Waste Management Regional Offices

<p><b>Bowling Green Waste Management Regional Office</b></p> <p>2642 Russellville Rd. Bowling Green, KY 42101 <b>Phone:</b> 270-746-7475 <b>Counties:</b> Allen, Barren, Butler, Edmonson, Grayson, Hart, Logan, Ohio, Simpson and Warren</p>
<p><b>Columbia Waste Management Regional Office</b></p> <p>2751 Campbellsville Rd. Columbia, KY 42728 <b>Phone:</b> 270-384-4735 <b>Counties:</b> Adair, Boyle, Casey, Clinton, Cumberland, Green, Larue, Lincoln, Marion, Metcalfe, Monroe, Nelson, Pulaski, Russell, Taylor, Washington and Wayne</p>
<p><b>Florence Waste Management Regional Office</b></p> <p>8020 Veterans Memorial Dr., Suite 110 Florence, KY 41042 <b>Phone:</b> 859-525-4923 <b>Counties:</b> Boone, Bracken, Campbell, Carroll, Gallatin, Grant, Henry, Kenton, Owen, Pendleton and Trimble</p>
<p><b>Frankfort Waste Management Regional Office</b></p> <p>300 Sower Boulevard Frankfort, KY 40601 <b>Phone:</b> 502-564-3358 <b>Counties:</b> Anderson, Bourbon, Clark, Estill, Fayette, Franklin, Garrard, Harrison, Jessamine, Madison, Mercer, Nicholas, Powell, Robertson, Scott and Woodford</p>
<p><b>Hazard Waste Management Regional Office</b></p> <p>1332 St. HWY 15. Hazard, KY 41701 <b>Phone:</b> 606-435-6022 <b>Counties:</b> Breathitt, Floyd, Johnson, Knott, Lee, Leslie, Letcher, Magoffin, Martin, Owsley, Perry, Pike and Wolfe</p>
<p><b>London Waste Management Regional Office</b></p> <p>875 South Main St. London, KY 40741 <b>Phone:</b> 606-330-2080 <b>Counties:</b> Bell, Clay, Harlan, Jackson, Knox, Laurel, McCreary, Rockcastle and Whitley</p>

<p><b>Louisville Waste Management Regional Office</b></p> <p>9116 Leesgate Rd. Louisville, KY 40222 <b>Phone:</b> 502-429-7120 <b>Counties:</b> Breckinridge, Bullitt, Hardin, Jefferson, Meade, Oldham, Shelby and Spencer</p>
<p><b>Madisonville Waste Management Regional Office</b></p> <p>625 Hospital Dr. Madisonville, KY 42431 <b>Phone:</b> 270-824-7532 <b>Counties:</b> Caldwell, Christian, Crittenden, Daviess, Hancock, Henderson, Hopkins, McLean, Muhlenberg, Todd, Union and Webster</p>
<p><b>Morehead Waste Management Regional Office</b></p> <p>525 Hecks Plaza Dr. Morehead, KY 40351 <b>Phone:</b> 606-783-8655 <b>Counties:</b> Bath, Boyd, Carter, Elliott, Fleming, Greenup, Lawrence, Lewis, Mason, Menifee, Montgomery, Morgan and Rowan</p>
<p><b>Paducah Waste Management Regional Office</b></p> <p>130 Eagle Nest Dr. Paducah, KY 42003 <b>Phone:</b> 270-898-8468 <b>Counties:</b> Ballard, Calloway, Carlisle, Fulton, Graves, Hickman, Livingston, Lyon, McCracken, Marshall and Trigg</p>

# CHAPTER 3: Wastewater Management Regulations

You are responsible for managing any waste, including wastewater, generated from your business. Discharge of improperly treated wastewater can result in both soil and water contamination and potentially cost your business a great deal in cleanup costs and fines. The sections below will help you determine what kind of wastewater you generate and how to dispose of it properly.



## 3.1 Do You Discharge Wastewater?

Dry cleaners discharge sanitary and/or nonsanitary wastewater.

- **Sanitary wastewater** is the wastewater from your restrooms, breakrooms and sinks. Sanitary wastewater does not include wastes from dry cleaning machines or pouring waste fluids down the drain.
- **Nonsanitary wastewater** is the wastewater that results from your business activities that might contain one or more pollutants. It includes any wastewater from your dry cleaning process (e.g., wastewater resulting from machine wash down, separator water, filter cleaning and cooling water from your solvent condenser(s), compressor(s), or still(s)). This also includes any wastewater that is discharged through floor drains. Nonsanitary wastewater is also referred to as industrial or commercial wastewater.

### AUDIT QUESTION C1



What type of wastewater does your business generate?

- Sanitary
- Nonsanitary
- Both

### IN THIS CHAPTER ...

- 3.1 Do You Discharge Wastewater
- 3.2 Where Does Your Wastewater Go?
- 3.3 Disposal Requirements
- 3.4 Best Management Practices
- 3.5 Spills
- 3.6 Annual Wastewater Reporting
- 3.7 Where to Go for Help.

## 3.2 Where Does Your Wastewater Go?

Wastewater may be disposed of in the following ways:

- Municipal sewer system
- Septic system
- Holding tanks
- Surface water (includes direct discharge to a river, stream or ditch)

Determine how your wastewater is disposed and then identify your requirements in Section 3.3.



**AUDIT QUESTION C2**

How do you dispose of wastewater generated at your establishment?

- .. **Municipal Sewer System** - Go to Section 3.3.1 (below)
- .. **On-Site Septic System** - Go to Section 3.3.2 (page 3-4)
- .. **Holding Tank** - Go to Section 3.3.3 (page 3-5)
- .. **Surface water (ditch, river, lake, stream)** - Go to Section 3.3.4 (page 3-6)

**3.3 Disposal Requirements**

The sections below describe the requirements associated with the four disposal options discussed in 3.2.

**3.3.1 Municipal Sewer System**

There are two types of sewer systems, generally referred to as "combined" and "separate" (see Figures 3-1 and 3-2 below).

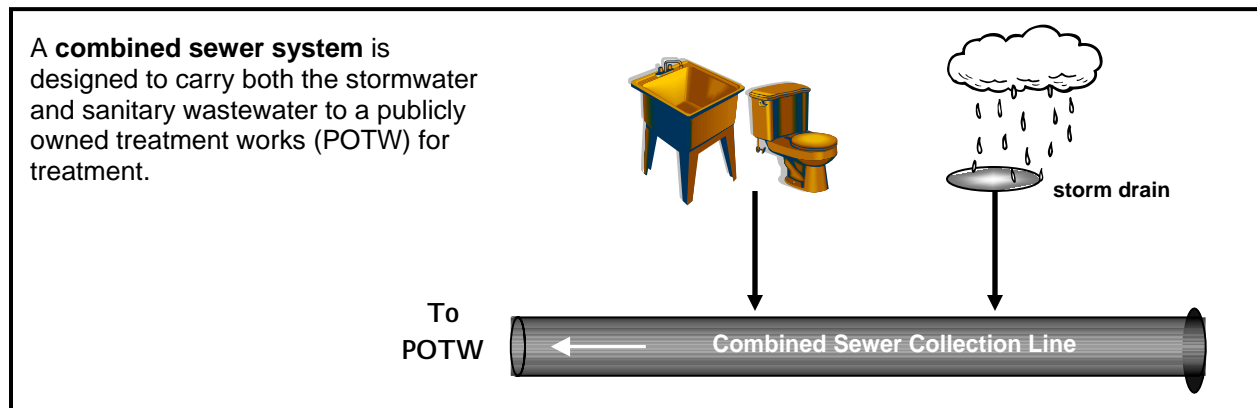


Figure 3-1: Combined Sewer System

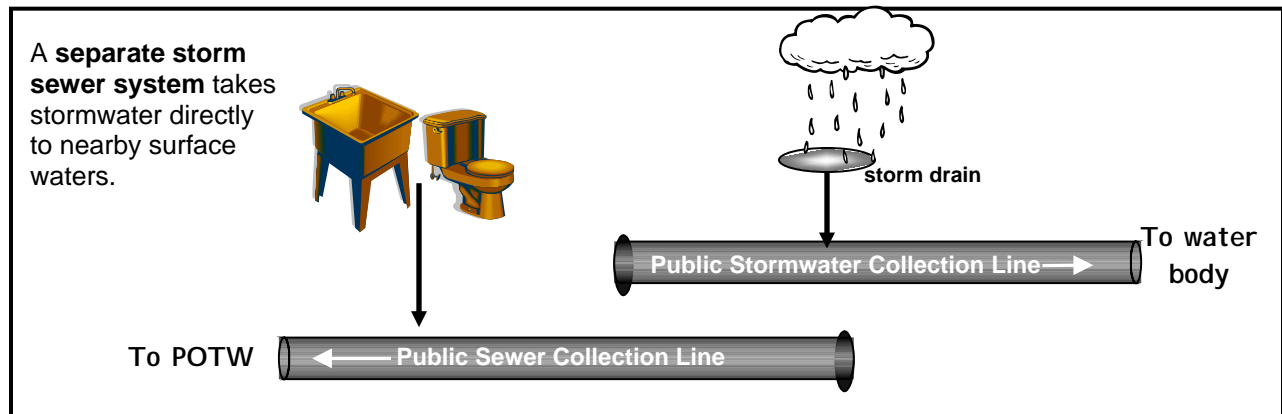



Figure 3-2: Separated Sewer System

**TABLE 3-1: SEWER SYSTEM DISCHARGE REQUIREMENTS**

<p>.. Determine if you are connected to a “combined” or “separated” sewer system. For information on the sewer system type that services your area, call the local sewer authority or public works department.</p>	<p><b>You must have an authorization from your local POTW before discharging any of your wastewater to the sewer system.</b></p>
<p>.. Obtain authorization from your publicly owned treatment works (POTW) to discharge waste into the sewer system. Generally, you will be required to fill out an application detailing what wastes you are requesting permission to discharge. Your sewer authority will review the application and notify you if you can or cannot discharge the waste to their treatment facility.</p>	
<p>.. Review with your POTW any requirements for discharge, such as monitoring, recordkeeping, sampling and whether industrial pretreatment regulations apply.</p>	
<p>.. Comply with any pretreatment standards or other requirements established by your POTW before discharging wastewater to the sewer system.</p>	
<p>.. Do not pour separator water into the sink or toilet unless you have obtained authorization from your POTW to do so.</p>	
<p>.. Notify your POTW before discharging any NEW wastes to the system.</p>	
<p>.. Do not discharge any wastewater to the storm drains. <b>Be sure that floor drains are <u>not</u> connected to the storm sewer.</b></p>	
<p>.. All floor drains should discharge to your POTW or a holding tank (see page 3-5). Most POTWs will accept waste and wastewater from floor drains, such as building wash down water, small quantities of oily substances, etc., at specific rates and times as long as you have permission from them to do so.</p>	
<p>.. Any floor drains that do NOT discharge to your POTW or a holding tank must be plugged (e.g., with concrete) or rerouted. Do NOT discharge your wastewater to storm drains.</p>	

	<p><b>AUDIT QUESTION C3</b> Are you complying with the sewer system discharge requirements identified in Table 3-1?</p>	<p>.. YES .. NO - Out of Compliance</p>
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Facilities on POTW systems can go to Section 3.5.

### 3.3.2 Septic System


When a municipal sewer system is not available, most facilities dispose of their sink- and bathroom-generated domestic (sanitary) wastewater to an on-site sewage disposal system. Sewage disposal systems consist of a septic tank and tile field and are designed to capture solids, provide some biological decomposition and discharge the remaining wastewater to the ground and groundwater through the tile field.

Since the discharge of the treated wastewater is to the ground and groundwater, septic systems are to be used solely for disposal of domestic septage (sanitary wastewater). **Do not discharge your hazardous or liquid industrial waste into septic systems.** Septic tanks should be pumped out by a licensed septic waste hauler every two to three years or when needed.

If you have a septic system, you may only use it to discharge sanitary waste. Nonsanitary wastes need to be collected in a holding tank and then hauled away to a disposal facility.

