



Air Pollution Control Division

Small Business Assistance Program

Fact Sheet - Perc Dry Cleaning Alternatives

There are several alternative dry cleaning methods available that may offer advantages over using perc. Although these alternative cleaning methods are not without risk, they may be much less likely to cause chronic health effects and can be less costly to clean up if released into the environment. This fact sheet reviews basic air and waste requirements and provides resources for the most common alternatives currently in use in Colorado.

STATE AIR QUALITY REQUIREMENTS

State Requirements

The Colorado Air Pollution Control Division (APCD) requires you to evaluate air emissions from your dry cleaning facility to determine if you must report them. The guidance document, "A Simple Guide to Calculating and Reporting your VOCs and HAPs" provides an overview of this process. This document is available online at www.colorado.gov/pacific/cdphe/apen-and-permitting-guidance.

Volatile Organic Compounds

Inherent properties of petroleum-based solvents include flammability, volatility and odor. Most of the alternative solvents contain VOCs that can contribute to ozone formation in the lower atmosphere (smog). GreenEarth (liquid silicone solution), Carbon dioxide systems and most professional wet cleaning processes are the exception.

Reporting requirements are dependent upon where in Colorado your dry cleaning shop resides (attainment or nonattainment areas), the quantity of solvent purchased (gallons per year), and the quantity of VOC (pounds per gallon) and/or HAP emitted.

8-Hour Ozone Nonattainment Area

Air emission reporting and permitting requirements in Colorado vary based on whether a business is located in an "attainment/attainment maintenance" area or a "nonattainment" area of Colorado. In general, air regulations are more stringent in "nonattainment" areas because these areas exceed the National Ambient Air Quality Standards for regulated pollutants.

Colorado's 8-Hour Ozone Nonattainment Area:

To determine if your business is located in an attainment or nonattainment area, visit the Divisions Ozone information page at: www.colorado.gov/pacific/cdphe/ozone-information

Air Pollutant Emission Notices (APENs)

An APEN is a form used to report a facility's emissions. Dry cleaning facilities that are or will be emitting VOCs at or above the reporting levels presented in Table 1 are required

to submit an APEN to the Air Pollution Control Division. The APEN form is titled, "Dry Cleaners, Air Pollutant Emission Notice (APEN) - and - Application for Construction Permit" and is available through the APCD and online at: www.colorado.gov/pacific/cdphe/specialty-apens

Table 1
APEN Reporting Thresholds

	Attainment (Ton per year)	Nonattainment (Ton per year)
Criteria Pollutants (NOx, Ozone)	2 (~615 gallons*)	1 (~308 gallons*)
Other Criteria Pollutants (CO, SOx, PM, PM-10, etc.)	2	1
Non-Criteria Pollutant (HAPs & other reportable pollutants)	≥ 250 pounds per year of any individual non-criteria reportable pollutant	

*Note: the number of gallons in Table 1 is based on an average solvent density of 6.5 pounds per gallon of VOC (ozone precursor).

Once submitted, the APEN is valid for five years. A fully completed APEN form must be submitted to the APCD at least 30 days prior to expiration of the five-year term on the current APEN.

If your shop changes ownership, dry cleaning equipment, type of solvent, and/or quantity of solvent, you may be required to file a revised APEN.

Hazardous Air Pollutants (HAPs)

Most of the alternative dry cleaning solvents currently in use do not, by themselves, contain HAPs. Several states, however, have petitioned EPA to add dry cleaning solvents containing n-propyl bromide (e.g., DrySolv and Fabrisolv) to the HAP list. It is your responsibility to determine if the products used in your shop contain reportable HAPs.

To determine if your dry cleaning solvent contains HAPs:

1. Review the Safety Data Sheet (SDS) for the product (used to be called Material Safety Data Sheet). Under the new OSHA requirements, composition and information on ingredients will be listed in Section 3 (unless they are proprietary). If they are proprietary, contact the manufacturer and request a "Technical Data Sheet" (or similar) on the product. Ingredients should be listed on this sheet or may be provided by the manufacturer.
2. Refer to the guidance document, "A Simple Guide to Calculating and Reporting your VOCs and HAPs" to help you calculate HAP emissions, if any.
3. If the quantity of any individual HAP emitted equals or exceeds 250 pounds per year, you must submit the form titled, "APEN Addendum for Non-Criteria Reportable Pollutants" along with the APEN form and filing fee to the APCD.

