Defining Green Dry Cleaning

A Green Paper
by Beth Fiteni, MSEL

Green Inside and Out
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PURPOSE AND GOALS

Addressing Marketplace Confusion and Promoting Better Alternatives

Many Long Islanders bring their clothing to be dry cleaned by professional cleaners, sometimes because garments specifically carry a “dry clean only” label, and sometimes for the convenience of having a professional handle the proper cleaning of clothing items. However, many people may not know what products are used to clean their clothes and may not be aware of the difference between a typical dry cleaner and one claiming to be “green,” “non-toxic,” “eco-friendly,” or even “organic.”

The most commonly used dry cleaning chemical is perchloroethylene (Perc). The federal government considers Perc to be a probable human carcinogen. It is a drinking water contaminant, and has been the culprit in numerous hazardous waste sites, including on Long Island. To avoid these concerns, the market has responded by developing alternatives to this chemical to professionally clean clothes. However, there is confusion in the marketplace created by varying degrees of safety among the alternatives, and the lack of legal definition for what are truly safer alternatives. This paper concludes that more public disclosure and information, and clearly defined marketing terms would lead to clearer choices among the public and further commercial success for green dry cleaners.

Dry cleaners displaying signs saying they are green or eco-friendly most often are using a substance or method for professional dry cleaning other than Perc, which may indeed be less toxic than Perc; however, as it stands today, this cannot be easily verified by customers. Many consumers remain uninformed about which substances are being used and what degree of risk they may carry.

This paper addresses this confusion by recommending policy changes. As people are becoming more aware of the concerns with typical dry-cleaning chemicals and are seeking safer alternatives, customers deserve to know what solvent is being used on their garments, including when they see the terms “green” or “eco-friendly” in store windows. Through full disclosure, consumers can make informed decisions.

This paper is also meant to serve as an educational tool about the various alternative cleaning agents available, and seeks to encourage use of them. Alternatives to the typical dry cleaning solvent perchloroethylene are generally less risky for consumers (some less than others) and especially for dry cleaning workers who are potentially at risk for exposure to these chemicals in higher doses than the general public. Finally, there are several other ways for the act of dry cleaning to have a lesser impact on the environment and how we as consumers can help move the industry in the right direction.

PERCHLOROETHYLENE:

History, Issues and Regulation

There are about 35,000 dry cleaners in the United States.[1] The chemical used by the majority (80-85%) of dry cleaning businesses is Tetrachloroethylene, also called percloroethylene, or "Perc."[2] It is a chlorinated hydrocarbon solvent that is very effective at removing oil based and other stains from clothing, and for degreasing metals. There are approximately 2,000 dry cleaning facilities using perchloroethylene solvent (Perc) in NY State.[3] In regular use by dry cleaners starting in the 1930s as an alternative to kerosene being used as a cleaner, Perc became the chosen cleaning fluid since it had minimal odor and was non-flammable.

However, by the 1990s, the federal government recognized that this chemical could pose health effects such as cancer in humans.[4] In humans and animals, the major effects of Perc exposure are on the central nervous system, kidney, liver, and possibly the reproductive system, varying with the level and length of exposure.[5] In it's 2014 13th Report on Carcinogens, the National Toxicology Program of the U.S. Department of Health and Human Services listed Perc as "reasonably anticipated to be a human carcinogen"[6] because it caused liver tumors in mice and kidney tumors in male rats after lifetime exposure oral and inhalation exposures.

EPA has also classified Perc as likely to be carcinogenic to humans.[7] Perc volatilizes into the air, and exposure through inhalation can cause neurological effects such as dizziness headache, nausea, or even death depending on the dose.[8] It is also associated with reproductive harm and sperm abnormalities, and effects on vision. Perc is listed on California's Prop 65 List of cancer causing chemicals.

A question remains as to how much Perc residues remain in clothing after dry cleaning. A study published in 2011 attempted to answer this by testing for Perc in recently dry cleaned clothing. Cloth samples were cleaned, frozen to preserve the sample, and taken to a lab twice a week for testing. The research found that polyester, cotton, and wool retained some micrograms (µM) of Perc, that these levels increased in successive dry-cleaning cycles especially in wool, and that Perc is slowly volatilized from these fabrics under ambient room air conditions. They found that silk does not retain appreciable Perc. Researchers found Perc levels of up to about 8µM in five square centimeters of fabric. "Measured differences across dry-cleaning establishments and fabric type suggest more vigorous monitoring of Perc residues may be warranted."[9]