**TABLE 3-2: SEPTIC SYSTEM DISCHARGE REQUIREMENTS**

<ul style="list-style-type: none"> <li>•• Only discharge sanitary wastes to your septic system. Sanitary waste includes bathroom and breakroom wastewater.</li> <li>•• Do not dispose of nonsanitary wastewater (e.g. wastewater from your dry cleaning operations) in toilets, sinks or floor drains.</li> <li>•• Nonsanitary wastewater should be collected in a holding tank and then transported to an appropriate disposal facility (see page 3-5)</li> <li>•• <b>Floor drains should not be connected to your septic system.</b> If you have floor drains, they should be plugged (e.g., with concrete) or rerouted to a holding tank.</li> </ul>
---



**AUDIT QUESTION C4**

Are you complying with the septic system discharge requirements identified in Table 3-2?


- YES
- NO - Out of Compliance

### 3.3.3 Holding Tanks

Wastewater, excluding septage waste, may be collected in a holding tank and then transported to a recycling or disposal facility. You may haul your own liquid waste without being licensed by the Division of Waste Management or requiring a manifest if conditions in Chapter 2.3 are met. You may alternatively hire a permitted and registered hazardous or liquid waste transporter. Industrial wastewater hauled by a permitted and registered transporter must have manifests accompanying the shipment (see page 2-24). Manifests are not required for septage waste hauled by licensed septage waste transporters. Licensed septage waste haulers cannot transport liquid industrial or hazardous waste.

**TABLE 3-3: HOLDING TANK DISCHARGE REQUIREMENTS**

..	Wastewater contained in a holding tank must adhere to the liquid industrial waste requirements while being stored on-site. Chapter 2.3 provides the liquid industrial waste requirements.
..	The wastewater must be pumped out and hauled away by a permitted and licensed hazardous or liquid waste transporter.
..	You must manifest any shipment of hazardous and liquid industrial waste (see page 2-24 for exceptions).

	<b>AUDIT QUESTION C5</b>	.. YES
	Are you complying with the holding tank discharge requirements identified in Table 3-3?	.. <b>NO - Out of Compliance</b>

### 3.3.4 Surface Water Discharge

The Kentucky Division of Water and the U.S. Environmental Protection Agency (EPA) regulate direct discharges to surface water. You are “directly discharging” to the surface water if your wastewater goes to any lake, stream, river, county drain, roadside ditch or local storm sewer that goes to a lake, stream, etc.




It is not recommended that dry cleaners in Kentucky dispose of wastewater in this manner. However, if your establishment wishes to do so, you must obtain a wastewater discharge permit (also called a Kentucky Pollutant Discharge Elimination System or KPDES permit).

Contact your Division of Water regional office for information about applying for a KPDES permit.

#### TABLE 3-4: SURFACE WATER DISCHARGE REQUIREMENTS

.. You must obtain a KPDES Permit before discharging any wastewater to surface waters.
.. Be sure that your floor drains are not connected to a storm sewer that empties to a ditch, river, stream or other body of water. Plug any floor drain (e.g., with concrete) that does not discharge to a publicly owned treatment works (POTW) or a holding tank.

	<b>AUDIT QUESTION C6</b>	
	Are you complying with the surface water discharge requirements identified in Table 3-4?	.. YES .. NO - Out of Compliance



### 3.4 Best Management Practices for Wastewater Discharge

**BEST MANAGEMENT PRACTICES - *Not required, but recommended***

**Pollution Prevention**

- .. Keep your establishment clean. Prevent spills and leaks that may add contaminants to floor rinse waters.
- .. Minimize your establishment's water usage. If you use less water, there will be less wastewater to manage.


**Training**

- .. Train staff on good housekeeping skills. At the end of the day, spend 15 minutes to clean up materials.

**Running a Dry Shop**  
A dry shop is one that uses no water, or very little water, to clean floors

**How to Run a Dry Shop**

- .. Do not wash the floors or use wet mops to clean up spills.
- .. Clean up small spills with rags. Do not saturate rags.
- .. If the spills are solvents, use appropriate absorbents to clean the spill and dispose of the absorbents as hazardous waste.

	<p><b>AUDIT QUESTION C7</b> Have you instituted any of the best management practices for wastewater discharge identified in 3.4?</p>	<ul style="list-style-type: none"><li>.. YES</li><li>.. NO - It is recommended to do so</li></ul>
---	--	---

### 3.5 Spills

Do not wash, sweep or in any way direct an outside spill to the ground or down a drain. Contain and collect the spilled material and dispose of it properly. See Chapter 5 for more information regarding spill reporting requirements and cleanups.



### 3.6 Where to Go for Help

<b>SUBJECT</b>	<b>Kentucky Division of Water (DOW)</b>
<b>TELEPHONE</b>	Surface Water Permits Branch 502-564-3410
<b>WEBSITE</b>	<a href="https://eec.ky.gov/Environmental-Protection/Water/Pages/default.aspx">https://eec.ky.gov/Environmental-Protection/Water/Pages/default.aspx</a>
<b>SUBJECT</b>	<b>Kentucky Division of Compliance Assistance (DCA)</b>
<b>TELEPHONE</b>	502-564-0323
<b>WEBSITE</b>	<a href="https://eec.ky.gov/Environmental-Protection/Compliance-Assistance/Pages/default.aspx">https://eec.ky.gov/Environmental-Protection/Compliance-Assistance/Pages/default.aspx</a>
<b>SUBJECT</b>	<b>Kentucky Small Business Development Center</b>
<b>CONTACT</b>	Call 1-888-475-SBDC (7232) or visit the website for the center near you
<b>WEBSITE</b>	<a href="https://www.ksbdc.org/">https://www.ksbdc.org/</a>
<b>SUBJECT</b>	<b>Kentucky Pollution Prevention Center</b>
<b>TELEPHONE</b>	502-852-0965
<b>WEBSITE</b>	<a href="http://www.kppc.org/">http://www.kppc.org/</a>

#### Kentucky Division of Water Regional Offices

<p><b>Bowling Green Water Regional Office</b></p> <p>2642 Russellville Road Bowling Green, KY 42101 <b>Phone:</b> 270-746-7475 <b>Counties:</b> Allen, Barren, Butler, Edmonson, Grayson, Hart, Logan, Ohio, Simpson and Warren</p>
<p><b>Columbia Water Regional Office</b></p> <p>2751 Campbellsville Road Columbia, KY 42728 <b>Phone:</b> 270-384-4734 <b>Counties:</b> Adair, Boyle, Casey, Clinton, Cumberland, Green, Larue, Lincoln, Marion, Metcalfe, Monroe, Nelson, Pulaski, Russell, Taylor, Washington and Wayne</p>
<p><b>Florence Water Regional Office</b></p> <p>8020 Veterans Memorial Drive, Suite 110 Florence, KY 41042 <b>Phone:</b> 859-525-4923 <b>Counties:</b> Boone, Bracken, Campbell, Carroll, Gallatin, Grant, Henry, Kenton, Owen, Pendleton and Trimble</p>

**Frankfort Water Regional Office**

300 Sower Boulevard

Frankfort, KY 40601

**Phone:** 502-564-3358

**Counties:** Anderson, Bourbon, Clark, Estill, Fayette, Franklin, Garrard, Harrison, Jessamine, Madison, Mercer, Nicholas, Powell, Scott and Woodford

**Hazard Water Regional Office**

1332 South KY Hwy 15

Hazard, KY 41701

**Phone:** 606-435-6022

**Counties:** Breathitt, Floyd, Johnson, Knott, Lee, Letcher, Magoffin, Martin, Perry, Pike and Wolfe

**London Regional Office**

875 South Main Street

London, KY 40741

**Phone:** 606-330-2080

**Counties:** Bell, Clay, Harlan, Jackson, Knox, Laurel, Leslie, McCreary, Owsley, Rockcastle and Whitley

**Louisville Water Regional Office**

9116 Leesgate Road

Louisville, KY 40222

**Phone:** 502-429-7122

**Counties:** Breckinridge, Bullitt, Hardin, Jefferson, Meade, Oldham, Shelby and Spencer

**Madisonville Regional Office**

625 Hospital Dr.

State Office Bldg. 4<sup>th</sup> Floor

Madisonville, KY 42431-1683

**Phone:** 270-824-7529

**Counties:** Caldwell, Christian, Crittenden, Daviess, Hancock, Henderson, Hopkins, McLean, Muhlenberg, Todd, Union, and Webster

**Morehead Water Regional Office**

525 Hecks Plaza Dr.

Morehead, KY 40351

**Phone:** 606-783-8655

**Counties:** Bath, Boyd, Carter, Elliott, Fleming, Greenup, Lawrence, Lewis, Mason, Menifee, Montgomery, Morgan and Rowan

**Paducah Water Regional Office**

130 Eagle Nest Dr  
Paducah, KY 42003

**Phone:** 270-898-8468

**Counties:** Ballard, Calloway, Carlisle, Fulton, Graves, Hickman, Livingston,  
Lyon, McCracken, Marshall and Trigg

# CHAPTER 4: Material Storage Regulations

There are various regulations that address the storage of hazardous materials to protect the environment, employees and public. This chapter provides a summary of environmental regulations that may apply to the storage of materials usually found at dry cleaning facilities.



## 4.1 Secondary Containment

Secondary containment is a structural means to control the impact of released materials to groundwater, surface water, and human exposure. Not all dry cleaners will have materials that are required by state and federal regulations to be stored in areas with secondary containment, although the practice is highly recommended for all materials that may pose a risk to human health and the environment if released. Some local ordinances and insurance companies may also require containment or other storage requirements. It is usually cheaper to install and utilize containment structures than to clean up releases that contaminate groundwater, surface water, and soils.

Because dry cleaners may have different chemicals, each dry cleaning facility will need to determine if the materials on-site have containment requirements under the various regulations and permits. Materials may be subject to more than one regulation. The following are common situations where containment may be required.

1. You are a Small Quantity Generator (SQG). See Table 2-16 (page 2-30) for containment requirements.
2. Containment, inspections and precipitation management is required for any outdoor storage area of polluting materials. Containment must be able to hold whichever is larger: not less than 10 percent of the total volume of containers within the outdoor storage area, or 100 percent of the largest container within the storage area. Indoor storage and use areas must be designed and operated to prevent any releases from getting into the sewer, surface water and groundwater.
3. Your facility is subject to federal Spill Prevention Control and Countermeasure (SPCC) planning requirements (see Chapter 5.2). You must meet containment, inspection and other storage requirements for oils including petroleum solvents (naphtha, mineral spirits and Stoddard Solvent).
4. Materials are stored in underground or aboveground storage tanks (see Sections 4.2 or 4.3 for containment requirements).
5. You have flammable and combustible liquids in portable containers and aerosol cans. You must meet KYOSHA requirements for storage rooms and storage cabinets.
6. You have a permit that requires containment.
7. Your local fire department or insurance company requires containment.

### IN THIS CHAPTER ...

- 4.1 Secondary Containment
- 4.2 Underground Storage Tanks
- 4.3 Aboveground Storage Tanks
- 4.4 Where to Go for Help

**AUDIT QUESTION D1**

Do you store any materials that require secondary containment (see list on page 4-1)? *If you are unsure about what materials require secondary containment, contact the Division of Compliance Assistance at 502-564-0323.*

- .. YES
- .. NO - Go to Section 4.2

Many environmental regulations do not specify how the containment structures must be built; only that they are capable of keeping releases from reaching surface water, groundwater and public sewer systems. The containment must also be compatible with the material stored within them, and be impervious. For example, poured concrete floorings are usually given an epoxy or other sealant coating. Cinder or concrete block walls are not impervious. It is also important to incorporate squirt protection so if a container ruptures, or is punctured, the contents cannot squirt out beyond the containment structure.

Containment does not have to be expensive to be effective. Examples of secondary containment include the following:

- Metal drip pans under equipment
- Enclosed cabinets with sealed flooring
- Portable containment units or spill pallets (Note: Spill pallets without sides do not meet the hazardous waste containment requirements for liquids because they do not provide squirt protection.)
- Smaller containers placed in another larger container (e.g., a 5-gallon jug put in a plastic storage box or a cut-down 55-gallon drum)
- Plastic children's swimming pool
- Curbing, retaining walls and floors designed with a slight slope to pool released liquids

However, keep in mind that the material of which the containment is made must be chemically compatible with the chemical it is intended to contain. For example polyethylene #2 and #4 do not hold up to mineral spirits while #3 PVC does not hold up to naphtha. These are the typical plastics used for one piece children's swimming pools.