Air Permits

All dry cleaners must submit an APEN form and obtain an air permit if VOC emissions are equal to or greater than reporting levels listed in Table 2.

Table 2
AIR PERMIT Reporting Thresholds

Pollutant	Uncontrolled Actual Emissions (tons per year)	
	Attainment Area	Non-attainment Area
VOC	5	2
PM 10, PM 2.5	5	1
TSP, CO, SO _x , NO _x	10	5
Non-Criteria Pollutant (HAP)	10 per each pollutant	

**Please note: water-based dry cleaning machines (e.g., professional wet cleaning) and dry cleaning machines that use GreenEarth and/or only liquid carbon dioxide are exempt from APEN and permit requirements at this time.

Your air permit defines the type of air pollution control measures that will be used, sets air pollutant emission limits (such as VOC and HAP emission limits), includes recordkeeping requirements, and requires you to mark the air permit number on each piece of equipment subject to the air permit. Take the time to review your air permit and be familiar with your regulatory requirements.

In Colorado, Construction Permits are issued in two phases: "Issuance 1" and "Final Approval to Operate".

- Issuance 1 of a permit allows the plant to be constructed and begin operation. The source must self-certify to Issuance 1 of the permit once in operation within 180 days of receiving the first issued permit.
- After the owner certifies that the operation is in compliance with the conditions of Issuance 1 of the permit, the Division issues a "Final Approval to Operate" letter to operate under the conditions of Construction Permit Issuance 1. This letter confirms the completion of the self-certification requirements of that permit. The source is issued an invoice for processing time for this letter, and must pay the invoice within 30 days of receipt. Please note that if the permit processing fee is not paid within 30 days of receipt, you will be in violation of your permit conditions and may result in revocation of the permit.
- If the source modifies an existing permit, the source will be issued Construction Permit Issuance 2 (Issuance number determined by modification sequence). The source may have to self-certify to the new Issuance if required by the permit.

A permit describes key areas that an operator needs to address. The permit defines the type of air pollution control measures to be used, limits the annual production at the site, provides guidelines for opacity (how dense the visible emissions are allowed to be), and includes recordkeeping requirements.

The final approval air permit is valid for the life of the equipment. In the event of a change of ownership or equipment, a revised APEN form must be filed and will result in a new Issuance number.

➤ Recordkeeping Requirements

Your dry cleaning shop may be required to maintain air emission records for VOCs and HAPs and/or other air pollutants as specified in your air permit. These records

must be available for inspection upon request. You should maintain a copy of the most recent APEN, APEN fee, air permit, air emissions calculations, and other documentation as required by your air permit. The air permit number must be permanently affixed on each piece of equipment subject to the air permit, including control equipment.

❑ Air Emission and Permitting Fees

APEN Fee: A filing fee is required for each APEN submitted. This includes APENs submitted for administrative changes (e.g., change in ownership, change in location). Fees are subject to change by the legislature on an annual basis.

Annual Fee: All sources required to file APENs must pay annual fees. The Division bills each source subject to an APEN filing fee per ton of criteria pollutants emitted and per ton of non-criteria (hazardous air pollutants) emitted. The Division mails invoices for these fees in May or June of each year (these fees account for the emissions from the previous year's operation). Fees are subject to change by the legislature on an annual basis.

Permit Processing Fee: In addition to the APEN filing fee, permit-processing fees will be assessed at an hourly rate. If the total processing time is anticipated to be more than 30 hours the Division will contact the applicant in writing and provide an estimate of the projected processing time. The applicant can waive this notice by submitting a letter making this request when the application is submitted.

Current fee information is available online at:
www.colorado.gov/pacific/cdphe/emissions-and-permitting-fees

If you will no longer be operating your dry cleaning operations, please submit a cancellation form to the APCD or a letter on company letterhead requesting that the APEN or air permit be cancelled.

If you are selling your shop, you may transfer the current air permit to the new owner. A new APEN form and application fee must be filed for a transfer of ownership. Proof of the transfer of ownership will be required (e.g., a copy of a bill of sale or the previous owner's signature on the construction permit application form).