1) Lisa Matsny, Worldwatch Institute. "Dry Cleaning." http://www.worldwatch.org/system/files/Dry%20Cleaning.pdf
2) Office of Pollution Prevention and Toxics, U.S. Environmental Protection Agency. "Chemicals In The Environment: Perchloroethylene." http://www.epa.gov/chemfact/f_perchl.txt
3) NYS Department of Environmental Conservation. "Dry Cleaner Regulation." http://www.dec.ny.gov/chemical/8567.html
4) Technology Transfer Network Air Toxics Website, U.S. Environmental Protection Agency. "Tetrachloroethylene (Perchloroethylene)." www.epa.gov/ttn/atw/hlthef/tet-ethy.html
5) NYS Department of Health. "Fact Sheet: Tetrachloroethylene (Perc) in Indoor and Outdoor Air." www.nyhealth.gov/environmental/chemicals/tetrachloroethene
6) National Toxicology Program, U.S. Department of Health and Human Services. "Substances Listed in the Thirteenth Report on Carcinogens." http://ntp.niehs.nih.gov/ntp/roc/content/listed_substances_508.pdf
7) Technology Transfer Network Air Toxics Website, U.S. Environmental Protection Agency. "Tetrachloroethylene (Perchloroethylene)." www.epa.gov/ttn/atw/hlthef/tet-ethy.html
8) Agency for Toxic Substances & Disease Registry. "Toxic Substances Portal - Tetrachloroethylene (Perc)." www.atsdr.cdc.gov/toxfaqs/tf.asp?id=264&tid=48
9) K. S. Sherlach, A. P. Gorka, A. Dantzler and P. D. Roepe. "Quantification of perchloroethylene residues in dry-cleaned fabrics," (2011). Environmental Toxicology and Chemistry, Volume 30, Issue 11, Pages 2481–2487. http://onlinelibrary.wiley.com/doi/10.1002/etc.665/abstract

In real life terms, exposure to customers may vary depending on whether clothing is given the opportunity to off-gas. A spokesperson for the Dry Cleaning and Laundry Institute, an industry association, pointed out that the clothing in the study had not been pressed. "Blowing steam through garments to get rid of wrinkles helps remove residual solvent." [10]

According to the Center for Disease Control (CDC), "studies by the National Cancer Institute and by other researchers also have found excess bladder, esophageal, and cervical cancer deaths among groups of dry-cleaning workers." A 1996 study of dry cleaning workers by the National Institute for Occupational Safety and Health (NIOSH) found a 5-fold increase between the risk of tongue cancer and exposure to Perc.[11] The study involved 625 dry cleaning workers with 5 or more years of working in the industry. It must be noted that since this study, both industry & regulatory agencies point out that significant progress has been made in protecting workers by reducing workplace exposures due to improved technology and methods.

The U.S. Environmental Protection Agency (EPA) lists Perc as a hazardous waste, # F002.[12] It is a water, air, and soil contaminant, and has been detected at several hundred Superfund sites across the U.S. According to the EPA's Superfund Information Systems data, 10 of the 25 National Priorities List sites here on Long Island are contaminated with Perc.[13] Cleanup of Perc on contaminated sites can be difficult and is costly, and remediating potential sources of vapors from a building can be difficult. It often requires the installation of a sub-slab depressurization system, similar to systems used to prevent radon gas from entering buildings. In some cases the gases that are vented from these systems require treatment through a carbon filter before release to the atmosphere so that they do not lead to an outdoor air pollution issue. In 2010, the Suffolk County Water Authority sued a Perc manufacturer, Dow Chemical, to recover damages due to drinking water contamination.[14]

New York State is represented on, but not a member of, the State Coalition for Remediation of Dry Cleaners, which is a group of states with established dry cleaner remediation programs.[15]

Perc is regulated under the Toxic Substances Control Act, Clean Air Act, Comprehensive Environmental Response, Compensation, and Liability Act (Superfund), Resource Conservation and Recovery Act, National Emissions Standards for Hazardous Air Pollutants (NESHAP), Clean Water Act, and Safe Drinking Water Act. In New York State, Perc and dry cleaners are regulated under Part 232 of the Environmental Conservation Law.[16]

The rules require permitting for facilities, equipment standards and certification, annual inspections, hazardous waste management, owner training, and record-keeping for all new and existing perchloroethylene dry cleaning facilities.[17]

10 Lena H. Sun. "Perc remains in dry-cleaned clothes." *The Washington Post*, September 2, 2011. http://www.washingtonpost.com/national/health-science/study-perc-remains-in-dry-cleaned-clothes/2011/09/01/gIQAbiPsxJ_story.html

11. National Institute for Occupational Safety and Health, Centers for Disease Control and Prevention. "Worker Health Study Summaries: Dry Cleaners." http://www.cdc.gov/niosh/pgms/worknotify/Drycleaner1.html

12. Environmental Protection Agency, "EPA Hazardous Waste Codes," http://www.epa.gov/waste/inforesources/data/br91/na_apb-p.pdf

13. EPA Search Superfund Site Information. http://cumulis.epa.gov/supercpad/cursites/srchsites.cfm

14. Jennifer Smith. "New alarms raised about dry-cleaning solvent in water," Newsday, May 4, 2010. http://www.newsday.com/news/health/new-alarms-raised-about-dry-cleaning-solvent-in-water-1.1893974

15. State Coalition for Remediation of Dry Cleaners. "State Programs and Resources." http://www.drycleancoalition.org/state.cfm

16. NYCRR Part 232. "Perchloroethylene Dry Cleaning Facilities." http://www.dec.ny.gov/regs/4207.html

17. NYSDEC. "Dry Cleaner Regulations and Policy FAQ." http://www.dec.ny.gov/chemical/8942.html

Because Perc can volatilize into the air, the EPA required that no new Perc dry cleaning machines could be installed in residential buildings after July 13, 2006. Under its NESHAP standards (National Emissions Standards for Hazardous Air Pollutants), the EPA has called for the removal of Perc-using dry cleaners from residential buildings by 2020 nationwide.[18]

In 2007, California went further and became the first state to ban both the use of Perc and the purchase of new Perc machines by 2023. The NY State Department of Health recently strengthened its guidelines, recommending that the average air level in a residential community not exceed 30 micrograms of Perc per cubic meter of air (30 mcg/m3) or .0044 parts per million (PPM).[19] (The former guideline was 100 mcg/m3.) A ban on Perc by 2022 has been adopted in France, and Perc is no longer allowed to be used in dry cleaners located in residential buildings in the City of Philadelphia as of December 31, 2013.[20] New Jersey had also been considering a phase-out but has tabled action until 2026.