Prefabricated or fabricated containment units may be purchased or containment structures can be built to your specifications by suppliers or facility employees.

Consider the following when selecting or designing a structure:

- .. **Structural strength** so the containment is capable of supporting the weight of the loads placed on it, including the materials and equipment that will enter the area.
- .. **Impermeability** so the containment is resistant to penetration of the materials contained in the structure. For example, an area storing acids or corrosives should not be a concrete area, unless the concrete has been sealed with a coating that makes it resistant to the chemicals. Again, the containment structures must be compatible with the chemicals used in your facility.
- .. **Integrity** so there are no drains, other piping or openings of any kind where liquids may escape. For



example, seal all joints and cracks and do not include floor drains in the area or use cinder blocks in the construction.

- **Security** to prevent vandalism and the entry of unauthorized persons to the area. The containment must allow emergency personnel and equipment to enter. Sumps included in the design should be *manually controlled*
- **Protection** from extreme temperatures including ignition sources.
- **Squirt distance** control to contain any liquids spurting from the containers if a leak occurs.

Figure 4-1: Secondary Containment

Some other things to consider when designing your secondary containment area include:

- Avoid creating confined spaces;
- Provide adequate lighting and ventilation;
- Ensure required isolation distances from property lines, public ways, buildings, etc.;
- Specify how employees will move materials in and out of the area and
- Remove precipitation and spilled materials.

Releases, and subsequent removal of material from containment areas, can usually be prevented by using common sense and care when storing and transferring materials. Tips include the following:

- Train all personnel handling the materials about spill prevention and response techniques. Some regulations indicate who, at a minimum, must be trained.
- Practice safe loading and unloading procedures.
- Keep container lids and covers closed to control spills and evaporation. Many regulations require this.
- Post appropriate warning and instructional signs in usage and storage areas.
- Adequately label all containers.
- Use pumps or funnels to transfer liquids.
- Use seal-less pumps.
- Install splash guards and drip boards on tanks and faucets.
- Use drip buckets under liquid spigots.
- Have sorbent materials (e.g., kitty litter, pigs, pads), and devices or covers that block drains, readily available where they may be used if there is a release.
- Prohibit transferring or draining of fluids outside over the ground or on pavement not designed for containment.
- Conduct regular inspections to identify leaks or other problems.
- Have inventory control procedures to track materials from receipt to ultimate use or disposal and use to determine if releases have occurred.

Any collected liquids and materials from secondary containment structures must be characterized to determine if they are a regulated hazardous or liquid industrial waste (see Chapter 2).

**AUDIT QUESTION D2**

Does your secondary containment comply with the requirements described in Section 4.1?

- .. YES
- .. NO - Out of Compliance

## 4.2 Underground Storage Tanks

Your business may utilize underground storage tanks (USTs) in its day-to-day operations. The storage and handling of products (such as perc or petroleum solvents) can have significant environmental and safety consequences if they are not managed properly.

**AUDIT QUESTION D3**

Do you store any materials in an underground storage tank?

- .. YES
- .. NO - Skip to Section 4.3

(page 4-11)

### ***Is Your UST System Regulated?***

A **regulated UST system** is defined as:

- A UST or combination of USTs and underground connected piping that have at least 10 percent of their volume underground;
- Used to contain a regulated substance after Jan. 1, 1974;
- Having a total capacity greater than 110 gallons; and
- Refer to KRS 224.60-100, 401 KAR 42:005 and 40 CFR 280 Subpart A for additional information on the definition of a regulated UST system.

Petroleum solvents and perchloroethylene are considered **regulated substances**; therefore if you store these substances in an underground storage tank that meets the above requirements, it is regulated and you must comply with the requirements outlined in this section.

**AUDIT QUESTION D4**

Is your UST System a regulated UST system?

- .. YES
- .. NO - Skip to Section 4.3

(page 4-11)



**TABLE 4-1: GENERAL UST SYSTEM REQUIREMENTS**

- .. All regulated UST systems must be properly registered with the DWM's Underground Storage Tank Branch. You must complete a **"UST Facility Registration Form, DEP7112."** To access the registration form and instructions, go to <https://eec.ky.gov/Environmental-Protection/resources/Pages/Forms-Library.aspx>.
- .. A \$30-per-tank fee is paid annually to the DWM (based on DWM's fiscal year).
- .. You must send an amended "UST Facility Registration Form", DEP7112 form to the DWM any time the registration information changes. The registration form must be submitted within 30 days from the date of the change.
- .. You must demonstrate financial responsibility to cover the costs of cleanups, property damage and third-party compensation for bodily injury resulting from leaking underground storage tanks. You will be required to show proof of financial responsibility when you register the tanks. For further information regarding financial responsibility requirements, go to <https://eec.ky.gov/Environmental-Protection/Waste/underground-storage-tank/Pages/2011Regs.aspx> and select KAR 42:090. Financial responsibility is only required for petroleum storage tanks not hazardous substance tanks.
- .. All UST systems must have and maintain spill protection, overfill prevention, corrosion protection (as applicable) and release detection. For further information regarding these requirements, go to <https://eec.ky.gov/Environmental-Protection/Waste/underground-storage-tank/Pages/2011Regs.aspx> and select KAR 42:030 and KAR 42:040.
- .. Keep records of your daily operations, purchases of equipment and other information relating to the operation of your UST system. Records must be kept on routine maintenance of the UST system, release detection, inventory control, site assessment results, reporting of releases and corrective actions. These records should be kept and available upon request.
- .. When the material stored in a UST system is changed from a regulated substance to a non-regulated substance (such as water or heating oil), you must perform an assessment in accordance with 401 KAR 42:070 by permanent closure in-place sampling (see 4.2.2).
- .. A suspected or confirmed UST system release of any amount or a suspected or confirmed aboveground release, such as a spill or overflow of petroleum product(s) in excess of 25 gallons, shall be reported immediately to the Environmental Response Team at 1-800-928-2380 or 505-564-2380 in Frankfort. Any spill or overfill less than 25 gallons that cannot be cleaned up within 24 hours shall be reported to the Environmental response Team. All suspected or confirmed release shall be investigated in accordance with the Release Response and Initial Abatement Requirements outline. For further information regarding these requirements go to <https://eec.ky.gov/Environmental-Protection/Waste/underground-storage-tank/Pages/2011Regs.aspx> and select 401 KAR 42:060.

**AUDIT QUESTION D5**

Is your UST in compliance with the requirements identified in Table 4-1?

- .. YES
- .. NO - Out of Compliance

## 4.2.1 New UST Installations

If you are installing a new UST system, you must comply with the requirements identified in Table 4-2.

**AUDIT QUESTION D6**

Are you installing or planning to install a new UST system?


- .. YES
- .. NO - Skip to Section 4.2.2 (page 4-7)

**TABLE 4-2: REQUIREMENTS FOR NEW INSTALLATIONS:**

- .. A **“Permit Application to Install an Underground Storage Tank for Petroleum Products or Hazardous Materials” (HazMat 38-08 Revised 9/07)** must be completed and submitted by an approved licensed UST contractor with the site diagram detailing the materials and part numbers used on the UST installation as appropriate to the Kentucky State Fire Marshall’s office. To access the application form and instructions, go to <http://dhbc.ky.gov/sfm/Pages/Hazardousmaterials.aspx> (select “Forms,” “Hazardous Materials,” “Permit Applications,” then “Permit Application to install-modify Underground Storage Tank (UGST)”).
- .. The requirements for spill protection, overfill prevention, corrosion protection, and release detection must be met at the time of installation. For further information regarding these requirements, go to <https://eec.ky.gov/Environmental-Protection/Waste/underground-storage-tank/Pages/2011Reqs.aspx> and select 401 KAR 42:030 and 401 KAR 42:040.
- .. A \$100 fee per first tank and \$50 fee for each additional tank must be submitted with the permit application to the Kentucky State Fire Marshal’s office. (Note: This fee may or may not be included in the contractor bid. Check with approved contractor for details regarding tank fee installation payments).
- .. Following installation, but no later than 30 days following installation of a UST system, the UST system owner must submit a **“UST Facility Registration Form, DEP7112.”** To access the registration form and instructions, go to <https://eec.ky.gov/Environmental-Protection/resources/Pages/Forms-Library.aspx>.
- .. Following all installation activity and inspections, a \$30-per-tank fee will be assessed annually by the DWM (based on DWM’s fiscal year).

<p><b>AUDIT QUESTION D7</b></p> <p>Are you complying with the requirements for installing a new UST system identified in Table 4-2?</p>	<ul style="list-style-type: none"> <li>.. YES</li> <li>.. NO - Out of Compliance</li> </ul>
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### 4.2.2 UST System Temporary and Permanent Closure and Change-of-Service for Stored Materials


 <p><b>AUDIT QUESTION D8</b></p> <p>Are you planning on temporarily or permanently closing a UST system or changing the material stored in the UST?</p>	<ul style="list-style-type: none"> <li>.. YES</li> <li>.. NO - Skip to Section 4.2.3 (page 4-10)</li> </ul>
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There are two types of closures that are allowed for UST systems—temporary and permanent. A temporary closure is allowed for up to a 12-month period. However, if the temporary closure is over a 3-month period, then an amended UST Facility Registration form (DEP7112) is required to be submitted. If a facility meets the general operating requirements and release detection requirements under 401 KAR 42:030 and 040, the tank may be in temporary closure without time limit.



If you are temporarily or permanently closing a UST, use Table 4-3 to identify some of the requirements that apply to you. When the material stored in a UST system is changed from a regulated substance to a non-regulated substance (such as water or heating oil), you must perform an assessment in accordance with 401 KAR 42:070 by permanent closure in-place sampling (Table 4-3).

You can find more information about permanent closure and change-in-service, as well as the forms mentioned above at <https://eec.ky.gov/Environmental-Protection/Waste/underground-storage-tank/Pages/default.aspx>. It is also important to check with your local county government regarding additional requirements for UST system permanent closure by removal or closure in place.

 <p><b>AUDIT QUESTION D9</b></p> <p>Are you complying with the appropriate requirements from Table 4-3?</p>	<ul style="list-style-type: none"> <li>.. YES</li> <li>.. NO - Out of Compliance</li> </ul>
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**TABLE 4-3: REQUIREMENTS TO TEMPORARILY OR PERMANENTLY CLOSE A UST SYSTEM:*****If Temporarily Closing a UST System:***

If a UST system is temporarily closed for three (3) months or more, then the following shall be required:

- .. An amended “**UST Facility Registration Form (DEP7112)**” must be submitted to the DWM, UST Branch notifying them of the temporary closure.
- .. Leave vent lines open and functioning and cap and secure all other lines, pumps, man ways, and ancillary equipment.
- .. If a UST system is temporarily closed for more than 12 months, and meets the performance standards for corrosion protection, spill protection or overfill prevention, then the UST system shall undergo tank and line tightness tests prior to returning to service.

***If Permanently Closing a UST System:***

There are two types of permanent closures for UST systems that are allowed – removal or closure in place.


- .. A permanently closed UST system must be emptied, cleaned (removing all liquids and accumulated sludge and purged of all vapors), and removed from the ground. If the liquid and sludge is characterized as hazardous waste (see Chapter 2 and there is enough volume that it may change your hazardous waste generator status for the month(s) the liquid is shipped off-site, you must notify the DWM and meet all the applicable hazardous waste requirements for that generator status.

The DWM Field Operations Branch must be notified of the pending UST system permanent closure by submitting a “**Notice of Intent to Permanently Close Underground Storage Tank System**” (DEP7114) 14 days prior to the pending permanent closure date. To access the “Notice of Intent to Permanently Close Underground Storage Tank System” (DEP 7114) form go to <https://eec.ky.gov/Environmental-Protection/Waste/underground-storage-tank/Pages/2011Regs.aspx> and select 401 KAR 42:070 then “Notice of Intent to Permanently Close Underground Storage Tank System” DEP7114). An assessment must be performed in accordance with the “Closure Outline”.