➤ FEDERAL AIR QUALITY REQUIREMENTS

➤ Petroleum Dry Cleaning

The New Source Performance Standard for Petroleum Dry Cleaners (40 CFR Part 60, Subpart JJJ) was established to limit the emission of VOCs from petroleum dry cleaning operations. Facilities with dry cleaning machines using hydrocarbon solvents (e.g., DF-2000, EcoSolv) and other petroleum-derived solvents (e.g., GenX, SolvonK4, Rynex, etc.) may be subject to the NSPS (40 CFR Part 60, Subpart JJJ) if the manufacturer's rated capacity from all dry cleaning machines combined at the facility is equal to or greater than 84 pounds.

The federal rule applies to facilities constructed and/or modified after December 14, 1982. Petroleum machines installed between 12/14/82 and 9/21/84 are exempt from the NSPS if the annual facility

petroleum solvent usage is less than 4,700 gallons per year.

Source subject to the NSPS must comply with the following requirements:

1. The dryer must be a solvent recovery dryer.
2. The filter must be a cartridge filter and you must drain the filters in their sealed housings for at least 8 hours prior to removal.
3. 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.
4. Records of the initial performance test, if required, should be maintained to verify the flow rate of recovered solvent from the dryer.

□ Performance Testing

The APCD believes the test method procedures of Subpart JJJ, Section 60.624 were developed for the petroleum transfer machine dryers and may not be applicable to non-vented, closed-loop machines that are equipped with a refrigerated condenser. Therefore, determinations as to whether initial performance testing will be required will be reviewed on a case-by-case basis by the APCD. Specific details on performance testing are outlined in the guidance document, "NSPS Subpart JJJ Guidance". This guidance is available online at www.colorado.gov/pacific/cdphe/apen-and-permitting-guidance; Guidance Documents A-G, Dry Cleaning.

➤ Perc and the Alternatives

Facilities with multiple dry cleaning machines that use both perc and petroleum or perc and another alternative dry cleaning method must meet the additional regulatory requirements for perc dry cleaners under the National Emissions Standards for Perchloroethylene Dry Cleaners under 40 CFR Part 63, Subpart M. At this time, an air permit is required for perc dry cleaners. Guidance for perc dry cleaners is available online at www.colorado.gov/pacific/cdphe/apen-and-permitting-guidance.

➤ **HAZARDOUS WASTE REQUIREMENTS**

Every dry cleaner must determine if their wastes are considered hazardous waste, either because the waste exhibits a characteristic (ignitability, corrosivity, reactivity or toxicity) or because it is a listed hazardous waste.

Most of the alternative dry cleaning solvents currently in use are not, by themselves, classified as hazardous waste before use. It should be noted, however, that the classification of a dry cleaning solvent can change after use, especially if spotting agents, waterproofing, or other fabric treatments are used. Some of these treatments contain listed hazardous waste constituents such as trichloroethylene (TCE) that will cause the used solvent to be classified as a hazardous waste (TCE is a listed F002 hazardous waste). In addition, other contaminants and break down of the solvent itself may cause the waste to exhibit one or more of the hazardous waste characteristics after use. It is important to note that a hazardous waste determination must be made on all dry cleaning wastes

including lint, filters, still bottoms, distillation sludge, separator and vacuum water.

Dry cleaning wastes tend to vary over time; therefore, one-time testing will likely not suffice in making the hazardous waste determination. Periodic testing of representative samples of each waste may be required to ensure proper management and disposal of these wastes. Testing should include constituents and characteristics that are reasonably expected to be there. For example, if the dry cleaner knows that the spotting agent they use does not contain TCE, there is no reason to test the waste for this constituent.

➤ Waste Management and Disposal

Dry cleaning wastes, including used solvent, lint, filters, still bottoms and sludges that are determined to be hazardous waste must be managed as hazardous waste while on site and sent to a permitted hazardous waste treatment, storage, and disposal facility utilizing the services of a hazardous waste transporter.

Dry cleaning wastes that are determined to be non-hazardous may be disposed of as non-hazardous industrial solid wastes. Municipal solid waste facilities with solidification basins approved to take industrial liquids may be able to manage this type of waste. In this case, the lint, filters, still bottoms and sludge that do not contain free liquids may be disposed of at any municipal solid waste landfill. Please check with the landfill prior to disposal of non-hazardous dry cleaning wastes.