Many cleaners still opt to use Perc because of known efficacy and familiarity, and to avoid new equipment costs for technologies which may be more expensive. According to the Dry Cleaning and Laundry Institute (DLI), the process has improved over time. Clothing used to go through a cylinder through which Perc was pumped and then filtered, and then clothing was moved to a separate dryer where vapors vented out. Today, due to federal rules adopted in 2006 banning transfer machines and requiring only "fourth generation" standards (*see back page*), clothing is dried within the same unit, removing most remaining vapors from clothing.

While much Perc used to end up in the environment while changing from one unit to the other, International Fabricare Institute CEO Bill Fisher states, "With today's practices and equipment, in which 99.999 percent of the solvent is recycled, we absolutely feel that all dry cleaning is environmentally safe."[21] To avoid concerns about potential drinking water contamination, risks to workers and the general public, there are several alternatives to Perc now in use by professional cleaners.

1) Professional Wet Cleaning:

This method uses only water and mild detergents in an advanced system of computer controlled machines that mildly agitate clothes, minimizing wear and tear. It can be used for "dry-clean" only clothing, but may cause shrinking depending on fabric. (*In truth, "dry" cleaning is a misnomer; all chemical solvents used are liquid, and then clothing is put through a dryer*.) The Toxics Use Reduction Institute in Massachusetts reports that this method saves energy compared to standard methods.[22] "The EPA Design for the Environment (DFE) Program recognizes the wetcleaning process as an environmentally- preferable technology, stating the "process does not generate hazardous waste, air emissions, greenhouse gases, or ozone depleting substances; therefore, compliance with Federal and state hazardous waste regulations is eliminated," therefore also making it less costly.[23] Wet Cleaning is considered the least hazardous of option by the City and County of San Francisco "SF Environment" program.[24]

2) Liquid Carbon Dioxide:

As it sounds, this method uses highly pressurized liquid carbon dioxide, usually from industrial byproducts, as well as detergents, to clean clothing. "The EPA Design for the Environment (DFE) Program recognizes the liquid carbon dioxide (CO_2) cleaning process as one example of an environmentally-preferable technology that can effectively clean garments."[25] It requires a different type of equipment than that used for Perc cleaning, which can cost three times as much. It is non-flammable, and 98% of the CO_2 is recycled. The main health concern stated on the Material Safety Data Sheet (MSDS) is inhalation of large doses which can cause dizziness, asphyxiation, and stinging of the nose and throat.[26]

* *See sidebar defining generations of cleaning technology on last page.*

18. Environmental Protection Agency. "National Perchloroethylene Air Emission Standards for Dry Cleaning Facilities." U.S. Code of Federal Regulations, 40 CFR 63.322(o)(5)(i).
19. New York State Department of Health. "Fact Sheet: Tetrachloroethene (PERC) in Indoor & Outdoor Air." http://www.health.ny.gov/environmental/chemicals/tetrachloroethene/
20. City of Philadelphia Department of Public Health Air Management Services. "Air Management Regulation XIV: Control of Perchloroethylene from Dry Cleaning Facilities." http://www.phila.gov/health/pdfs/DryCleaningBackgroundDocFINAL20131118.pdf
21. William E. Fisher. "Industry Challenges EarthTalk."Bay Weekly, Volume 13, Issue 4, January 27 - Febuary 2, 2005. http://bayweekly.com/old-site/year05/issuexiii4/lettersxiii4.html
22. Toxics Use Reduction Institute. "Dry Cleaning." http://www.turi.org/Our_Work/Business/Small_Businesses/Dry_Cleaning/Wet_Cleaning_Handout
23. U.S. Environmental Protection Agency, Design for the Environment. "Case Study: Wetcleaning Systems for Garment Care." http://web.archive.org/web/20141012124809/http://www.epa.gov/dfe/pubs/garment/wsgc/wetclean.htm
24. San Francisco Environment. "Garment Cleaners." http://sfenvironment.org/garmentcleaning
25. U.S. Environmental Protection Agency, Design for the Environment. "Case Study: Liquid Carbon Dioxide (CO2) Surfactant System for Garment Care." http://web.archive.org/web/20130312071007/http://www.epa.gov/dfe/pubs/garment/lcds/micell.htm
26. Universal Industrial Gases. "Material Safety Data Sheet: Liquid CO_2." http://www.uigi.com/MSDS_liquid_CO2.html#SECT3

Critics say that it doesn't get clothes as clean as other options unless other chemical solvents, such as SolvairTM (which contains propylene glycol ether similar to Rynex), are added to help lift off stains.