- .. When a UST system is permanently closed or a change-in-service occurs, the UST site must be assessed for UST system releases where contamination is most likely to be present. The assessment requires sampling of soil and water, if encountered. A laboratory must analyze these samples in accordance with the requirements of the “Closure Outline”.
- .. A Closure Assessment Report (DEP8055) must be submitted to the DWM UST Branch within 90 days after the permanent closure date. To access the “Closure Outline” (August 2006) go to <https://eec.ky.gov/Environmental-Protection/Waste/underground-storage-tank/Pages/2011Regs.aspx> and select 401 KAR 42:070 and “Closure Outline”.
- .. If your site assessment shows contamination above the site specific cleanup levels, you must then follow the DWM requirements for site investigation and corrective action in accordance with the “Site Investigation Outline” and “Corrective Action Plan Outline”.


### 4.2.3 Releases, Reporting and Investigation

The requirements in Table 4-4 apply if you have a release from a UST system. Additional release reporting requirements are provided in Chapter 5.5.

	<p><b>AUDIT QUESTION D10</b></p> <p>Have any materials been released from the UST?</p>	<p>.. YES</p> <p>.. NO - Skip to Section 4.3 (page 4-10)</p>
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**TABLE 4-4: UST SYSTEM RELEASE REPORTING REQUIREMENTS**


<ul style="list-style-type: none"> <li>.. A suspected or confirmed UST system release of any amount or a suspected or confirmed aboveground release, such as a spill or overflow of petroleum product(s) in excess of 25 gallons shall be reported immediately to the Environmental Response Team at 1-800-928-2380 or 502-564-2380 in Frankfort. Any spill or overfill less than 25 gallons that cannot be cleaned up within 24 hours shall be reported to the Environmental Response Team.</li> <li>.. All suspected or confirmed releases shall be investigated in accordance with the Release Response and Initial Abatement Requirements Outline. For further information regarding these requirements, go to <a href="https://eec.ky.gov/Environmental-Protection/Waste/Pages/default.aspx">https://eec.ky.gov/Environmental-Protection/Waste/Pages/default.aspx</a> (select "Underground Storage Tank," then "Forms, Outlines, Regulations and Statutes"), then 401 KAR 42:060 and Release Response and Initial Abatement Requirements Outline.</li> <li>.. If a suspected release is confirmed or if you know that you have a confirmed release, you must begin a site investigation in accordance with the "Site Investigation Outline."</li> <li>.. The certified contractor must provide proof of pollution liability insurance. Be aware that even though you must hire a certified contractor, you are ultimately liable for assuring that corrective actions are performed at your site.</li> <li>.. The following reports are to be completed and submitted to the DWM UST Branch when requested in writing from the UST Branch: initial site investigation report, intermediate site investigation report and final assessment report.</li> <li>.. Each site must be evaluated and cleaned up based on the site-specific cleanup levels for the potential impact to human health, safety and the environment.</li> </ul>
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	<p><b>AUDIT QUESTION D11</b></p> <p>Are you complying with the release response requirements identified in Table 4-4?</p>	<p>.. YES</p> <p>.. NO - Out of Compliance</p>
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### 4.3 Aboveground Storage Tanks

Aboveground storage tanks (ASTs) are often used for the same purposes as USTs. An AST system has less than 10 percent of the volume of the storage tank system underground. One advantage of ASTs is that they are highly visible so any leaks or defects can be detected early.




	<p><b>AUDIT QUESTION D12</b> Do you have any aboveground storage tanks (AST)?</p>	<p>.. YES .. NO - Go to Chapter 5 (page 5-1)</p>
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***Are Your ASTs Regulated by the SFMO?***

Aboveground storage locations that fit one or more of the following conditions must be plan reviewed and certified by the Kentucky State's Fire Marshal's office (SFMO):

- Any flammable compressed gas or LPG container filling location.
- A facility that supplies flammable compressed gas or any LPG that has a tank with a water capacity of more than 2,000 gallons, or two or more tanks with an aggregate water capacity of more than 4,000 gallons.
- A facility that supplies flammable liquid or combustible liquid that has an individual tank storage capacity of more than 1,100 gallons.




	<p><b>AUDIT QUESTION D13</b> Does the AST meet any of the following criteria?</p> <ul style="list-style-type: none"> <li>.. A flammable compressed gas or LPG container filling location.</li> <li>.. An LPG tank with a water capacity of more than 2,000 gallons or two or more tanks with an aggregate water capacity of more than 4,000 gallons?</li> <li>.. Used to supply flammable or combustible liquid with a storage capacity of more than 1,100 gallons.</li> </ul>	<p>.. YES .. NO - Go to Chapter 5 (page 5-1)</p>
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**TABLE 4-5: ABOVEGROUND STORAGE TANK REQUIREMENTS**



- .. Prior to installing an AST, you must submit a **“Permit Application to Install Aboveground Storage Tanks (AST) for Petroleum Products or Hazardous Substance” (HazMat 38-07)** along with a site plan and a piping diagram. The form will provide all the details for completion including the tank fee schedule. You may request this form and get assistance completing it by calling the State Fire Marshal’s Office at 502-573-0382 or go to <http://dhbc.ky.gov/sfm/Pages/Hazardousmaterials.aspx> (select “Fire Prevention,” “Hazardous Materials,” “Forms and Publications,” then “Permit Application to Install Aboveground Storage Tanks”).
- .. Most ASTs must have secondary containment. Several containment systems are acceptable to the SFMO tanks with built-in secondary containment, vaulted systems, concrete encasement and lightweight thermal insulated tanks. For information on secondary containment, call the SFMO directly at **502-573-0382**.
- .. Most ASTs must have corrosion protection. A single- or double-bottomed shop-manufactured tank that has an external mastic-coated bottom can only be installed on a concrete or asphalt pad that is higher than the surrounding dike floor. Cathodic protection that is properly engineered and maintained must be used for the exterior of single- or double-bottomed tanks that are installed on earth and gravel. Also, cathodic protection can be used on single- or double-bottomed tanks that are installed on a concrete or asphalt pad at the same level as the rest of the dike floor. Additional requirements and guidelines can be found in the Storage and Handling of Flammable/Combustible Liquids (FL/CL) Rules.
- .. Precautions should be taken to prevent the ignition of flammable vapors. Sources of ignition include, but are not limited to, open flames, cutting and welding, thermal heat, spontaneous ignition, stray currents, smoking, etc. All equipment such as tanks, machinery and piping must be bonded or otherwise connected to the ground to prevent static electricity.
- .. Releases or suspected releases of a regulated substance from flammable and combustible liquid ASTs and heating oil ASTs must be reported to the Division of Waste Management, Superfund Branch at **502-564-6716** and the local fire department having jurisdiction or the Local Emergency Response Agency. Some signs that a release has occurred are visibly stained soils, holes in the AST and odoriferous soils.
- .. You need to know what to do in case of a fire, spill or any on-site emergency. An emergency action plan must be available and made known to employees to respond to fire or other emergencies. (Alternate fire safety measures on-site must be in place while any fire safety equipment is shut down.) This emergency plan should be coordinated with your local emergency response agencies, such as fire, police, etc. In most cases, your local agencies will respond to your alarm or call. Additional requirements for release prevention and response planning are found in Chapter 5.

	<b>AUDIT QUESTION D14</b>	
	Are you complying with the AST requirements identified in Table 4-5?	<ul style="list-style-type: none"> <li>.. YES</li> <li>.. NO – Out of Compliance</li> </ul>

### 4.3.1 AST System Out-of-Service

For an AST system that is going to be out-of-service for more than 12 months, it is recommended that a business comply with the requirements in Table 4-6.



#### AUDIT QUESTION D15

Do you have any ASTs that are out of service?

- .. YES
- .. NO - Go to Chapter 5 (page 5-1)

#### TABLE 4-6: AST OUT-OF-SERVICE REQUIREMENTS

- .. The AST system owner/operator is recommended to have the tank and related piping completely emptied and cleaned (professionally) to a vapor-free condition.
- .. The piping is recommended to be disconnected from the AST system.
- .. The AST system must also be safeguarded against trespass.
- .. The owner/operator has the option of removing the tank system from the property. All tanks removed from the property must be disposed of properly.
- .. Although Kentucky (at the time of this printing) does not have any procedures for AST temporary closures, the facility owner/operator is recommended to take proper care in removing or controlling from potential leakage any material contained in an AST. For further information regarding AST system in Kentucky, contact the Division of Waste Management, Superfund Branch, Petroleum Section at **502-564-6716**.



#### AUDIT QUESTION D16

Are you complying with the AST out-of-service requirements identified in Table 4-6?

- .. YES
- .. NO - Out of Compliance



## 4.4 Where to Go for Help

<b>SUBJECT</b>	<b>Kentucky Waste Management Regulations</b> Division of Waste Management (DWM)
<b>TELEPHONE</b>	502-564-6716
<b>WEBSITE</b>	<a href="https://eec.ky.gov/Environmental-Protection/Waste/Pages/default.aspx">https://eec.ky.gov/Environmental-Protection/Waste/Pages/default.aspx</a>
<b>SUBJECT</b>	<b>Hazardous Materials</b> DWM - Hazardous Waste Branch
<b>TELEPHONE</b>	502-564-6716
<b>WEBSITE</b>	<a href="https://eec.ky.gov/Environmental-Protection/Waste/hazardous-waste/Pages/default.aspx">https://eec.ky.gov/Environmental-Protection/Waste/hazardous-waste/Pages/default.aspx</a>
<b>SUBJECT</b>	<b>Underground Storage and Secondary Containment</b> DWM - Underground Storage Tank Branch
<b>TELEPHONE</b>	502-564-5981
<b>WEBSITE</b>	<a href="https://eec.ky.gov/Environmental-Protection/Waste/underground-storage-tank/Pages/default.aspx">https://eec.ky.gov/Environmental-Protection/Waste/underground-storage-tank/Pages/default.aspx</a>
<b>SUBJECT</b>	<b>Releases, Site Cleanup</b> DWM - Superfund Branch
<b>TELEPHONE</b>	502-564-6716
<b>WEBSITE</b>	<a href="https://eec.ky.gov/Environmental-Protection/Waste/superfund/Pages/default.aspx">https://eec.ky.gov/Environmental-Protection/Waste/superfund/Pages/default.aspx</a>
<b>SUBJECT</b>	<b>Kentucky State Fire Marshal</b>
<b>TELEPHONE</b>	502-573-0382
<b>WEBSITE</b>	<a href="http://dhbc.ky.gov/sfm/Pages/default.aspx">http://dhbc.ky.gov/sfm/Pages/default.aspx</a>
<b>SUBJECT</b>	<b>U.S. Transportation of Hazardous Material</b> U.S. Department of Transportation
<b>TELEPHONE</b>	800-467-4922
<b>WEBSITE</b>	<a href="https://search.usa.gov/search?query=hazardous+materials&amp;affiliate=usdot">https://search.usa.gov/search?query=hazardous+materials&amp;affiliate=usdot</a>
<b>SUBJECT</b>	<b>Kentucky Transportation of Hazardous Material</b>
<b>CONTACT</b>	Kentucky Vehicle Enforcement
<b>TELEPHONE</b>	502-564-3276
<b>WEBSITE</b>	<a href="https://kentuckystatepolice.org/">https://kentuckystatepolice.org/</a>

<b>SUBJECT</b>	<b>Kentucky Small Business Ombudsman</b>
<b>TELEPHONE</b>	502-564-0323
<b>WEBSITE</b>	<a href="https://eec.ky.gov/Environmental-Protection/Compliance-Assistance/Pages/default.aspx">https://eec.ky.gov/Environmental-Protection/Compliance-Assistance/Pages/default.aspx</a>
<b>SUBJECT</b>	<b>Louisville Metro Air Pollution Control District</b>
<b>TELEPHONE</b>	502-574-6000
<b>WEBSITE</b>	<a href="http://www.louisvilleky.gov/APCD/">http://www.louisvilleky.gov/APCD/</a>
<b>SUBJECT</b>	<b>Kentucky Small Business Development Center</b>
<b>TELEPHONE</b>	1-888-475-SBDC (7232)
<b>WEBSITE</b>	<a href="http://www.ksbdc.org/">http://www.ksbdc.org/</a>
<b>SUBJECT</b>	<b>Kentucky Pollution Prevention Center</b>
<b>TELEPHONE</b>	502-852-0965
<b>WEBSITE</b>	<a href="http://www.kppc.org/">http://www.kppc.org/</a>

