



**DOCKET ITEM #11D**

**Special Use Permit #2011-0032**

**407 East Braddock Road - Green Dry Cleaners**

**(Parcel addresses: 401,405 E. Braddock Rd, 515 Mt.**

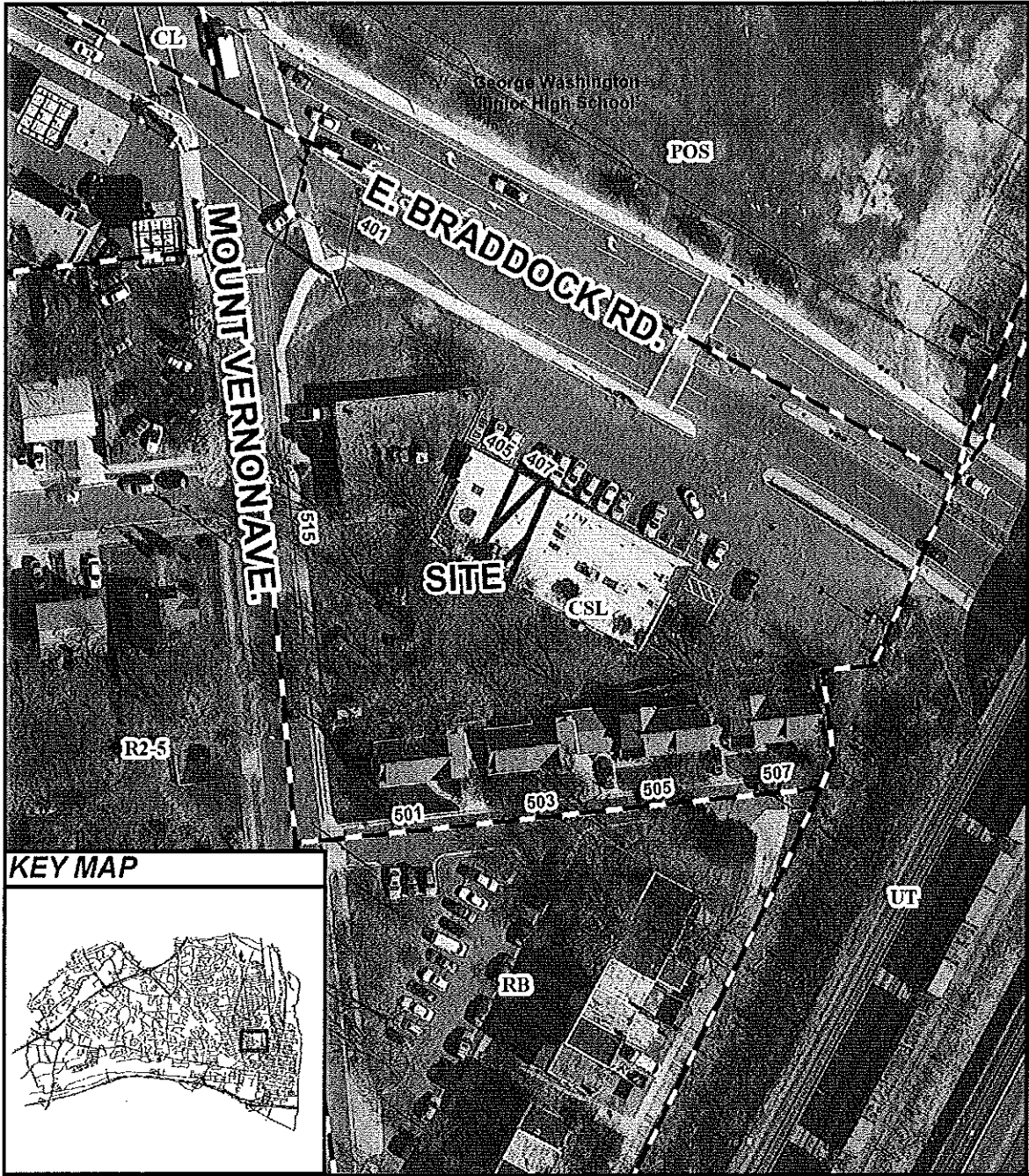
**Vernon Ave.)**

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<b>Application</b>	<b>General Data</b>	
Consideration of a SUP request for approval of a dry cleaning operation.	<b>Planning Commission Hearing:</b>	June 7, 2011
	<b>City Council Hearing:</b>	June 25, 2011
<b>Address:</b> 407 East Braddock Road (Parcel address: 401, 405 E. Braddock Rd, 515 Mt. Vernon Ave.)	<b>Zone:</b>	CSL/Commercial service low
<b>Applicant:</b> Yates Holdings, LLC	<b>Small Area Plan:</b>	Potomac West

**Staff Recommendation:** APPROVAL subject to compliance with all applicable codes and ordinances and the recommended permit conditions found in Section III of this report.

**Staff Reviewers:** Barbara Ross, Planning and Zoning [Barbara.ross@alexandriava.gov](mailto:Barbara.ross@alexandriava.gov)



**SUP#2011-0032**

**6/7/2011**



## I. DISCUSSION

The applicant, Yates Holdings, LLC, by Duncan Blair, attorney, requests Special Use Permit approval for a dry cleaning operation in a new building to be constructed at 407 East Braddock Road.

### SITE DESCRIPTION

The subject site, at the corner of Mount Vernon Avenue and East Braddock Road, is currently three lots of record, one of which is City-owned, on which a small shopping center and one-story industrial building are located. Tenants in the shopping center include 7-Eleven and a Subway restaurant. The industrial building is used for automobile storage associated with the adjacent service station operation. The total site area is 44,480 square feet.

