Emission Standards for Perchloroethylene Dry Cleaning Facilities

Illinois Small Business Environmental Assistance Program
800-252-3998
www.ildceo.net/enviro

Contents

Definitions used:

°C – degrees Celsius.

CA - carbon adsorber - "sniffer" – bed of activated carbon into which an air-perchloroethylene gas-vapor stream is routed and which adsorbs the perchloroethylene on the carbon.

Colorimetric detector tube – glass tube (sealed prior to use), containing material impregnated with a chemical that is sensitive to perchloroethylene and is designed to measure the concentration of perchloroethylene in air.

Dry-to-dry machine – one-machine dry cleaning operation in which washing and drying are performed in the same machine.

Existing – began construction or reconstruction before December 9, 1991.

°F – degrees Fahrenheit

Filter – porous device through which perchloroethylene is passed to remove contaminants in suspension (for example lint filter, button trap, cartridge filter, tubular filter, regenerative filter, prefilter, polishing filter, and spin disc filter)

Fugitive emissions – emissions that can not reasonably be collected and emitted through a stack or vent.

Halogenated hydrocarbon detector – portable device capable of detecting vapor concentrations of perchloroethylene of 25 parts per million by volume or greater by emitting an audible or visual signal that varies as the concentration changes.

New – began construction or reconstruction on or after December 9, 1991.

Perc – perchloroethylene

Perc gas analyzer – flame ionization detector, photoionization detector, or infrared analyzer capable of detecting vapor concentrations of perc of 25 ppm by volume.

ppm – parts per million.

Process vent controls – devices used to control emissions from a vent, stack, or similar device.

Residence – any dwelling or housing in which people reside excluding short-term housing that is occupied by the same person for a period of less than 180 days (such as a hotel room)

RC - refrigerated condenser - "chiller" – vapor recovery system into which an air-perc gas-vapor stream is routed and the perc is condensed by cooling the gas-vapor stream.

Transfer machine system – multiple-machine dry cleaning operation in which washing and drying are performed in different machines. Examples include, but are not limited to: (1) a washer and dryer, (2) a washer and reclaimer, or (3) a dry-to-dry machine and reclaimer.

Vapor barrier enclosure – room that encloses a dry cleaning system and is constructed of vapor barrier material that is impermeable to perc.

The U. S. Environmental Protection Agency (EPA) has set standards for the control of perc releases from dry cleaning facilities.

Perc is suspected of causing cancer in humans.

These emission standards are different from hazardous waste regulations. They are based on use of perc, not generation of perc related drained spent cartridge filters, still bottoms, or filter muck waste.

Coin-operated dry cleaning facilities are exempt from these requirements.

Continuing Requirements			
Applicability:	**Small Area Sources[a]**	**Large Area Sources[a]**	**Major Sources[b]**
Facilities with:	Consume less than (*gallons perc/year*):	Consume equal to or between (*gallons perc/year*):	Consume more than (*gallons perc/year*):
Only Dry-to-Dry	140	140-2,100	2,100
Only Transfer Systems	200	200-1,800	1,800
Both Dry-to-Dry and Transfer Systems	140	140-1,800	1,800
Process Vent Controls:			
Existing Facilities	None	RC[c] CA installed before September 22, 1993, can remain; it does not have to be replaced by RC.	
New Facilities	Closed loop, dry-to-dry machine with RC[c]		Closed loop, dry-to-dry machine with RC[c] followed by CA[c] operated immediately before or as the door is opened
Fugitive Controls[e]:			
Existing Facilities	Sealed containers Leak detection/repair		Room enclosure[d] Sealed containers Leak detection/repair
New Facilities	No new transfer systems Sealed containers Leak detection/repair		
Monitoring:			
Existing Facilities	None	Meet parameters set for RC and CA	
New Facilities	Meet parameters set for RC and CA		
Compliance Dates[e]			
Existing facilities	Should already be in compliance with these continuing requirements.		
New facilities	Should comply upon start up with these continuing requirements.		
Existing Facilities *– began construction or reconstruction before December 9, 1991* ***New Facilities*** *– began construction or reconstruction on or after December 9, 1991*			