Please note that due to the nature of dry cleaning solvents, *it is recommended* that even non-hazardous dry cleaning solvents and other dry cleaning wastes containing free liquids be disposed of at a hazardous waste treatment, storage and disposal facility that can manage them as non-hazardous solid waste.

Separator and/or vacuum water that is determined to be non-hazardous waste may be evaporated in an onsite evaporator or mister. Any discharges to the sanitary sewer must be approved by the local sanitation district prior to discharge. Evaporator policies and guidance are available online at www.colorado.gov/cdphe/sbap; see Guidance and Clarification Document Library, Guidance Documents A-G, Dry Cleaning.

➤ **ALTERNATIVE DRY CLEANING METHODS - INFORMATION AND RESOURCES**

Examples of alternative dry cleaning methods used in Colorado are listed below. A good resource on alternatives is available online at www.turi.org/About/Library/TURI_Publications. Do your homework before you decide to convert to a specific dry cleaning alternative method. There is a lot of information available on alternatives on the web. Search the specific product name or search using the words, "Dry Cleaning Alternatives" in general.

- Wetcleaning; professional cleaning with specialized equipment, detergents and fabric treatments, www.epa.gov/dfe/pubs/garment/wsgc/wetclean.htm

- Green Earth® (SB-32): decamethylcyclopentasiloxane, CAS 541-02-6; www.greenearthcleaning.com
- Rynex E3: dipropylene glycol tert-butyl ether, CAS 132739-31-2; www.rynex.com
- ExxonMobil DF-2000¹: synthetic hydrocarbon, CAS 64742-48-9; www.df2000.com
- Chevron Philips EcoSolv®¹: highly refined hydrocarbon, CAS 68551-17-7; [www.cpchem.com/bl/specchem/en-us/Pages/EcoSolvDrycleaning Fluid.aspx](http://www.cpchem.com/bl/specchem/en-us/Pages/EcoSolvDrycleaningFluid.aspx)
- R.R. Streets Solvair™²: dipropylene glycol n-butyl ether (DPGnBE), CAS 29911-28-2; <http://solvaircleaning.com/>
- GenX ; blend of aliphatic propylene glycol ether and hydro treated heavy naphtha, CAS 64742-48-9/ proprietary; www.caledclean.com
- SolvonK4™: dibutoxymethane, CAS 2568-90-3; www.systemk4.com

None of the above alternative solvents are a drop-in replacement for perc. Contact the alternative solvent manufacturer for the required dry cleaning machine specifications and for information on compatible spotting agents, waterproofing or other fabric treatments.

Note: This list is for informational purposes only and is not an endorsement of any product. This list is in no specific order and is not all-inclusive.

➤ OTHER RECOMMENDATIONS

Alternative dry cleaning equipment should conform to local fire codes and meet the additional specifications required by the manufacturer. It is recommended that you contact your local fire department, city and/or county building department and local and state health departments to determine if there are any restrictions or special requirements.

➤ DEFINITIONS

Attainment area - Any area within Colorado in which the ambient air concentrations of any designated pollutants are less than that specified in the National Ambient Air Quality Standards (NAAQS).

Hazardous Air Pollutant (HAP) - An air pollutant that presents through inhalation or other routes of exposure, a threat of adverse human health or environmental effects and that has been listed pursuant to Section 112 of the Federal Act, or Section 25-7-109.3 of the state Act.

Nonattainment area - An area within Colorado in which ambient air concentrations of any designated pollutant exceed the National Ambient Air Quality Standards (NAAQS) for that pollutant.

Petroleum solvent - individual or mixed liquid hydrocarbons obtained from petroleum. Volatile Organic Compounds (VOCs) are commonly produced by petroleum distillation.

Petroleum Dry Cleaner under NSPS JJJ - a dry cleaning facility that uses a petroleum solvent in a combination of washers, dryers, filters, stills and settling tanks.

Volatile Organic Compounds (VOCs) - Any compound of carbon, excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate that participates in atmospheric photochemical reactions, except those listed in the definition of negligibly reactive volatile organic compounds.

➤ Questions

Contact the Small Business Assistance Program (SBAP) at (303) 692-3175 or 3148 or visit our website at www.colorado.gov/pacific/cdphe/small-business-assistance-program-sbap.