### Division of Waste Management Regional Offices

<p><b>Bowling Green Waste Management Regional Office</b></p> <p>Supervisor: Barbara Hankins  2642 Russellville Rd.  Bowling Green, KY 42101  <b>Phone:</b> 270-746-7475  <b>Counties:</b> Allen, Barren, Butler, Edmonson, Grayson, Hart, Logan, Ohio, Simpson and Warren</p>
<p><b>Columbia Waste Management Regional Office</b></p> <p>Supervisor: John Rogers  2751 Campbellsville Rd.  Columbia, KY 42728  <b>Phone:</b> 270-384-4735  <b>Counties:</b> Adair, Boyle, Casey, Clinton, Cumberland, Green, Larue, Lincoln, Marion, Metcalfe, Monroe, Nelson, Pulaski, Russell, Taylor, Washington and Wayne</p>
<p><b>Florence Waste Management Regional Office</b></p> <p>Supervisor: Michael Fant  8020 Veterans Memorial Dr., Suite 110  Florence, KY 41042  <b>Phone:</b> 859-525-4923  <b>Counties:</b> Boone, Bracken, Campbell, Carroll, Gallatin, Grant, Henry, Kenton, Owen, Pendleton and Trimble</p>

**Frankfort Waste Management Regional Office**

Supervisor: Richard Thomas

300 Sower Blvd.

Frankfort, KY 40601

**Phone:** 502-564-3358

**Counties:** Anderson, Bourbon, Clark, Estill, Fayette, Franklin, Garrard, Harrison, Jessamine, Madison, Mercer, Nicholas, Powell, Robertson, Scott and Woodford

**Hazard Waste Management Regional Office**

Supervisor: Alex Sandlin

1332 State Highway 15

Hazard, KY 41701

**Phone:** 606-435-6022

**Counties:** Breathitt, Floyd, Johnson, Knott, Lee, Leslie, Letcher, Magoffin, Martin, Owsley, Perry, Pike and Wolfe

**London Waste Management Regional Office**

Supervisor: Chase Whitis

875 South Main St.

London, KY 40741

**Phone:** 606-330-2080

**Counties:** Bell, Clay, Harlan, Jackson, Knox, Laurel, McCreary, Rockcastle and Whitley

**Louisville Waste Management Regional Office**

Supervisor: Duke York

9116 Leesgate Rd.

Louisville, KY 40222

**Phone:** 502-429-7120

**Counties:** Breckinridge, Bullitt, Hardin, Jefferson, Meade, Oldham, Shelby and Spencer

**Madisonville Regional Office**

Supervisor: Larry Tichenor

625 Hospital Dr.

State Office Bldg. 4<sup>th</sup>

Madisonville, KY 42431

**Phone:** 270-824-7532

**Counties:** Caldwell, Christian, Crittenden, Daviess, Hancock, Henderson, Hopkins, McLean, Muhlenberg, Todd, Union and Webster

**Morehead Waste Management Regional Office**

Supervisor: Rodney Maze

525 Hecks Plaza Dr.

Morehead, KY 40351

**Phone:** 606-783-8655

**Counties:** Bath, Boyd, Carter, Elliott, Fleming, Greenup, Lawrence, Lewis, Mason, Menifee, Montgomery, Morgan and Rowan

**Paducah Waste Management Regional Office**

Supervisor: Margie Williams

130 Eagle Nest Dr.

Paducah, KY 42003

**Phone:** 270-898-8468

**Counties:** Ballard, Calloway, Carlisle, Fulton, Graves, Hickman,  
Livingston, Lyon, McCracken, Marshall and Trigg

# CHAPTER 5: Environmental Reporting, Planning and Release Response

Liquids such as perc can potentially be spilled and illegally allowed to run onto the ground, down drains or evaporate into the atmosphere. If this happens, it might cause serious harm to the environment and may possibly put you, your employees and neighbors at risk. The reporting, planning and response requirements identified in this chapter are used to protect public health and the environment from spills and releases that could occur at your business.



## 5.1 Hazardous Chemical Inventory Reporting

It is especially important for the safety of facility personnel, the community and first responders, that the first responders (usually the local fire department) know what hazardous chemicals are in your facility. Hazardous chemical inventory reporting is a federal requirement that was established under Title III of the Superfund Amendments and Reauthorization Act (SARA Title III). It applies to any facility that is required to maintain a Safety Data Sheet (SDS) in accordance with the Occupational Safety and Health Administration (OSHA) regulations. The inventory of hazardous chemicals that you submit provides valuable information regarding hazard potential to first responders in the event of a chemical release emergency.

### **Who Must Report?**

You are required to maintain an SDS for all your dry cleaning chemicals. **If your facility has 10,000 pounds or more of any dry cleaning chemical on-site (in storage and/or in process) at any one given time, your facility is subject to this reporting requirement.**

10,000 pounds = approximately 738.5 gallons of perc or 1,470 gallons of petroleum solvent

#### **AUDIT QUESTION E1**



Does your facility have 10,000 pounds or more of any dry cleaning chemical on-site at any one given time?

.. YES  
.. NO - Skip to  
Section 5.2  
(page 5-3)

#### **IN THIS CHAPTER ...**

- 5.1 Hazardous Chemical Inventory Reporting
- 5.2 Spill Prevention, Control and Countermeasure Plans
- 5.3 Contingency Plans for Hazardous Waste Generators
- 5.4 Release Reporting
- 5.5 Release Response and Cleanup
- 5.6 Where to Go for Help

If your business is subject to this requirement, it is recommended that an initial letter contacting the Kentucky Division of Emergency Management notifying of your hazardous chemicals use and an annual report of your hazardous chemicals be submitted by March 1 of the following year (see 1 and 2 below).

### 1. Initial Notification Letter of Hazardous Chemicals

You are requested to provide an initial letter of intent reporting any EPCRA (Emergency Planning and Community Right-to-Know Act) hazardous chemicals on-site in amounts greater than 10,000 pounds to your Local Emergency Planning Committee (LEPC) and your local fire department.

The initial letter is recommended to be submitted within three months after the chemical threshold is exceeded.

The initial letter should consist of either copies of the SDSs or a list of the OSHA hazardous chemicals. If you choose to submit a list, it must include the chemical or common name of each substance and identify the applicable hazard categories.

#### Environmental Response Branch

DEP

300 Sower Boulevard

Frankfort, KY 40601

502-564-2380

<https://eec.ky.gov/Environmental-Protection/Waste/Pages/EmergencyResponseBranch.aspx>

#### AUDIT QUESTION E2



Have you submitted an initial report of your hazardous chemicals to the ERT office, Local Emergency Planning Committee and local fire department?

- .. YES
- .. NO - Out of Compliance

### 2. Annual Report of Hazardous Chemicals

In addition to the initial letter you must also submit an **annual** Emergency and Hazardous Chemical Inventory to your Local Emergency Planning Committee and your local fire department. The inventory is submitted on a **Tier Two Report Form** by March 1 of every year. The Tier Two report includes information about the amount and storage of all hazardous chemicals that exceeded the applicable thresholds during the previous calendar year.

For information, the report form, and software to submit Tier Two hazardous chemical inventories in Kentucky go to <https://kyem.ky.gov/Pages/default.aspx>.

#### AUDIT QUESTION E3



Do you submit an annual Hazardous Chemical Inventory to the ERT office, LEPC and local fire department?

- .. YES
- .. NO - Out of Compliance

## 5.2 Spill Prevention, Control and Countermeasure (SPCC) Plans

A dry cleaning facility that has 1,320 gallons or more storage capacity for petroleum solvents, including naphtha, mineral spirits and Stoddard Solvent, along with other oils, may be subject to the federal SPCC regulations. Containers less than 55 gallons in size do not need to be included when calculating this volume. In addition to preparing an SPCC plan and having it certified by a professional engineer, there are secondary containment requirements, inspections, release reporting and other requirements. SPCC plans may be combined with other required plans. If you believe you are subject to this requirement, contact the Division of Compliance Assistance at 502-564-0323 or visit the SPCC Plan website at <http://www.epa.gov/oilspill>.



### AUDIT QUESTION E4

Does your facility have 1,320 gallons of storage capacity for petroleum solvents, naphtha, mineral spirits or Stoddard Solvent?

- .. YES
- .. NO - Skip to Section 5.3 (page 5-3)



### AUDIT QUESTION E5

Are you complying with the SPCC requirements?

- .. YES
- .. NO - Out of Compliance

## 5.3 Contingency Plans for Hazardous Waste Generators

The hazardous waste regulations require **Large Quantity (LQG)** to be prepared in case of a fire, explosion or release of hazardous waste and to maintain and operate their businesses in a way that minimizes these risks. **Small Quantity Generators (SQG)** and **Conditionally Exempt Small Quantity Generators (CESQG)** are highly encouraged to also be prepared. See Chapter 2 for an explanation of the generator status levels.

If your dry cleaning establishment is a large quantity generator, you are required to have a written contingency plan. If you are a small quantity generator or a conditionally exempt small quantity generator, you are not required to have a contingency plan. However, it is recommended. If you are a SQG or a CESQG and you treat your hazardous waste on-site, you must comply with the LQG requirements and have a written contingency plan.



### AUDIT QUESTION E6

Are you an LQG of hazardous waste or an SQG or CESQG that treats hazardous waste on-site (see Chapter 2.3 to determine generator status)?

- .. YES
- .. NO - Skip to Section 5.4 (page 5-5)

**TABLE 5-1: HAZARDOUS WASTE EMERGENCY PREPAREDNESS AND PREVENTION REQUIREMENTS**

<p>.. Have proper emergency equipment available:</p> <ul style="list-style-type: none"> <li>· Communication devices (phones, radios, intercom, etc.);</li> <li>· Portable fire extinguishers;</li> <li>· Spill control equipment (absorbents, containers, kits);</li> <li>· Water for fire control in sufficient volumes;</li> <li>· Test and maintain equipment as necessary;</li> <li>· Have immediate access to an internal alarm system (this means personnel can activate an alarm within seconds, not minutes); and</li> <li>· Provide and maintain sufficient aisle space in the hazardous waste handling areas to ensure access of emergency equipment and emergency personnel.</li> </ul>
<p>.. Hazardous waste generators (HWGs) must identify one employee who is on-site or on call and has the responsibility to coordinate all emergency response activities. It is recommended that you identify alternative coordinators to cover when the primary person is on vacation or otherwise not available. HWGs must post the following next to their telephones:</p> <ul style="list-style-type: none"> <li>· Name and telephone number(s) of the emergency coordinator and alternates;</li> <li>· Locations of fire extinguishers, alarms and spill control material; and</li> <li>· Location of fire alarms if direct to fire department or the telephone number of the local fire department.</li> </ul>
<p>.. Have arrangements in place with authorities that respond to the types of emergencies regarding the waste handled at your business. Invite police, fire departments and emergency response teams to tour your business. Keep documentation of any visits by emergency response people, agreements, etc.</p>
<p>.. HWGs must send a diagram or discuss the layout of their facility, access roads and evacuation routes with the response agencies. HWGs must also submit to local hospitals a listing of possible injuries or illnesses that might result from the hazardous waste at their businesses. If local or state authorities decline your arrangement, you must have written documentation of that refusal. If you use outside contractors to respond to emergencies, you must make arrangements with emergency response contractors and suppliers.</p>
<p>.. The plan must be updated whenever emergency coordinators or equipment change or when the plan fails during an emergency. In addition, updates must be made if the facility makes any changes to its design, construction, operations, etc., that increase the potential for fires, explosions or releases of hazardous waste or that change the necessary response actions.</p>
<p>.. HWGs must provide emergency training for employees. It is recommended records be kept of training events. There may be other training requirement classes available through KyOSH Hazardous Waste Operations and Emergency Response (HAZWOPER).</p>



If you are required to prepare another release prevention and response plan, you only need to add the hazardous waste management provisions necessary to make your existing plan comply with these additional requirements.