a Area sources are permanently exempted from Title V permitting requirements. Perc dry cleaners using 360 gallons /yr require a permit from the Illinois EPA Bureau of Air. Note: You must apply for a construction/operating permit before usage reaches 360 gallons. Failure to get the required permits prior to solvent usage reaching 360 gallons or prior to installation of equipment may result in double fees plus fines and penalties. ***(All petroleum based cleaners are required to either have a permit or register under Registration of Smaller Sources (ROSS) program, regardless of solvent usage; operating without a permit may result in double fees plus fines and penalties.) More information concerning ROSS can be found online at www.ildceo.net/enviro.***

b **All major sources need Title V air permits.**

c or equivalent control

d The room enclosure must be constructed of materials impermeable to perc, must be designed and operated to maintain a negative pressure at each opening while the dry cleaning machine is operating, and must exhaust to a carbon adsorber. The room enclosure must be vented to a separate carbon adsorber or equivalent device and not share a carbon adsorber in common with a dry cleaning machine.

e Please refer to the Regulatory Update in the front of this workbook for further information regarding controls and compliance.

Requirements since July 27, 2006		
Process Vent Controls		
	Small Area Sources* *(Small and Large)*	**Major Sources**
	By July 27, 2006, or immediately upon start up, whichever is later.	
Constructed or reconstructed on or after December 21, 2005	Closed loop, dry-to-dry machine with RC* followed by CA* operated immediately before the door is opened	Closed loop, dry-to-dry machine with RC* followed by CA* operated immediately before the door is opened
Fugitive Controls:		
By July 28, 2009 Eliminate transfer machines. (The only exceptions are transfer machines that qualify as Small Area Sources and were installed between December 9, 1991, and September 22, 1993.)		

MONITORING:

BY JULY 27, 2006, OR IMMEDIATELY UPON START UP, WHICHEVER IS LATER.

Monitor high pressure and low pressure on RC, when pressure gauges are available, rather than temperature. Use a calorimetric detector tube or a perc gas analyzer to monitor CA.

If located in a building with a residence:

When your current perc machine wears out, you must not replace it with another perc machine.

You must not install a perc machine, including relocating a used machine, after December 21, 2005.

By July 27, 2006

If you did install a perc machine on or after December 21, 2005, but before July 13, 2006, you must meet these requirements:

- Operate the dry cleaning system inside a vapor barrier enclosure. Operate the exhaust system for the enclosure at all times the dry cleaning system is in operation and during maintenance. Ensure that the entry door to the enclosure is open only when a person is entering or exiting the enclosure.
- Route the air-perc gas-vapor stream through a RC and pass the air-perc gas-vapor stream from inside the dry cleaning drum through a CA* immediately before the door of the dry cleaning machine is opened. Desorb according to manufacturer's instructions.
- Inspect for vapor leaks on a weekly basis using a halogenated hydrocarbon detector or a perc gas analyzer. Follow the manufacturer's instructions. Place the probe at the surface where leakage could occur and move it slowly along the surface.

By July 27, 2009

You must eliminate perc machines installed (including the relocation of a used machine) on or after December 21, 2005.

After December 21, 2020

You* must eliminate perc machines *installed before December 21, 2005.

"Third generation" perc drycleaning machines (defined as a machine without a secondary control system) **can** be operated until the end of their useful life at their **existing** location. However, these machines **cannot** be installed and operated at a **new** location.

** or equivalent control device*

Inspections

Perceptible leaks – those you can see, feel, or smell.
Inspections for vapor leaks using a halogenated hydrocarbon detector or a perc gas analyzer always suffice for perceptible leak inspections

Continuing Requirements

	Small Area Sources	Large Area Sources	Major Sources
Existing Facilities	Inspect biweekly for perceptible leaks. Repair leaks and maintain records.	Inspect weekly for perceptible leaks. Repair leaks and maintain records.	
New Facilities	Inspect weekly for perceptible leaks. Repair leaks and maintain records.		

Requirements since July 27, 2006

	Area Sources	Major Sources
New Facilities By July 28, 2009, if installed before December 21, 2005. **By July 27, 2006, if installed on or after December 21, 2005.**	Inspect weekly for perceptible leaks. Inspect for vapor leaks on a monthly basis using a halogenated hydrocarbon detector or a perc gas analyzer. Follow the manufacturer's instructions. Place the probe at the surface where leakage could occur and move it slowly along the surface. Repair leaks and maintain records.	Inspect weekly for perceptible leaks. Inspect for vapor leaks on a monthly basis using a perc gas analyzer and operate it according to EPA Method 21. Repair leaks and maintain records.