3) Liquid silicone (siloxane D5):

Sold under the name "GreenEarth ®," this is an odorless substance that acts as a carrier for detergents and is used in body care products.[27] Greenearth's website claims the EPA does not recognize D5 silicone as a potential carcinogen or toxic air contaminant. Silicone degrades into silica (sand), water and carbon dioxide. It is combustible, but can be shipped without "hazardous handling" requirements.[28] The California Air Resources Board (ARB) does not consider Siloxane to be a volatile organic compound (VOC).[29] However, the California's Office of Environmental Health Hazard Assessment (OEHHA) found that exposures of D5 at the highest achievable vapor concentrations cause uterine tumors in rats, and that it exhibits persistence in the environment and human tissues. It has adverse health effects on the reproductive system, adipose [fat] tissue, bile production, and immune system.[30]

4) K4 System (Butoxymethoxy/butylal):

Not yet widely used in the U.S., a German solvent technology similar to cyclosiloxane D5, marketed as halogen-free, biodegradable, and "neither a hazardous material nor a hazardous substance in Europe" according to the European Union Classification, Labeling and Packaging regulation.[31] The MSDS does not show acute toxicity concerns, but says "do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system."[32] It has not been found to be mutagenic but it "has not been reviewed by IARC [International Agency for Research on Cancer] for carcinogenicity."[33]

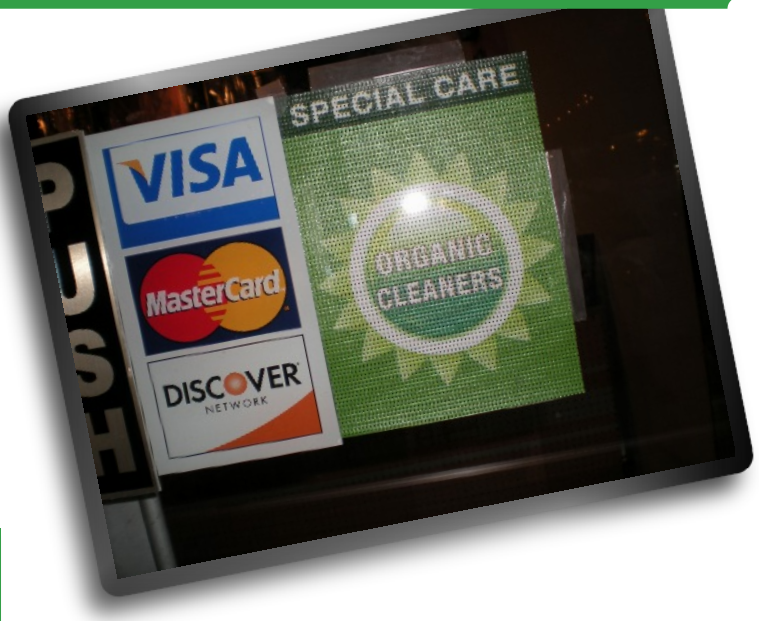
5) Rynex ®:

Made from an aliphatic propylene glycol ether that can be used in hydrocarbon dry cleaning machines. There is not much government information on Rynex, but the MSDS indicates that it is mildly irritating to skin, a moderate to severe eye irritant, and a respiratory irritant.[34] There is a lack of data regarding carcinogenicity. According to the California ARB, it is not considered a hazardous waste, but is considered a VOC.[35]

27. U.S. Environmental Protection Agency. "Siloxane D5 in Drycleaning Applications Fact Sheet." http://infohouse.p2ric.org/ref/37/36171.pdf
28. GreenEarth® Cleaning. "Consumer FAQs." http://www.gecleaning.com/ Consumers/FAQs.html
29. California Air Resources Board. "Dry Cleaning, Alternative Solvents: Health and Environmental Impacts." http://www.arb.ca.gov/toxics/dryclean/alternativesolvts_e.pdf
30. Cyclosiloxanes: Materials for the December 4-5, 2008 Meeting of the California Environmental Contaminant Biomonitoring Program (CECBP) Scientific Guidance Panel (SGP). http://oehha.ca.gov/multimedia/biomon/pdf/1208cyclosiloxanes.pdf
31. Kreussler. "SolvonK4 – the halogen-free solvent." http://www.systemk4.com/en/products/solvonk4.html
32. Ilsa. "Material Safety Data Sheet: Solvon K4." http://www.ilsa.it/SECCO/Immagini/Solventi/Schede%20sicurezza/SolvonK4%20SD-EN.pdf
33. Toxics Use Reduction Institute, Umass, Lowell. "Assessment of Alternatives to Perchloroethylene for the Dry Cleaning Industry," 201 http://www.turi.org/TURI_Publications/TURI_Methods_Policy_Reports/Assessment_of_Alternatives_to_Perchloroethylene_for_the_Dry_Cleaning_Industry._2012/2012_M_P_Report_27_Assessment_of_Safer_Alternatives_to_Perchloroethylene
34. Equinox Chemicals. "Material Safety Data Sheet: Rynex-3 Dry Cleaning Solvent." http://rynex.com/PDF/Rynex%20MSDS%20WEBSITE.pdf
35. ibid.