Not all of the specific requirements have been outlined above; therefore, you should contact your local Division of Waste Management regional office or refer to the regulations for more details.



**AUDIT QUESTION E7**

Are you in compliance with the hazardous waste emergency preparedness and prevention requirements identified in Table 5-1?

- .. YES
- .. NO - Out of Compliance

## 5.4 Release Reporting Requirements

It is extremely important that you know who to contact should a spill/release occur at your facility. Use Table 5-2 to identify who you should contact and when.

- Ø If in doubt whether or not a release should be reported, go ahead and report it to the Kentucky 24-hour Spill Reporting Hotline at **800-928-2380**, and to the National Response Center at **800-424-8802**. Report the release immediately.

*All spills/releases require a follow-up written report be completed. You can contact the Division of Waste Management to find additional information about required reports at **502-564-6716** or on the Internet at <https://eec.ky.gov/Environmental-Protection/Waste/Pages/default.aspx>.*



**AUDIT QUESTION E8**

Do you know who to contact if you have a spill/release?

- .. YES
- .. NO - Refer to Table 5-2 (page 5-6)

**TABLE 5-2: RELEASE REPORTING REQUIREMENTS**

<b>If the spill/release involves</b>	<b>Contact</b>	<b>Written Follow –Up Report</b>
Threat to public health or safety	<ul style="list-style-type: none"> <li>.. 911 or Fire Department</li> <li>.. 24-hour Spill Reporting Hotline 800-928-2380</li> </ul>	Contact DWM, for any required reports.
7.4 gallons or more of perc	Within 15 minutes of discovery: <ul style="list-style-type: none"> <li>.. National Response Center 800-424-8802</li> <li>.. 24-hour Spill Reporting Hotline 800-928-2380</li> <li>.. Local Emergency Planning Committee (LEPC) (if release affects those outside of property boundary)</li> </ul>	Contact DWM, ERT Office 502-564-6716 for any required reports.
Unpermitted release of 0.74 gallons or more of perc or any amount that causes unnatural turbidity, color, visible sheens, oil films, foams, solids or deposits in water.	As soon as practicable: <ul style="list-style-type: none"> <li>.. 24-hour Spill Reporting Hotline 800-928-2380</li> </ul>	Within 10 days after release, submit written report to DWM, ERT Office 502-564-6716 outlining cause, discovery, response and prevention of reoccurrence.
Any amount of substance from an underground storage tank (UST)	Immediately: <ul style="list-style-type: none"> <li>.. 24-hour Spill Reporting Hotline 800-928-2380</li> </ul>	Contact DWM, UST Branch for any required reports 502-564-5981.
Any amount of petroleum solvent (Stoddard Solvent) that reaches navigable waters or shorelines that can affect water quality standards or cause a film, sheen or discoloration or could cause a sludge or emulsion and it was not a permitted release.	<ul style="list-style-type: none"> <li>.. National Response Center 800-424-8802</li> <li>.. 24-hour Spill Reporting Hotline 800-928-2380</li> </ul>	
One death or the hospitalization of three or more persons	Within eight hours: <ul style="list-style-type: none"> <li>.. KYOSH hotline 502-564-3070</li> </ul>	

**AUDIT QUESTION E9**

Do you know how you will respond to and clean up a spill/release should one occur at your establishment?

- .. YES
- .. NO – Read Section 5.5

## 5.5 Release Response and Cleanup

Responding to and cleaning up a spill can be expensive and detrimental to the health of your employees and environment. Make it a priority to integrate pollution prevention activities into all aspects of your operations, including the prevention of spills.

You must be ready to immediately respond whenever a release occurs. Whether you are legally required to prepare an environmental release prevention and response plan or voluntarily decide to prepare one, it needs to be in effect with personnel who are adequately trained to implement it. This helps to ensure that when a release occurs, appropriate response is taken without delay. At least one person trained in release control and cleanup procedures, equipment use and disposal methods of recovered materials should be on duty or on call at all times. It is important to remember that you are obligated to respond and clean up all contamination. Failure to do so may result in escalated enforcement, including, but not limited to, the imposition of civil penalties.



All response actions to releases of materials should encompass the following concerns:

1. Immediately assess the type of release and take appropriate response measures to protect the health and safety of those in the affected area, when and where possible.
2. Quickly contain the release to prevent the spread of contamination. For example, cover floor drains to prevent the release from reaching the sewer and dike the release with absorbents, such as spill pillows or cat litter and dirt, if necessary, to prevent it from spreading. Staff responding to the release must be trained and wearing the appropriate personal safety equipment. Most facilities managing materials are required to have an environmental release prevention and response plan in the event of a release. These plans need to be practical, efficient and provide useful instructions to facility personnel that can be easily followed to clean up a release.
3. Clean up the contamination to prevent further damage(s) to human health and the environment. Release prevention, planning, rapid containment, response and cleanup may minimize the environmental impact(s) as well as decrease your overall cost of cleanup. This can be as simple as sweeping up an absorbent used to contain a release or as complex as purging and treating groundwater for years under an approved state remedial action plan or state/federal enforcement order. Waste generated from a cleanup must be properly characterized, managed and disposed of in accordance with the applicable state and federal requirements. Most importantly, communicate with the environmental regulatory agencies in your area. Division of Compliance Assistance staff can provide additional guidance to help assure your response is appropriate and cost-effective.

Some released substances and cleanup materials may pose a health threat to personnel. Have appropriate personal protection equipment (PPE) available and personnel trained in its proper use. Depending on the hazardous nature of the release, PPE may include the appropriate chemical-resistant suits, gloves, boots, respirators, self-contained breathing apparatus and eye protection, such as goggles or face shields. SDSs or the NIOSH Pocket Guide to Chemical Hazards' website at <http://www.cdc.gov/niosh/npg/> contain valuable information for selecting the appropriate PPE. Persons responding to hazardous releases must be trained in accordance with the Hazardous Waste Operations and Emergency Response (HAZWOPER) procedures. Another option is to procure professional assistance from companies offering environmental cleanup services in your area.



Commercial spill kits are available to help contain releases or you may assemble equipment specific to your company's needs based on release planning. Many products are used to contain and clean up released materials. Absorbent pads, booms or portable dikes are often used for large liquid releases. Commercially available absorbent powders and granular clay (like cat litter) are examples of items used to absorb and contain small amounts of released liquids.

Be very careful not to mix incompatible or reactive wastes together. Containers used to store spent cleanup materials must be kept closed and labeled. Remember that the container must be resistant to the absorbed chemicals. If the container is not compatible with the released liquid, the container could dissolve, which could result in a bigger cleanup problem. Once contained, the used cleanup materials must be properly disposed of based on the hazardous characteristics of your waste. Make sure there is no free liquid present with the spent absorbent material, if the used materials are going to a sanitary landfill. If liquid is present, the absorbent material cannot be sent to a sanitary landfill for disposal. If the materials are characterized as hazardous waste, handle the waste in accordance with Chapter 2.

If a release cannot be cleaned up by your trained personnel, consider hiring an experienced environmental cleanup contractor. A contractor may provide cost-effective response solutions in a more efficient and effective manner.

For more information about response procedures, contact the Division of Compliance Assistance at 502-564-0323. DCA office staff can assist in assuring that state reporting obligation(s) have been satisfied and that your cleanup is being conducted properly.

## 5.6 Where to Go for Help

<b>SUBJECT</b>	<b>Kentucky Environmental Response Team</b>
<b>TELEPHONE</b>	800-928-2380
<b>WEBSITE</b>	<a href="https://eec.ky.gov/Environmental-Protection/Waste/Pages/EmergencyResponseBranch.aspx">https://eec.ky.gov/Environmental-Protection/Waste/Pages/EmergencyResponseBranch.aspx</a>
<b>SUBJECT</b>	<b>Releases from leaking underground storage tanks</b>
<b>CONTACT</b>	Underground Storage Tank Branch
<b>TELEPHONE</b>	502-564-5981
<b>WEBSITE</b>	<a href="https://eec.ky.gov/Environmental-Protection/Waste/underground-storage-tank/Pages/default.aspx">https://eec.ky.gov/Environmental-Protection/Waste/underground-storage-tank/Pages/default.aspx</a>
<b>SUBJECT</b>	<b>Releases from general spills or aboveground storage tanks</b>
<b>CONTACT</b>	Superfund Branch
<b>TELEPHONE</b>	502-564-6716
<b>WEBSITE</b>	<a href="https://eec.ky.gov/Environmental-Protection/Waste/superfund/Pages/default.aspx">https://eec.ky.gov/Environmental-Protection/Waste/superfund/Pages/default.aspx</a>
<b>SUBJECT</b>	<b>Technical and Compliance Questions</b>
<b>CONTACT</b>	DCA, Kentucky Division of Compliance Assistance
<b>TELEPHONE</b>	502-564-0323
<b>WEBSITE</b>	<a href="https://eec.ky.gov/Environmental-Protection/Compliance-Assistance/Pages/default.aspx">https://eec.ky.gov/Environmental-Protection/Compliance-Assistance/Pages/default.aspx</a>
<b>SUBJECT</b>	<b>Release of hazardous materials during transportation</b>
<b>CONTACT</b>	U.S. Department of Transportation
<b>TELEPHONE</b>	800-467-4922
<b>WEBSITE</b>	<a href="https://www.fmcsa.dot.gov/regulations/hazardous-materials/incident-spill-reporting-preventions">https://www.fmcsa.dot.gov/regulations/hazardous-materials/incident-spill-reporting-preventions</a>
<b>SUBJECT</b>	<b>Chemical emergency preparedness and prevention</b>
<b>CONTACT</b>	EPA Chemical Emergency Preparedness Prevention Office
<b>WEBSITE</b>	<a href="http://epa.gov/ceppo">http://epa.gov/ceppo</a>

# APPENDIX A: Acronyms

<b>ASBDC</b> .....	Association of Small Business Development Centers (National level)
<b>AST</b> .....	Aboveground Storage Tank
<b>ASME</b> .....	American Society of Mechanical Engineers
<b>ASTM</b> .....	American Society for Testing and Materials
<b>AWR</b> .....	Annual Wastewater Report
<b>BEA</b> .....	Baseline Environmental Assessment
<b>BTU</b> .....	British Thermal Units
<b>CAA</b> .....	Clean Air Act
<b>CAAA</b> .....	Clean Air Act Amendments
<b>CAP</b> .....	Corrective Action Plan
<b>CAS</b> .....	Chemical Abstract Service
<b>CEPPO</b> .....	Chemical Emergency Preparedness and Prevention Office (EPA)
<b>CERCLA</b> .....	Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (also known as Superfund)
<b>CFC</b> .....	Chlorofluorocarbon
<b>CFR</b> .....	Code of Federal Regulations
<b>CNG</b> .....	Compressed Natural Gas
<b>CRT</b> .....	Cathode Ray Tube
<b>CWA</b> .....	Clean Water Act
<b>DAQ</b> .....	Division for Air Quality
<b>DCA</b> .....	Division of Compliance Assistance
<b>DOW</b> .....	Division of Water
<b>DWM</b> .....	Division of Waste Management
<b>DWM(SFB)</b> .....	Division of Waste Management, Superfund Branch
<b>DWM(HWB)</b> .....	Division of Waste Management, Hazard Waste Branch
<b>DWM(USTB)</b> .....	Division of Waste Management, Underground Storage Tank Branch
<b>EEC</b> .....	Energy and Environment Cabinet
<b>EHS</b> .....	Extremely Hazardous Substance
<b>EMS</b> .....	Environmental Management System
<b>EPCRA</b> .....	Emergency Planning and Community Right-To-Know Act
<b>F</b> .....	Fahrenheit
<b>FL/CL</b> .....	Flammable and Combustible Liquids
<b>FP</b> .....	Flashpoint
<b>HAPs</b> .....	Hazardous Air Pollutants
<b>HAZWOPER</b> .....	Hazardous Waste Operations and Emergency Response
<b>IPP</b> .....	Industrial Pretreatment Program
<b>KBEAP</b> .....	Kentucky Business Environmental Assistance Program
<b>KPPC</b> .....	Kentucky Pollution Prevention Center
<b>KSBDC</b> .....	Kentucky Small Business Development Center
<b>KSP</b> .....	Kentucky State Police
<b>KVE</b> .....	Kentucky Vehicle Enforcement
<b>KyOSHA</b> .....	Kentucky Occupational Safety & Health Administration
<b>LEPC</b> .....	Local Emergency Planning Commission
<b>LPG</b> .....	Liquefied Petroleum Gas
<b>MSDS</b> .....	Material Safety Data Sheet
<b>NAICS</b> .....	North American Industrial Classification System
<b>NESHAP</b> .....	National Emission Standards for Hazardous Air Pollutants

