

## BEST MANAGEMENT PRACTICES FOR PERCHLOROETHYLENE DRY CLEANERS

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### BACKGROUND

Perchloroethylene (perc) is the most common chemical solvent used in the Illinois dry cleaning industry. Perc is an effective cleaning agent that removes stains and dirt from garments, draperies, leather goods and other fabric items. It currently accounts for 75 percent of the cleaning solvents used in the approximately 1,000 professional dry cleaners operating throughout the state.



Unfortunately perc has drawbacks; it is a pollutant with both human health and environmental concerns. Perc is classified as a suspected carcinogen and has been found to be moderately toxic to people. Perc can be released into the air during leaks from machine operations, or into the soil and groundwater if solvent-contaminated waste or wastewater is improperly handled. There are cases of public and private water wells being significantly impacted by dry cleaning solvent contamination. This has led to the increased regulation of perc use and

disposal by various federal, state and local regulatory agencies.

This fact sheet provides an overview of best management practices that can help reduce exposure and releases of perc into the environment. It was designed to assist dry cleaners in minimizing air emissions, reducing the potential for spills and leaks, protecting groundwater and promoting the more efficient use of cleaning solvents. These practices include good operating and “housekeeping” procedures to minimize losses of solvents, as well as modifications to equipment and processes that provide extra protection for containing leaks and spills.

While some best management practices are required by the air emission standards and hazardous waste management regulations, perc dry cleaners can use this fact sheet to help identify areas for maximizing compliance and achieving greater protection of public health and our environment. Many of these practices are low-cost and low-risk alternatives that can provide additional benefits, including



improved equipment efficiency, lower operating costs and avoided penalties related to non-compliance.

It is important to note that this fact sheet does not cover all the details in the environmental regulatory requirements affecting Illinois dry cleaners that use perc. We encourage you to obtain a copy of the *Watch Your Perc!* fact sheet, which is a general overview of the regulations. Call the IEPA Office of Small Business at 1-888-EPA-1996 to request a copy. Or, you can obtain a copy from IEPA's web site at <http://www.epa.state.il.us/small-business/publications.html>. Another compliance assistance resource is the *Emission Standards for Perchloroethylene Dry Cleaning Facilities* fact sheet, which can be obtained by contacting the Illinois Small Business Environmental Assistance Program at 1-800-252-3998, or by visiting <http://www.illinois.gov/dceo/EIT/SBEAP/Pages/default.aspx>.

## AIR EMISSIONS

Vapor and liquid leaks can contribute significantly to perc emissions to the atmosphere. Leaks can occur during operation, service and maintenance activities at a dry cleaning facility. Like many liquid chemical solvents, perc can evaporate quickly when exposed to air. Perc may be released as "fugitive emissions" from leaks around machine door gaskets, evaporation from spent filters, solvent spills, open containers and losses during solvent transfer. Proper operation and effective maintenance of equipment, in addition to a good leak detection and repair



program, can reduce solvent loss from evaporation and fugitive emissions. This will reduce worker exposure and releases of perc to the outside air.

- Follow manufacturer's recommended maintenance schedule to keep dry cleaning equipment running efficiently.
- Inspect your dry cleaning equipment weekly for perceptible leaks that are obvious by sight, smell or touch.
- Repair or replace leaking components in a timely manner.
- Clean certain component parts regularly, including condensing coils, fan blades and lint screens.
- Drain all cartridge filters in a closed container for at least 24 hours before properly handling them as hazardous waste.
- Minimize the time the button traps and door of the dry cleaning machine are open.
- Keep all solvent and waste materials in tightly sealed containers with no evidence of leaks or deterioration.
- Inspect for vapor leaks on a monthly basis using a halogenated hydrocarbon leak detector or a perc gas analyzer.



- Check the refrigeration system pressure or refrigerated condenser temperature every week as specified by the air emission standards to ensure that the refrigeration system of the dry cleaning machine is operating optimally.
- Maintain good records of dry cleaning equipment operation, maintenance and repair, leak testing and solvent mileage.



Note: A useful tool to keep records up-to-date is the *Dry Cleaner's Compliance Workbook Calendar*, which can be downloaded at:  
<http://www.ildceo.net/dceo/Bureaus/Entrepreneurship+and+Small+Business/Small+Business+Environmental+Assistance+Program/DryCleaners.htm>.

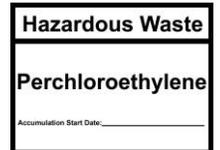
## HAZARDOUS WASTE

Dry cleaner waste that contains perc is classified as a hazardous waste and must be managed appropriately. Examples of hazardous wastes generated from dry cleaning operations include spent filter cartridges contaminated with perc, muck from distillation units, spent solvent, lint from the dry cleaning machine, spill cleanup materials and separator water unless managed through an on-site wastewater treatment unit.

Care should be exercised whenever solvent-contaminated wastes are handled. Do not dispose of these wastes into the sink, toilet, trash or outside onto the ground, into

storm drains or into the dumpster. The proper management of hazardous waste can help prevent accidents, improper disposal and lower the risk of environmental liability.

- Clearly label each container used for storing hazardous waste with the words "hazardous waste," and mark on that container the date you began to collect waste.



- Use containers for waste materials that are in good condition and keep securely closed except when adding or removing material.
- Provide trays, pans or other containment structures under storage and waste containers.
- Protect all containers from fire and secure from vandalism and physical damage.
- Inspect waste containers at least weekly for leaks, dents, bulges and corrosion.
- Do not mix different wastes together that could create fires, leaks or other releases.
- Train employees on proper waste handling and emergency response procedures relevant to their job duties.
- Use licensed waste transporters and facilities when disposing of hazardous waste.