6) Hydrocarbon:

Petroleum based solvents including DF-2000 (developed by ExxonMobil), and Eco-Solv (developed by Chevron Phillips). They are combustible and toxic to aquatic environment. They have become the second most popular Perc alternative because they are the most similar to Perc. Hydrocarbon solvent is classified as a VOC, and is a likely contributor to smog formation, according to the City and County of San Francisco. Studies have shown high concentrations of hydrocarbon to be a neurotoxin, and cause headaches, dizziness, skin and eye irritation for workers.[36] Hydrocarbons have not been classified as to their carcinogenicity by the IARC. [37]



Defining Terms

Many dry cleaners are using the words "green," "organic," "eco- friendly," or "natural," in their window advertisements. These terms often mean that the business is using one of the above named alternatives to Perc. However, there is no legal definition of these terms in the context of dry cleaning. None of these terms clearly identify the type of solvents and detergents being used, so consumers must ask.

Typically if a dry cleaner is using hydrocarbon solvent, the term chosen will be "organic." However, this does not mean the same thing as it does on a food item. The term "organic" on food is a highly regulated definition which means that food has met strict U.S. Department of Agriculture (USDA) production and labeling standards. The term "organic" in terms of dry cleaning fluid is somewhat misleading because it is referring to the chemical make-up of the substance being carbon based. i.e. the study of organic chemistry is the study of carbon based molecules. Therefore Perc is also "organic" in that it contains carbon[38] (it's molecular formula is C_2Cl_4).

Other terms can also be confusing since some dry cleaners use the words "green" or "eco-friendly" to refer to the fact that they recycle hangers or bags, but the terms may have nothing to do with the dry cleaning fluid being used.

36. Toxics Use Reduction Institute, Umass, Lowell. "Assessment of Alternatives to Perchloroethylene for the Dry Cleaning Industry," 2012. http://www.turi.org/TURI_Publications/TURI_Methods_Policy_Reports/Assessment_of_Alternatives_to_Perchloroethylene_for_the_Dry_Cleaning_Industry._2012/2012_M_P_Report_27_Assessment_of_Safer_Alternatives_to_Perchloroethylene
37. San Francisco Environment. "Dry Cleaning: How to Green Your Cleaning." http://www.sfenvironment.org/download/drycleaning-how-to-green-your-cleaning
38. The Green Dry Cleaner. "Consumer Alert: Dry Cleaning Services Misleadingly Branded as Natural and Organic" www.thegreendrycleaner.com/images/consumer%20alert%20organic%20cleaning.pdf

AUTHORITATIVE RANKINGS

There is no official green certification system or label that could be identified for green dry cleaners. However, in an attempt to guide consumers and provide a system in the absence of regulation, in 2008 the National Cleaners Association, a trade association, started a "Green Cleaners Council" [39] through which applicants fill out a form to get a "leaf" rating of 1 to 5 based on their ability to wet-clean, their recycling efforts, investments in cleaner technology, and water & energy conservation. However, this industry-devised system is not without controversy, since it does not focus only on the type of solvent being used, so the significance of the leaves may be misleading to consumers. Also no site visit is conducted to verify information provided.

The 3 cleaners currently ranked using this system on Long Island are:
1) Greensleeves Garment Care, Oyster Bay, NY
www.Thegreendrycleaner.com
Level: 4 leaves
2) Meurice Garment Care, Manhasset, www.garmentcare.com
Level: 4 Leaves
3) Andrew Howard Dry Cleaners, Syosset,
www.andrewhowardrycleaners.com
Level: 4 Leaves

The Environmental Protection Agency's Design for the Environment (DFE) designation distinguishes products that are safer for human health and the environment. From 1992 to 2001, through the DFE program, the EPA convened a Garment & Textile Care Partnership. The DFE program specifically recognizes carbon dioxide cleaning (under the brand name Micell) and wet cleaning as preferable. In 2001, EPA created a list of dry cleaners around the country that provide wet cleaning and carbon dioxide cleaning methods. At that time there were 3 cleaners on LI providing wet cleaning (Meurice, in Manhasset; Sunny Hi-Tech, in Shirley; and Kan Cleaners, in Oceanside [since closed]), and no carbon dioxide cleaners anywhere in NY.

In order to promote public health and environmental protection,[40] and to encourage the growth of safer alternatives, the following are suggestions that we recommend in order to address some of the issues highlighted in this paper.

POLICY RECOMMENDATIONS

1) Require Cleaning Agent Disclosure

For purposes of public disclosure, all dry cleaners should be required to disclose the type of cleaning agent being used in a location visible to customers. New York State regulation (6NYCRR Part 232) already requires any dry cleaner using Perc to post a notice informing the public that the shop uses Perc, listing where to report odors and other problems, and stating where additional information may be found about the potential health effects of Perc exposure.[41] All dry cleaners should register with the New York State Department of Environmental Conservation (NYS DEC) and disclose to the agency what cleaning method they use. The NYS DEC or New York State Health Department should provide a webpage dedicated to explaining any safety information consumers should know about each method. Examples of consumer factsheets provided by a municipality are the City of San Francisco's "How to Green Your Dry Cleaning",[42] and the "Comparison of Hazards, Regulatory Concerns, and Costs for Alternative Dry Cleaning Technologies."[43]