<b>NIOSH</b> .....	National Institute for Occupational Safety and Health
<b>NPDES</b> .....	National Pollutant Discharge Elimination System
<b>NSPS</b> .....	New Source Performance Standards
<b>NRC</b> .....	National Response Center (of the USCG)
<b>OSHA</b> .....	Occupational Safety and Health Administration or Occupational Safety and Health Act
<b>P2</b> .....	Pollution Prevention
<b>PEAS</b> .....	Pollution Emergency Alerting System
<b>Perc</b> .....	Perchloroethylene
<b>PIPP</b> .....	Pollution Incident Prevention Plan
<b>POTW</b> .....	Publicly Owned Treatment Works
<b>PPE</b> .....	Personal Protective Equipment
<b>PPM</b> .....	Parts Per Million
<b>PTE</b> .....	Potential to Emit
<b>QC</b> .....	Qualified Consultant
<b>RBCA</b> .....	Risk Based Corrective Action
<b>RCRA</b> .....	Resource Conservation and Recovery Act
<b>RQ</b> .....	Reportable Quantity
<b>SARA</b> .....	Superfund Amendments and Reauthorization Act of 1986
<b>SIC</b> .....	Standard Industrial Classification Code
<b>SPCC</b> .....	Spill Prevention, Control, and Countermeasures
<b>TCE</b> .....	Tetrachloroethylene
<b>TPQ</b> .....	Threshold Planning Quantity
<b>TRI</b> .....	Toxic Release Inventory
<b>TQ</b> .....	Threshold Quantity
<b>TSDF</b> .....	Treatment, Storage, and Disposal Facility
<b>USCG</b> .....	United States Coast Guard
<b>US DOT</b> .....	United States Department of Transportation
<b>US EPA</b> .....	United States Environmental Protection Agency
<b>UST</b> .....	Underground Storage Tank
<b>VOC</b> .....	Volatile Organic Compound

# **APPENDIX B: Chemicals Used In Dry Cleaning Operations**

*The following resource was developed for the State Coalition for the Remediation of Drycleaners (SCRD) using material data safety sheets (MSDS) and other sources. The report was prepared by William Linn, Florida Department of Environmental Protection (FDEP) and Chairperson of the SCR D Project Management/Technical Issues Subgroup. Scott Stupak, North Carolina Superfund Section and a member of the Subgroup, provided technical support for database development.*

## **INTRODUCTION**

A wide variety of chemical products are and have been used in dry cleaning operations. SCR D has developed this paper and a searchable database that include information about many of these products. These resources are intended to help those engaged in the assessment and remediation of contaminated drycleaner sites and to assist regulators conducting compliance inspections at dry cleaning facilities. This publication and the searchable database can be found on the Internet at: [www.drycleancoalition.org/chemicals/](http://www.drycleancoalition.org/chemicals/).

This paper provides current and historical information on the types of chemicals — solvents, other chemicals, pre-cleaning/spotting agents, garment treatments and solvent and equipment maintenance materials — used in dry cleaning operations. The database provides information on dry cleaning products/trade names (as listed on Material Data Safety Sheets), who manufactures or distributes them, what the products are used for in dry cleaning operations, what chemical ingredients each product contains, the CAS number for each chemical ingredient, any alternate name by which these chemicals are known, and any additional information available.

Chemicals used in dry cleaning operations can be grouped into five broad categories:

- Dry Cleaning Solvents
- Other Chemicals Used In the Dry cleaning Machine
- Pre-cleaning/Spotting Agents
- Garment Treatment Chemicals
- Chemicals Used In Solvent & Equipment Maintenance

## **DRY CLEANING SOLVENTS**

Historically, a number of different chemicals have been utilized as dry cleaning solvents. These include: camphor oil, turpentine spirits, benzene, kerosene, gasoline, petroleum solvents (primarily petroleum naphtha blends), chloroform, carbon tetrachloride, perchloroethylene, trichloroethylene, 1,1,1-trichloroethane, 1,1,2-trichloro, 1,1,1-trifluoroethane, propylene glycol ethers, decamethylcyclopentasiloxane and carbon dioxide.



## **Petroleum Dry Cleaning Solvents**

Petroleum-based compounds have been the most widely used solvents in dry cleaning. At the beginning of the twentieth century, gasoline was the dry cleaning solvent of choice in the United States. Because of fires and explosions associated with the use of gasoline, dry cleaning facilities were unable to obtain insurance and many cities banned dry cleaning operations within their city limits. Because of these circumstances, a drycleaner from Atlanta named Joseph Stoddard worked with Lloyd E. Jackson of the Mellon Research Institute and the petroleum refining industry to develop a less volatile petroleum dry cleaning solvent in 1924, which is now known as Stoddard solvent. In 1928, the U.S. Department of Commerce promulgated Commercial Standard CS3-28 which required that petroleum dry cleaning solvents must have a minimum flash point of 100 degrees Fahrenheit. Dry cleaners began using Stoddard solvent in 1928 (Martin, 1958). From the late 1920s until the late 1950s Stoddard solvent was the predominant dry cleaning solvent in the United States.

Stoddard solvent is a mixture of petroleum distillate fractions (petroleum naphtha) which is composed of over 200 different compounds. These solvents are composed predominantly of alkanes and cycloalkanes, with some aromatic compounds. Although many people refer to any petroleum dry cleaning solvent as Stoddard solvent, this is incorrect. More properly, Stoddard solvent is a mixture of  $C_5 - C_{12}$  petroleum hydrocarbons containing 30 – 50% straight- and branched –chained alkanes, 30 – 40% cycloalkanes, and 10 – 20 % alkyl aromatic compounds (Sciences International). The high aromatic content petroleum solvents are no longer widely used in dry cleaning (Schreiner, 2001).

Since the introduction of Stoddard solvent, the industry trend has been towards the development of higher flash point petroleum dry cleaning solvents including the 140 flash solvents (flash point approximately 140 degrees Fahrenheit), which have a very low aromatics content (generally less than 4%) and most recently, the introduction of the so-called synthetic petroleum dry cleaning solvents - high flashpoint petroleum dry cleaning solvents such as Exxon DF-2000 (flash point 147 degrees Fahrenheit), which contains no aromatic compounds.

## **Carbon Tetrachloride**

Carbon tetrachloride was the first chlorinated solvent used in dry cleaning operations – in the late 1920s. Carbon tetrachloride was commonly blended with other solvents for use as a dry cleaning solvent. Because of its high toxicity and tendency to contribute to machinery corrosion, carbon tetrachloride is no longer used in dry cleaning operations. It was used up to the early 1950s.

## **Trichloroethylene**

In 1930, trichloroethylene (TCE) was introduced as a dry cleaning solvent in the United States (Martin, 1958). TCE causes bleeding of some acetate dyes at temperatures exceeding 75 degrees Fahrenheit. It was never widely used in this country as a primary dry cleaning solvent. TCE is, however, still widely used as a dry-side pre-cleaning and spotting agent.

## **Perchloroethylene**

In 1934, perchloroethylene (PCE) was introduced to the United States as a dry cleaning solvent (Martin, 1958). The superior cleaning ability of PCE, coupled with petroleum shortages during World War II and municipal fire codes prohibiting the use of petroleum solvents in dry cleaning operations resulted in the increasing use of PCE. By the early 1960s, PCE had become the most widely used dry cleaning solvent in the United States.

Dry cleaning-grade PCE is produced in the United States by Dow Chemical (trade name DowPer), Vulcan Chemicals (trade name PerSec), and PPG Industries, Inc. Dry cleaning-grade PCE is also produced by ICI (Ineos Chlor Americas) - trade name Perklone, and exported to the United States. It is estimated that over 80% of the commercial drycleaners in the United States use PCE today (HSIA, 1999).

Perchloroethylene manufacturers claim that dry cleaning grade PCE is 99.9% pure. The impurities are other chlorinated compounds. Perchloroethylene is a very stable solvent and is not normally corrosive. However, in the presence of heat and moisture, acids can form from PCE and cause corrosion problems. The presence of other chlorinated compounds, such as TCA, which has been widely used in spotting agents, can also contribute to acid formation in PCE. To combat this problem stabilizers (acid acceptors) are added to PCE in small quantities (0.05 to 0.2% by volume). Some of the common stabilizers added to dry cleaning-grade PCE are: 4-methylmorpholine, diallylamine, tripropylene, cyclohexene oxide, benzotriazole, and betaethoxypropyl nitrile.

Some drycleaners purchase and use reclaimed PCE. This reclaimed solvent has a reported purity of 95 – 99%. Typical impurities in reclaimed PCE are methyl ethyl ketone, mineral spirits, toluene, 1,1,1-trichloroethane and other chlorinated solvents. A color inhibitor, butylated hydroxytoluene or BHT is added to some reclaimed PCE. Since reclaimed PCE typically does not contain stabilizers, it is often blended by the drycleaner with commercial (stabilized) PCE prior to use.

## **1,1,2-Trichloro-1,2,2-trifluoroethane**

In the late 1960s DuPont began marketing this chlorofluorocarbon (Freon 113) as a dry cleaning solvent. It is known in the dry cleaning industry as Valclene. Since the vapor pressure of Valclene is approximately 20 times that of PCE, clothes cleaned in Valclene can be dried at lower temperatures and it was therefore promoted as the solvent of choice for the dry cleaning of delicate fabrics. Freon 113 is one of the chlorofluorocarbons subject to the Montreal Protocols and is no longer being manufactured in the United States. It was never widely used in dry cleaning and most of the Valclene operations have converted to other solvents.

## **1,1,1-Trichloroethane**

In the early 1980s, Dow Chemical began marketing 1,1,1-trichloroethane (TCA) as a dry cleaning solvent. It was used particularly in leather cleaning operations. Only a few dry cleaning operations ever used TCA as a primary dry cleaning solvent. TCA is not a very stable solvent and there were problems with machine and equipment corrosion. TCA has been used as a pre-cleaning and spotting agent.

## **RYNEX**

Rynex was developed in the late 1990s as an alternative to PCE. It is described as “dipropylene glycol tertiary-butyl ether – DPTB” (US Patent, 2001).

## **GreenEarth™**

GreenEarth is a silicon-based solvent developed in the late 1990s. The chemical name for GreenEarth is decamethylcyclopentasiloxane, a.k.a D5.

## **PureDry**

PureDry was developed by Niran Technologies and was first marketed in 2000. It is described as a “hybrid” solvent and is reportedly composed of C<sub>9</sub> – C<sub>12</sub> hydrocarbons, hydrofluoroethanes (HFE), and perfluorocarbons. It has a flashpoint of 350 degrees F.

# **OTHER CHEMICALS USED IN THE DRY CLEANING MACHINE**

## **Detergents**

Detergents are used in the dry cleaning process. They perform three different functions:

- carry moisture to aid in the removal of water soluble soils;
- suspend soil after it has been removed from the fabric;
- and act as a spotting agent to penetrate the fabric so that the solvent and water can remove stains.

Based on their charge and how they carry water, there are three classifications of detergents:

- anionic detergents – are negatively charged and carry water by means of solubilization;
- non-anionic detergents - carry no charge and carry water by solubilization;
- cationic detergents – are positively charged and carry water by means of an emulsion. Most cationic detergents are pre-charged with moisture.