- Retain your hazardous waste shipping records (manifest, bill of lading or other shipping document) for at least three years and include a copy with the annual license renewal application for any hazardous waste that was shipped from your facility in the previous 12 months.

## SEPARATOR WASTEWATER

Perc-containing wastewater from dry cleaning collects in the water separation process of the dry cleaning machine. Separator wastewater will typically contain hazardous levels of perc solvent. Most local sewer or water reclamation agencies will not accept separator wastewater because it can leak into the soil through cracks in the sewer lines or directly through the concrete. This can result in groundwater contamination that is difficult and expensive to clean up. Dry cleaners using perc should not put separator wastewater into a septic system, storm sewer or surface water, and it should not enter the sanitary sewer (via sinks, toilets or drains).

Dry cleaners can manage separator wastewater by drumming the wastewater and shipping it offsite to a hazardous waste facility. It can also be managed onsite by using a wastewater treatment unit to remove solvent from the wastewater to below hazardous waste levels and then evaporating or atomizing the treated water to the outside air as water vapor. These treatment units are designed to managed wastewater containing very small amounts of solvent, not pure solvent.



- Keep your water separator cleaned out and well-maintained.
- Monitor the temperature settings on the water separator to ensure that pure solvent does not spill over and accumulate in the wastewater.
- If wastewater from the water separator on the dry cleaning machine is drummed up and shipped offsite, label the container as “hazardous waste” and engage the services of a licensed waste hauler to transport the wastewater to a permitted hazardous waste disposal facility.



- If separator wastewater is managed onsite (i.e., evaporator or misting device), follow the manufacturer’s instructions and maintenance schedule for the wastewater treatment unit and keep a record of the maintenance activities in a log.
- If the wastewater treatment unit is plumbed to receive separator wastewater from the dry cleaning machine, make sure the tubing/piping is secured with clamps or other devices to prevent leaks.
- If separator wastewater is collected in a container (e.g., a bucket) and carried to the wastewater treatment unit, keep the container closed (unless wastewater is being added

or removed) and place in an area with secondary containment.

- Change filters on the wastewater treatment unit regularly in accordance with the manufacturer's recommendations and keep replacement filters on hand at the facility.
- Use a wastewater treatment unit that includes a monitor/alarm that will shut down the unit when the filtration system becomes saturated with perc.



- Check the wastewater treatment unit regularly to ensure it is operating properly and does not have clogged nozzles that could allow treated wastewater to deposit or accumulate on surfaces outside the shop.
- Post this notice by all sinks and drains – *Do not pour any solvent-contaminated wastewater down sinks, toilets or drains.*

## SPILLED MATERIALS

One of the most likely ways for perc to be released to the environment is via spills or leaks from the dry cleaning machine, wastewater treatment unit and hazardous waste storage containers. Releases may occur during the delivery, transfer and storage of dry cleaning solvents and other materials. If spilled and not cleaned up appropriately, the solvent can pool and leak

into the ground underneath the dry cleaning facility, causing major environmental problems.

Releases of dry cleaning solvents can be effectively controlled with a good leak detection program, containment pans and prompt cleanup of any spilled solvent. Under a new state law that goes into effect on January 1, 2014, all perc dry cleaning machines and waste containers must have secondary containment, and solvent must be delivered to the dry cleaner via a closed, direct coupled delivery system.

- Install secondary containment (e.g., dike, pan or other structure) for each dry cleaning machine that is leak proof and capable of containing 110% of the cleaning solvent of the largest tank or vessel within it.
- Provide secondary containment for other items of equipment, such as wastewater treatment units, solvent storage areas and hazardous waste storage containers.



- Ensure that secondary containment is constructed of material impermeable to solvent and cleaning fluids, and able to withstand the weight of equipment or vessels stored within it.
- Make sure secondary containment extends beyond the outside perimeter of all dry cleaning equipment and that the area is kept free of materials or items that would

diminish its capacity to contain a leak or spill.

- If dry cleaning solvents or wastes are stored outside, secure and cover the storage areas to protect from weather and unauthorized access.
- Take caution when opening, handling, or storing containers to avoid rupturing the containers or causing them to leak or spill.
- Use drip pans or trays when repairing equipment, along with funnels when transferring waste to storage containers.
- Use only direct-coupled, closed loop systems for delivering cleaning solvent to your facility.
- Keep storage and work areas clean and well-organized.
- Keep track of where spills have occurred so that you can take precautionary measures in the future.
- Have adequate spill and personal protective equipment to respond to a spill or other emergency (e.g., spill cleanup materials, fire extinguishers and goggles, gloves and masks).
- Prepare emergency response instructions on what to do in the case of a spill or other emergency and train employees in their use.



## ACKNOWLEDGEMENTS

Information for this fact sheet was provided in part by the following resources.

*Dry Cleaner Fact Sheets, Oregon*  
Department of Environmental Quality, Land Quality Division, Dry Cleaner Program

*Environmental Guide for Ohio Dry Cleaners,*  
Ohio Environmental Protection Agency

*Pollution Prevention and Best Management Practices for Dry Cleaners,* Broward County, Department of Planning and Environmental Protection

*Regulatory and Compliance Issues at Perchloroethylene Drycleaners,* State Coalition for Remediation of Drycleaners

*Dry Cleaner's Guide to Clean Air: Self Inspection Booklet,* South Coast Air Quality Management District

*Michigan Dry Cleaning Self-Audit Workbook,* Michigan Department of Environmental Quality, Environmental Results Program

*Curriculum for the Environmental Training Program for Perchloroethylene Dry Cleaning Operations,* California Environmental Protection Agency, Air Resources Board

*Self-Audit Checklist for Drycleaners,* Colorado Department of Public Health and Environment and Colorado Pollution Prevention Program