2) Establish Marketing Terms for "Green" Dry Cleaning

Pertinent state agencies may wish to consider identifying specific advertising terminology for alternative dry cleaning should be identified by state agencies. Guidance would ideally provide marketing terms that allow businesses to differentiate themselves but also provide collectively consistent messaging, and discourage terms that are misleading. Dry cleaners advertising as "green," "non-toxic," "sustainable," "eco-friendly," etc. should be inspected periodically by the NYS DEC to verify that the company is indeed using an alternative to Perc, since such terms are meant to distinguish their system from the industry standard. The term "organic" in the dry cleaning context should be prohibited due to the confusion amongst the general public about the meaning of the term in comparison to the USDA's organic food standards. State government may wish to consider fines against businesses claiming to be "eco-friendly" et. al. while using Perc.

39. Green Cleaners Council. http://greencleanerscouncil.com/
40. U.S. Environmental Protection Agency, Design for the Environment Garment and Textile Care Program. "The Cleaner Guide." http://web.archive.org/web/20120711030318/http:/www.epa.gov/oppt/dfe/pubs/garment/gcrg/cleanguide.pdf
41. New York State Department of Environmental Conservation. "Dry Cleaner Regulation." http://www.dec.ny.gov/chemical/8567.html
42. San Francisco Environment. "DryCleaning: How to Green Your Cleaning." http://sfenvironment.org/download/drycleaning-how-to-green-your-cleaning
43. San Francisco Environment. "Comparison of Hazards, Regulatory Concerns, and Costs for Alternative Dry Cleaning Technologies." http://www.ftc.gov/sites/default/files/documents/public_comments/16-cfr-part-423-trade-regulation-rule-care-labeling-textile-wearing-apparel-and-certain-piece-goods.r511915-00089%C2%A0/00089-80514.pdf

The Federal Trade Commission offers "Guides for the use of Environmental Marketing Claims," which may be helpful.[44]

3) Publish a List and Information

If NY State registers all dry cleaners, local governments are encouraged to publish a list of dry cleaners that are using alternatives to Perc on their website. For example, the City of San Francisco created a webpage listing cleaners using the wet cleaning method.*[45] Establishing a publicly available list provides a public service, and is also an incentive for traditional dry cleaners to convert to less toxic methods. The State and/or Counties' websites could also include basic information on each method, such as the MSDS (Material Safety Data Sheets) or other resources. As of now, neither the Departments of Health nor Department of Consumer Affairs in Nassau County, Suffolk County, nor NY State have information on their websites for consumers as to how to make the best choice on dry cleaners. However, the NYS Pollution Prevention Institute (NYSP2I) which is funded by NYS DEC, provides information on wet cleaners for the public.[46]

4) Offer Incentives

NY State leadership may wish to consider making financial assistance available to existing dry cleaners willing to convert their system to a Perc alternative, especially CO_2 and wet cleaning, and to those starting a new business using designated less-toxic cleaning options. For comparison, the California Air Resources Board offers $10,000 to businesses that convert from chemical solvents to either wet cleaning or CO_2.[47] The funding source for this program is a $4 per gallon tax on Perc. While wet cleaning machines are comparable in price, carbon dioxide machines can be about two to three times the cost of dry cleaning machines that use Perc.[48] Currently, NYSP2I offers $500 to wet cleaners to demonstrate their equipment to other dry cleaners. Also, "the NYSP2I has partnered with equipment manufacturers to offer wet cleaning system discounts in order to offset conversion costs. Energy reduction incentives and equipment financing are also available." [49]

5) Change Garment Labels

The Federal Trade Commission is encouraged to instruct garment manufacturers to change clothing labels specifying "Dryclean, Petroleum Solvent Only" to "Clean Professionally" wherever possible. This broadens the instruction to include other current options.

6) Inform Consumers on Bag Disposal

Dry cleaning bags are usually made of plastic #4 and are recyclable. Manufacturers of non-biodegradable plastic dry cleaning bags are encouraged to place a stamp on each bag informing consumers to return bags to grocery store bag recycling facilities.

What Consumers Can Do

1) You may wish to seek out a dry cleaner that identifies themselves as "green," "natural," or "eco-friendly" and ask them to identify which type of solvent they use. The Suffolk County Cancer Awareness Task Force recommends CO_2 cleaning or wet cleaning.[50]

To find a wet cleaner, CO_2 cleaner, or silicone dry cleaner, see www.nodryclean.com. There are many wet cleaners, but only two CO_2 companies currently operating in New York: Arthur Copeland Cleaners in Cedarhurst (also owns Cameo Cleaners in Gramercy Park, NY), and GreenAppleCleaners.com (facility is in NJ but has 2 drop stores in Manhattan, and one in Park Slope, Brooklyn.)