Detergents are introduced into the dry cleaning machine by two different systems:

- In charged systems, where detergent is added to the solvent or “charged” as a certain percentage of the solvent (normally 1 to 2%) to maintain a continuous concentration of detergent. Charged systems use anionic detergents. “Pre-charged solvent” (solvents containing the detergent) have been marketed in the industry – particularly for use in coin-operated dry cleaning machines.
- In injection systems, also known as batched detergent injection, solvent is added to the wheel saturating the garments and then detergent is injected into the flow line or into the drum by a pump or dump method. Cationic detergents are used in injection systems.

The earliest dry cleaning detergents were soaps. There were three different types: paste soaps, gel soaps and liquid soaps. Most of these soaps were composed of surfactants, Stoddard

Solvent, free fatty acids and some moisture to create an emulsion. When filtration was first utilized in the dry cleaning process, it was discovered that paste and gel soaps, also known as “true soaps”, tended to plug or “slime” the filters, so the soaps became obsolete. The liquid soaps, also known as “filter soaps”, sometimes contained a co-solvent such as butyl cellosolve, hexylene glycol, isopropanol, cyclohexanol, ethanolamine or n-butanol, which was used to disperse moisture. By the early 1950s, the industry trend was from liquid soaps to the use of synthetic detergents.

Synthetic detergents are surfactants or mixtures of surfactants with solvents. The following surfactants have been used in commercial dry cleaning detergents: soap-fatty acid mixtures; “mahogany” or petroleum sulfonates; sodium sulfosuccinates; sodium alkylarenesulfonates; amine alkylarenesulfonates; fatty acid esters of sorbitan, etc; ethoxylated alkanolamides; ethoxylated phenols; and ethoxylated phosphate esters (Kirk-Othmer, 1965).

The constituents listed for the dry cleaning detergents included in the spreadsheet include surfactants: phosphate esters, linear alkylbenzenesulfonic acid salt, oxyethylated isononylphenol, diethanolamine, alkearyl sulfonate, sodium sulfonate, and sulfosuccinate. They also include dry cleaning solvents and co-solvents that function as carriers. These include perchloroethylene, petroleum solvents and the following cosolvents – butyl cellosolve, hexylene glycol, 2-propanol, isopropyl alcohol, 2-butoxyethanol, diethylene glycol monobutylether, dipropylene glycol monomethylether and glycol ether. The most common solvent contained in the dry cleaning detergent mixtures listed on the spreadsheet is petroleum dry cleaning solvent (petroleum naphtha blends).

### **Sizing**

Sizing is a type of finish used in dry cleaning to impart “body” to a fabric. Sizing is actually applied to fabrics when they are manufactured and is depleted after several fabric cleanings. Most sizing used in dry cleaning operations today is composed of hydrocarbon resins. Alpha methylstyrene was reportedly used in sizing in the past. There are two forms of sizing used in dry cleaning operations - a solid (in a powder or bead form) – and a liquid. The solid form of sizing - the bead form - is commonly used in PCE dry cleaning systems. Most of the liquid sizing used today has a petroleum solvent carrier. It is not uncommon for liquid sizing to contain over 50% petroleum solvent (petroleum naphtha blends) by volume. Anti-static agents and optical brighteners are commonly added to sizing.

Sizing can be applied in three different ways: by a continuous bath in the dry cleaning machine; by dipping garments in a tank of sizing; or by spraying sizing in an aerosol form (generally containing a propane/isobutane carrier) on the garments after they have been dry cleaned.

In the continuous bath application method 0.5 to 1.5% charge of sizing is added to the dry cleaning machine. The concentration of sizing used in the dipping method ranges from 1 to 4% (Eisenhauer).

### **Other Chemicals**

Other chemicals used in the dry cleaning machine include: optical brighteners, bactericides, fabric conditioners, and anti-static/anti-lint agents.

Optical brighteners, also known as fluorescent whitening agents, optical bleaches or optical dyes are used to “make white whiter”. These chemicals are normally added to dry cleaning detergents or sizing. Optical brighteners have been widely used in laundry detergents for many years. In recent years, they have been used in dry cleaning.

One of the problems associated with petroleum dry cleaning solvents is biodegradation. Bacteria introduced into the dry cleaning system through the clothing being drycleaned or in water introduced into the system will feed on the petroleum solvent and degrade the petroleum compounds producing “sour smells”. To combat this problem, bactericides or biocides are added to the system, normally in detergents. The biocides used today are reportedly similar to those used in shampoos, laundry products and cosmetics. In the past PCE was added to dry cleaning soaps as a bacterial inhibitor.

Some fabric conditioners are added to the dry cleaning process. These are used primarily to condition or restore luster and shine to suedes, leathers and silks. These products are typically solvent based – petroleum naphtha or perchloroethylene.

Anti-static agents and anti-lint agents (to prevent lint buildup and retention) are available for dry cleaning operations.

## **PRE-CLEANING/SPOTTING AGENTS**

The greatest number and variety of chemicals used in dry cleaning operations are used in pre-cleaning and spotting operations. Prior to being placed in the dry cleaning machine, heavily stained garments are usually pre-cleaned or pre-spotted with cleaning chemicals. The types of chemicals used depend on the type of stain and the type of fabric being cleaned. After they are drycleaned, garments that are still stained or soiled are spot cleaned using the same chemicals as in pre-cleaning. There are three types of pre-cleaning/spotting agents: wet-side agents, dry-side agents and bleaches.

### **Wet-side Spotting Agents**

Wet-side pre-cleaning/spotting agents are used to clean water soluble stains from clothing. Wet-side agents can be subdivided into three different classes: neutral, alkaline, and acidic.

Neutral Wet-Side Agents – Neutral spotting agents include water and neutral synthetic detergents (which contain surfactants). These agents are used to remove water-soluble stains, food, beverages and water-soluble dyes.

Alkaline Wet-Side Agents – Alkaline spotting agents include lye, ammonia, potassium hydroxide, sodium hydroxide and so-called protein formula home detergents. Protein formula detergents contain digester enzymes - Amylase, Cellulase, Lipase and Protease. Digesters can be used to remove: starch, cellulose, fats and oils, and protein stains.

Acidic Wet-Side Agents – Acid agents include acetic acid, hydrofluoric acid, oxalic acid, glycolic acid and sulfuric acid. Tannin or plant-based stains can be removed with wet-side spotting agents (known as tannin formula agents).

### **Dry-Side Spotting Agents**

Dry-side pre-cleaning/spotting agents are used to remove oily-type stains, stains including fats, waxes, grease, cosmetics, paints and plastics. The primary constituents of dry-side agents are non-aqueous solvents and alcohols and include, or have included: perchloroethylene, trichloroethylene, 1,1,1-trichloroethane, carbon tetrachloride, methylene chloride, amyl acetate and petroleum solvents. In general, from a contamination and regulatory standpoint, dry-side spotting agents include some of the most toxic chemicals used in dry cleaning operations.

### **Bleaches**

Bleaches are used in stain removal when other spotting techniques have failed to remove a stain. This process is known as “spot bleaching”. Bleaches are also used in conventional laundry operations which are conducted at most dry cleaning plants. Bleaches can be classified as either oxidizing or reducing.

#### **Oxidizing Bleaches**

- Sodium Perborate
- Hydrogen Peroxide
- Sodium Percarbonate
- Sodium Hypochlorite

#### **Reducing Bleaches**

- Sodium Bisulfite
- Sodium Hydrosulfite
- Titanium Sulfate
- Oxalic Acid

## **GARMENT TREATMENT CHEMICALS**

A number of different chemicals are used to treat garments after they are dry cleaned. The functions of these chemicals include waterproofing, flame retardants, refurbishing, deodorizing, stain repellents and pest control.

### **Waterproofing**

Waterproofing of garments by the clothing manufacturer is a relatively recent development. Historically, much of garment waterproofing was performed by drycleaners. The water proofing agent was usually a waxed-base product and the predominant carrying agent for waterproofing agents has been nonaqueous solvents – perchloroethylene and petroleum solvents. Several methods have been used to apply the waterproofing agent, including immersion in the waterproofing agent in a dip tank; spraying the waterproofing agent on the garments in a tank; applying the waterproofing agent in the form of an aerosol spray; and in some cases applying the waterproofing agent in an auxiliary tank in a dry cleaning machine (Rising, 1997).

## **Flame Retardants**

Flame retardants are normally applied to garments by the garment manufacturers. However, in the past, some drycleaners have treated or re-treated garments with flame retardants. Some of the chemicals used in flame retardants include: decabromodiphenyl oxide (DBDPO), organo-phosphates, phosphate salts and phosphated esters. Dry-side application of flame retardants used dry cleaning solvent as the carrying agent. The flame retardant chemicals were applied by immersion or dipping in a tank or by spraying the garment with the flame retardant (IFI, 1995).

## **Fabric Conditioner**

Chemicals are applied to refurbish garments after dry cleaning. Typically, these garments can include suedes, leathers, silks, wools and vinyls. These chemicals are usually applied by spraying the garment (using a spray bottle or aerosol spray). Plasticizers such as di-N-butyl phthalate and di-2-ethylhexyl adipate are used to re-condition vinyl garments.

## **Stain Repellents**

Stain repellents are generally applied by the garment manufacturer, but some drycleaners do apply stain repellents. Historically, these products have been silicone based and the carrying agent has been 1,1,1-trichloroethane (no longer used) or petroleum naphtha (IFI, 1994). Most stain repellents can be applied as an aerosol spray. Scotchgard™ (no longer manufactured) was one of the most commonly used stain/water repellents.

# **CHEMICALS USED IN SOLVENT & EQUIPMENT MAINTENANCE**

## **Solvent Maintenance & Treatment**

From the early part of the twentieth century until the early 1950s, both alkalis and sulfuric acid were used to clarify spent petroleum dry cleaning solvent. The most common alkali used was caustic soda (sodium hydroxide) in a 8-10% solution. The solvent was bubbled through or agitated with the caustic soda solution to help remove soap-fatty acid type detergents. Sulfuric acid was mixed and agitated with the spent solvent and then allowed to settle out (Martin, 1958).

Anti-foaming agents (such as glycol ether acetate) are sometimes added to the distillation unit to prevent contaminants in the spent solvents (pigments, fatty acids, filter powder, detergents water repellents and retexturing agents) from causing excessive foaming during the distillation process.

Chemical agents are sometimes added to prevent the formation of free fatty acids in solvents. Alkaline solutions are also added to buffer destabilized (acidic) perc. Detergents are sometimes added to the system to clean the drum and button trap of the dry cleaning machine.

### **Filter Maintenance**

Trisodium Phosphate was once used to clean tubular (regenerative) filters – used in powder filtration systems. It is doubtful that any of these tubular filters are still being utilized.

### **Detergent Maintenance**

In charged systems, where anionic detergents are used, it is important to maintain a constant detergent concentration. Test kits are utilized to titrate solvent/detergent mixtures to measure the amount of detergent in the system. Chemicals used in these test kits can include: 1,2-dichloroethane, methylene chloride, and chloroform.

### **Boiler Maintenance**

The use of untreated water in a boiler can cause scale buildup and corrosion. Treating the boiler water with chemicals - known as boiler feed water treatment - will increase the life of the boiler and reduce maintenance costs. Scale is formed from calcium and magnesium salts that are carried in solution in the water used in the boiler. Treatment of the boiler water by raising the pH with the addition of alkaline salts – such as sodium or potassium hydroxide – will prohibit most of the calcium and magnesium salts from precipitating and causing scale buildup in the boiler. Sodium sulfite is a constituent of some boiler feed water treatments. This constituent acts as an oxygen scavenger. The presence of oxygen in boiler water will lead to corrosion of the boiler (Faig). A chelating agent, sodium hexametaphosphate is sometimes added to boiler water to inhibit hard water salts from precipitating to form scale. Hydrochloric acid is sometimes utilized in acid boils to remove scale.

Acknowledgements – The following organizations contributed to this effort: the Michigan Department of Environmental Quality; the Florida Department of Environmental Protection; the South Carolina Department of Health & Environmental Control; the Oregon Department of Environmental Quality; the North Carolina Department of Environment and Natural Resources; International Fabricare; and Fabritec International.