Existing Facilities *– began construction or reconstruction before December 9, 1991*
New Facilities *– began construction or reconstruction on or after December 9, 1991*

Compliance Steps Required of All Perc Dry Cleaners

Reporting

Illinois perc dry cleaners must send reports to both the Illinois Environmental Protection Agency and USEPA. Each perc dry cleaner must submit an initial notification report and compliance reports. The initial notification report lets regulators know that you are affected by this rule. These were due on June 18, 1994, for existing machines. For new machines, they are due 30 days after installation. Compliance reports let regulators know if you are meeting the requirements of this rule. Compliance Reports for Pollution Prevention were due on June 18, 1994, for existing machines. For new machines, they are due 30 days after installation. Compliance Reports for Control Requirements were due by October 23, 1996, for existing machines. For new machines, they are due 30 days after installation.

New Training Requirements

Effective January 1, 2014, all operators of perc drycleaning machines must have completed an initial environmental training course that focuses on "best management practices". These training requirements were developed by the Illinois Drycleaner Environmental Response Trust Fund, the Illinois Environmental Protection Agency and industry representatives. Fund approved seminars focusing on "best management practices" can be used to meet some of the initial training requirements. Once every 4 years, the operator must successfully complete a refresher course.

Other

The license renewal application will include a certification by the applicant that all hazardous waste stored at the drycleaning facility is stored and transported in accordance with applicable federal and state laws and regulations. The drycleaner must submit with the license application copies all hazardous waste manifests for waste transported from the facility for the previous 12 months. With the 2019 license renewal application, the Illinois Drycleaner Environmental Response Trust Fund is requesting copies of all waste manifests for the period of January 1, 2018 through December 31, 2018.

Whenever a new machine is installed new forms must be submitted within 30 days.
Call the ILSBEAP 800/252-3998 for questions about reporting or for copies of reporting forms. To find available forms on-line go to: **www.ildceo.net/enviro**. Mailing addresses are given on the forms.

Monitoring: Required monitoring must begin immediately for new installations and was required to begin November 23, 1996, for existing facilities.

1. Refrigerated Condenser (RC): Monitor weekly.

Measure the refrigeration system high pressure and low pressure during the drying phase to determine if they are in the range specified by the manufacturer's operating instructions.

If the machine is not equipped with refrigeration system pressure gauges, monitor temperature. Use the temperature sensor according to manufacturer's instructions.

Measure the temperature of the air-perc gas-vapor stream on the outlet side of the RC on a dry-to-dry machine, dryer, or reclaimer to determine if it is equal to or less than 7.2 °C (45 °F) before the end of the cool down or drying cycle while the gas-vapor stream is flowing through the condenser. The temperature sensor should be designed to measure a temperature of 7.2°C (45°F) to an accuracy of ±1.1°C (2°F).

Measure the inlet and outlet temperature of the RC on a washer. Calculate the difference. It must be greater than 11.1°C (20°F). The temperature sensor should be designed to measure at least a temperature range from 0°C (32°F) to 48.9 °C (120 °F) to an accuracy of ±1.1°C (2°F).

2. Carbon Adsorber (CA): Monitor weekly. Follow the manufacturer's instructions.

If you use a CA instead of a RC or you use a supplemental CA and the exhaust passes through the **CA immediately upon door opening**, measure the concentration of perc in the exhaust of the CA. Use a colorimetric detector tube or perc gas analyzer that measures a concentration of 100 ppm by volume of perc in air to an accuracy of ±25 ppm by volume. Take the measurement while the dry cleaning machine is venting to the CA at the end of the last dry cleaning cycle prior to desorption of the CA or removal of the activated carbon. The perc concentration needs to be less than or equal to 100 ppm.

A sampling port for monitoring within the exhaust outlet of the CA must be provided in a place that is easily accessible; located at least eight times the diameter of the stack or duct downstream from any flow disturbance (bend, expansion, contraction, or outlet); not downstream from any other inlet; and two times the diameters of the stack or duct upstream from any flow disturbance.