2) If you use a dry cleaner that uses Perc, be sure to remove the clothing from the bag and air out clothing outdoors or in a well ventilated garage before bringing them inside your home so as to avoid off-gassing the Perc into indoor air. The EPA advises not accepting clothing that has a strong odor until it is completely dry.[51]

44. Federal Trade Commission. "Guides for the Use of Environmental Marketing Claims" (2012) 16 CFR Part 260. http://www.ftc.gov/policy/federal-register-notices/guides-use-environmental-marketing-claims-green-guides
45. San Francisco Environment. "Wet cleaners in San Francisco." http://sfenvironment.org/article/residents/garment-cleaners
46. NY State Pollution Prevention Institute. "Professional Wet Cleaning Program." http://www.rit.edu/affiliate/nysp2i/professional-wet-cleaning-program
47. California Air Resources Board. "Non-Toxic Dry Cleaning Incentive Program" (AB998). http://www.arb.ca.gov/toxics/dryclean/ab998.htm
48. City of Los Angeles Environmental Affairs Department. "Viable Alternatives to Perchloroethylene in Dry Cleaning," 2004. http://environmentla.org/pdf/EnvironmentalBusinessProgs/drycleaning%20final%20revised.pdf
49. New York State Pollution Prevention Institute. "Professional Wet Cleaning Program." http://www.rit.edu/affiliate/nysp2i/professional-wet-cleaning-program
50. Suffolk County Cancer Awareness Task Force. "Home Product Checklist." http://www.suffolkcountyny.gov/Portals/0/environmentandenergy/Forms/catf_home_product_checklist.pdf
51. U.S. Environmental Protection Agency. "An Introduction to Indoor Air Quality (IAQ)." http://www.epa.gov/iaq/voc.html

3) The EPA recommends that the public encourage their dry cleaners to improve their technologies, recycle materials, and reduce spills and fugitive emissions in order to maintain air and soil quality in our their community, since consumer advocacy can often yield results.[52]

4) If your dry cleaner accepts re-usable garment bags, use those (See below).

5) Recycle plastic dry clean bags. Standard dry cleaning bags are petroleum based, thus taking many years to decompose. Dry cleaning bags are made of Linear Low Density Polyethylene (LLPDE plastic #4), which is not typically recyclable via curbside collections. However, such bags can be recycled at grocery store plastic bag recycling bin programs.[53]

6) Bring your hangers back for re-use if your dry cleaner offers hanger recycling.

Other Ways Dry Cleaners Can Go Green

Other ways dry cleaners can reduce their environmental impacts include:

1) As mentioned, recycling (re-using) metal hangers or using cardboard recyclable ones (which can also be printed with advertising).

2) Use biodegradable plastic bags. One brand of bags marketed as biodegradable is "Eco Green" made in Canada and distributed by Minda. These are made from a polymer said to break down in 2 years.

3) Minimizing use of plastic bags by accepting re-usable garment bags. These are garment bags that customers can put their name on, and use again and again, instead of disposable plastic bags. Some dry cleaners offer their own re-usable garment bags for sale (further marketing opportunity). There are several brands of re-usable garment bags available for the public to purchase online:

- Reuseniks (cotton)
  http://reuseniks.com/
- Green Garmento (polypropelyne)
  http://thegreengarmento.com
- It's My Bag (PEVA-plolyethylene vinylacetate, safer alternative toPVC plastic)
  http://ItsmyB.com (Local—based in Plainview, NY)

Long Island Green Dry Cleaner List

An unpublished 2011 mail survey of over 800 LI dry cleaners conducted by Sustainability Institute at Molloy College in Farmingdale, NY yielded 14 replies by mail from companies identifying themselves as green/eco-friendly[54] In addition to those mailed survey results, dry cleaners were called directly by phone based on advertisements in the yellow pages & local green directory listings. For purposes of this paper, a search of local companies on www.nodryclean.com was also conducted. From all of this, a list of 26 Long Island dry cleaners was compiled that identify themselves as "green," "non-toxic," "organic," or other similar wording. The list is below, but note that it may not be comprehensive. Interesting to note while conducting this survey, many times only the owner, and not the workers, know the type of solvent being used.

52. U.S. Environmental Protection Agency. "Outdoor Air - Industry, Business, and Home: Dry Cleaning Operations." http://www.epa.gov/oaqps001/community/details/drycleaning.html
53. Plasticfilmrecycling.org. "Learn What's Recyclable." http://www.plasticfilmrecycling.org/s02/s02_01_main.html
54. Note: Difficulties with surveying dry cleaners is that not everyone answers the written survey, and also English may not be the primary language for some dry cleaning business owners.