If you use a supplemental CA and the air-perc gas-vapor stream passes through the CA **before the machine door is opened**, measure the concentration of perc in the dry cleaning machine drum at the end of the dry cleaning cycle. Use a colorimetric detector tube or perc gas analyzer that measures a concentration of 300 ppm by volume of perc in air to an accuracy of ±75 ppm by volume. Place the tube or analyzer into the open space at the rear end of the drum immediately after door opening. The perc concentration needs to be less than or equal to 300 ppm.

If required monitoring detects values that do not meet the parameters set in the standard, make adjustments or repairs to the dry cleaning system or control device to meet those values. If repair parts are needed, make a written or verbal order within two working days of detecting the value. Install repair parts within five working days after receipt.

Inspection Requirements:

Inspection requirements dictate that dry cleaners inspect the following components for leaks while the dry cleaning system is operating.

1. Hose and pipe connections, fittings, couplings, and valves;
2. Door gaskets and seatings;
3. Filter gaskets and seatings;
4. Pumps;
5. Solvent tanks and containers;
6. Water separators;
7. Muck cookers;
8. Stills;
9. Exhaust dampers;
10. Diverter valves; and
11. All filter housings.

Repair all leaks detected during inspections within 24 hours. If repair parts are needed, make a written or verbal order within 2 working days of detecting the leak. Install repair parts within 5 working days after receipt.

Inspect for leaks while the dry cleaning system is operating

Other Requirements for All Perc Dry Cleaning Facilities*:

Fugitive Controls

- Use solvent tanks or containers to store all perc and perc related waste. Ensure that these tanks and containers are closed so that they have no perceptible leaks. Except that you may leave containers for separator water uncovered if it is necessary for proper operation of your machine and still.
- Drain all cartridge filters in their housing, or other sealed container, for a minimum of 24 hours (or treat such filter in an equivalent manner) before removal from the dry cleaning plant.

Operation/Maintenance

- Close the door of each dry cleaning machine immediately after transferring articles to or from the machine; keep the door closed at all other times.
- Operate and maintain dry cleaning systems according to manufacturer's specifications and recommendations.
- Operate each RC to not vent or release the air-perc gas-vapor stream contained within the dry cleaning machine to the atmosphere while the dry cleaning drum is rotating. The air-perc vapor should be recirculating back through the machine without venting to the atmosphere (closed loop).
- Operate each RC to prevent air drawn into the dry cleaning machine when the door of the machine is open from passing through the RC.
- Do not bypass a CA at any time.
- Desorb each CA according to manufacturer's instructions.

Records

Retain on site a copy of the design specifications and the operating manuals for each dry cleaning system and each emission control device located at your facility.

Keep receipts of perc purchases and a log of the following information, maintain such information on site, and show it upon request for a period of five years:

1. Volume of perc purchased each month.
2. Calculation and result of the yearly perc consumption as shown. Perform the following calculation on the first day of every month:
   a) Sum the volume of all perc purchases made in each of the previous 12 months
   b) If no perc purchases were made in a given month, then the perc consumption for that month is 0 gallons.
   c) The total sum calculated is the yearly perc consumption at the facility.
3. Dates when the dry cleaning system components are inspected for leaks, as specified, and the name or location of dry cleaning system components where leaks are detected.
4. Dates of repair and records of written or verbal orders for repair parts.
5. Date and high and low pressure or temperature sensor monitoring results of RC, if required.
6. Date and colorimetric detector tube or perc gas analyzer monitoring results of CA, if required.

* Please refer to the Regulatory Update in the front of this workbook for further information regarding controls and compliance.

Illinois Permits:

If you are a perc dry cleaner and nearing the 360 gallon/yr threshold which requires a permit from the Illinois EPA Bureau of Air, you must apply for a construction/operating permit before using 360 gallons. Failure to get the required permits prior to solvent usage reaching 360 gallons or installation of equipment may result in double fees plus fines and penalties. (All petroleum based cleaners are required to register with the Registration of Smaller Sources (ROSS) program or have a permit depending on amount of solvent usage or emissions; operations without a permit or under ROSS program, may result in double fees plus fines and penalties.)

Call the ILSBEAP at 800-252-3998 if you have questions or would like a copy of this emission standard. To find this rule on-line or to find other information concerning this rule go to:
http://www.epa.gov/ttn/atw/dryperc/dryclpg.html .