DRY CLEANERS ON LONG ISLAND EMPLOYING ALTERNATIVE PRACTICES

Nassau

1) Adelphi Cleaners, Garden City So., 516 486-2442— hydrocarbon
2) American Drive In Cleaners, Hicksville, 516-931-9396 – Hydrocarbon
3) Andrew Howard Dry Cleaners, Syosset, 516-496-7962—hydrocarbon (spray method, uses less solvent), wet-cleaning
4) Arthur Copeland Cleaners, Cedarhurst, 516-295-2198 — CO_2, wet-cleaning
5) Blue Ribbon Cleaners, East Norwich 516-922-5050—Hydrocarbon
6) Connie French Cleaners & Tailors, Great Neck, 516-487-1599—hydrocarbon
7) Corniche Cleaners, Oyster Bay, 516-624-3804— wet-cleaning only
8) Country Cleaners, Port Washington, 516-883-9571 — Hydrocarbon
9) Deb's Cleaners, Jericho, 516-681-2878—Greenearth
10) Fiesta Cleaners, Massapequa Park, 516-541-2140— hydrocarbon
11) Go Green (Four Ws) Environmental Dry Cleaning, Long Beach, Rockville Centre, & Garden City, 516-431-6461—Greenearth
12) Greensleeves Garment Care, Oyster Bay, 516-624-2020 —Greenearth; wet-cleaning
13) Holiday Park Cleaners, Farmingdale, 631-694-6954—hydrocarbon
14) Meurice Garment Care, Manhasset, 516-627-6060— "Eco Care" hydrocarbon, wet-cleaning
15) Middle Neck Organic Cleaners, Great Neck, 516-482-1454—hydrocarbon
16) Pamper Cleaners, Hicksville, Plainview & Syosset, 516-681-5040—hydrocarbon; wet-cleaning
17) Sterling French Dry Cleaner, Port Washington, 516-767-0003 —hydrocarbon; wet-cleaning
18) Woodhill Cleaners Inc., Woodmere, 516-374-1103—hydrocarbon

Suffolk

19) All Fabric Cleaners, Farmingville, 631-736-1781— Wet-cleaning, *Participated in NYSP2I wet-cleaning demonstration in 2012*
20) Deb's At Huntington Cleaners, Huntington Station, 631-424-5583 — Greenearth
21) Evergreen Cleaners, Huntington, 631-923-0034, Hydrocarbon, wet-cleaning
22) Fort Hill Cleaners, Huntington, 631-351-2966 –Hydrocargon, wet-cleaning
23) Gentle Care Cleaners, Bayport, 631-363-2008—Hydrocarbon; wet-cleaning
24) Good Ground Dry Cleaners, Hampton Bays, 631-728-2288 – Hydrocarbon wet-cleaning; "dry-to-dry" machines
25) Greenlawn ECOCleaners, Greenlawn, 631-754-2766 — Hydrocarbon
26) New Best Cleaners, Nesconset, 631-382-9494 — Hydrocarbon
27) Northport Cleaners, Northport, 631-261-6777 — Hydrocarbon
28) Rainbow Cleaners, Huntington Village, 631-351-5820 —Hydrocarbon; wet-cleaning
29) Sunny Hi-Tech Cleaners, Shirley, 631-281-1666—Wet-cleaning
30) Swan Cleaners, Amityville, 631-691-1820—Hydrocarbon; wet-cleaning
31) Sweetwater's French Style Dry Cleaners, Wainscott, 631-537-5120-- hydrocarbon; wet-cleaning
32) The Cleanery, East Farmingdale, 631-847-3930—Greenearth; wet-cleaning (*Specializes in wedding gowns/leather*)

* Defining Cleaning System Levels

- First generation: similar to home washer & dryer, separate washer & dryer, clothes soaked with perc move from washer to dryer, called wet-to-dry.
- Second generation: eliminates stand alone dryer, washing & drying are done in the same machine, called dry-to-dry.
- Third generation: same as second generation with added controls to reduce perc emissions; air is emitted from the machine.[55]
- Fourth generation: same as third and recycles air back into the machine further reducing perc emissions, system is considered basically airtight. According to the Dry Cleaning and Laundry Institute, fourth generation machines can lose 4 fl oz or .42 lbs of perc per day.

55. Dry Cleaning & Laundry Institute. "A DLI Whitepaper: Key Information on Industry Solvents," July 2007. http://www.pdclean.org/downloads/ DLI solvents-08.pdf

USEFUL DRY CLEANING RESOURCES:

- Find local eco-friendly cleaners
  http://www.nodryclean.com/
  www.plasticfilmrecycling.org/
- NY State Department of Health Perc Factsheet:
  www.health.state.ny.us/environmental/chemicals/tetrachloroethene/
- NY State Pollution Prevention Institute
  http://www.rit.edu/affiliate/nysp2i/professional-wet-cleaning-program
  http://www.rit.edu/affiliate/nysp2i/garment-cleaning-new-york-state
- CA Air Resources Board Dry Cleaning Alternative Solvents Health and Environmental Impacts
  http://www.arb.ca.gov/toxics/dryclean/alternativesolvts_e.pdf
- San Francisco Environment, "Comparison of Hazards, Regulatory Concerns, and Costs for Alternative Dry Cleaning Technologies."
  http://www.ftc.gov/sites/default/files/documents/public_comments/16-cfr-part-423-trade-regulation-rule-care-labeling-textile-wearing-apparel-and-certain-piece-goods.r511915-00089%C2%A0/00089-80514.pdf

For more information contact:
Beth Fiteni, Principal
Green Inside and Out
GreenInsideandOut.com
info@greeninsideandout.com

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Green Inside and Out Consulting

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prevention is the cure™

Prevention Is the Cure (PITC) is a campaign of the Huntington Breast Cancer Action Coalition. PITC focuses on the causes of disease rather than ways of coping with it once diagnosed. We seek to increase public awareness of environmental links to disease, gain support for the "Precautionary Principle" as it applies to public policy, urge the public to demand more funding for environmental health research, and encourage a "better safe than sorry" attitude toward personal lifestyle. PreventionistheCure.org

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