The surrounding area features a mix of residential, institutional and commercial uses. WMATA and Metrorail tracks and the mixed-use Colecroft development are located to the east. Single-family residences are adjacent to the south. An automobile service station is located to the west. George Washington Middle School and the Braddock Field are located to the north. Beyond the commercial and institutional uses immediately adjacent lie residential neighborhoods in all directions.

### BACKGROUND

Consolidation and redevelopment of the properties on this site have been discussed for several years. The applicant here, Yates Holdings, LLC, is also the applicant for DSP#2010-0023 and is seeking permission to construct two new buildings and a parking garage on the site, which will be consolidated into one lot. The proposed two-story building located on the western portion of the site near the corner of Mount Vernon Avenue and East Braddock Road will feature retail and repair uses on the first floor and offices on the second story above. A separate one-story building on the eastern portion of the site is the location for a new building for the existing 7-Eleven convenience store.

### PROPOSAL

The applicant proposes to use approximately 1,500 square feet of the new retail/office building for a dry cleaning operation. The anticipated name of the business is Yates Corner Green Cleaners, LLC, and it will be located on the eastern end of the first floor of the new building at the corner of Mount Vernon Avenue and Braddock Road. It proposes to operate with new "green" technology, known as the Green Earth ® system which replaces the traditional dry cleaning process and its hazardous materials with odorless, non-toxic, non-hazardous products. According to the applicant, clothes are cleaned in a closed drum; once the cleaning process is completed the used solvent is distilled and returned to the holding tank for reuse. Elements of the proposal include:

Hours:	For customers and operations:
	Monday: 6:00 am – 8:00 pm
	Saturday: 8:00 am – 5:00 pm

Sunday: 9:00 am – 4:00 pm

- Employees: Three employees are anticipated at any one time.
- Customers: Approximately 50 customers a day are anticipated.
- Odors: No offensive odors are anticipated.
- Trash: Trash will consist mainly of paper products and will be deposited and stored in the commercial dumpster in the shared screened dumpster area on site. A small amount of residual solvent plus waste dirt from clothes will be stored on site in five gallon containers and removed periodically by a state licensed waste hauler.

### PARKING

As part of the new development of this site, a total of 77 parking spaces will be provided at grade as well as within and above a parking structure. Thirteen of those spaces will be dedicated for use by the 7-Eleven, and six dedicated for the repair facility. Otherwise, the remaining parking is shared among the commercial users on site. A 1,500 square foot dry cleaning business on its own would be required to provide four parking spaces, and that number has been included into the calculation of the overall parking on site.

### ZONING/MASTER PLAN DESIGNATION

The site is zoned CSL/Commercial service low. A dry cleaning operation is allowed in CSL with special use permit approval pursuant to section 4-303(O) of the zoning ordinance. The proposed use is consistent with the Potomac West Small Area Plan chapter of the Master Plan which designates the property for uses compatible with CSL zoning.

## **II. STAFF ANALYSIS**

The proposed dry cleaning business is a good use for the site because it offers convenience service for a wide community of residences in the immediate area. The prospect of an environmentally friendly dry cleaning operation provides additional benefits for the community. The business is proposed to be operated by Yates Holdings, LLC, which will be responsible for the entire site as well as the operation of this particular business. The redevelopment allows typical business functions such as loading and trash storage to share common facilities.

The business is uniquely well located for pedestrians on their way to and from the Braddock Metro, and will help provide an active streetscape and business location at this important neighborhood site. Driving customers for the dry cleaning business will likely park in the above grade parking deck in the rear of the site. If the applicant can show that traffic safety will not be negatively affected, up to five parking spaces will be added on Braddock Road immediately in front of the business, and will be convenient for dry cleaning customers.

Staff recommends approval of the special use permit subject to the Conditions listed in Section III below.

### III. RECOMMENDED CONDITIONS

Staff recommends **approval** subject to compliance with all applicable codes and ordinances and the following conditions:

1. The special use permit shall be granted to the applicant only or to any business or entity in which the applicant has a controlling interest. (P&Z)
2. Litter on the site and on public rights-of-way and spaces adjacent to or within 75 feet of the premises shall be picked up at least twice a day and at the close of business, and more often if necessary, to prevent an unsightly or unsanitary accumulation, on each day that the business is open to the public. (P&Z) (T&ES)
3. No material shall be stored and no operations shall take place outside the building. (P&Z)
4. Trash and garbage shall be placed in sealed containers which do not allow odors to escape and shall be stored inside or in a closed container which does not allow invasion by animals. No trash and debris shall be permitted to accumulate on site outside of those containers. All dumpsters and stored trash and recycling shall be placed within the shared dumpster enclosure on site. (P&Z)
5. The applicant shall use the shared loading space on site for all deliveries, loading and unloading. (P&Z)
6. The applicant shall conduct employee training sessions on an ongoing basis, including as part of any employee orientation, to discuss all SUP provisions and requirements. (P&Z)
7. The applicant shall contact the Crime Prevention Unit of the Alexandria Police Department at 703-838-4520 regarding a security survey for the business and a robbery awareness program for all employees. (Police)
8. All waste products including but not limited to organic compounds (solvents) shall be disposed of in accordance with all local, state and federal ordinances or regulations and not be discharged to the sanitary or storm sewers or be discharged onto the ground. (T&ES)
9. The applicant shall control odors, smoke and any other air pollution from operations at the site and prevent them from leaving the property or becoming a nuisance to neighboring properties, as determined by the Department of Transportation and Environmental Services. (T&ES)

10. The applicant is not permitted to use toxic or hazardous chemicals to clean clothes. (T&ES)
11. The applicant shall maintain compliance with all with all Local, State and Federal environmental regulations that apply to the dry cleaning operation. (T&ES)
12. All loudspeakers shall be prohibited from the exterior of the building, and no amplified sounds shall be audible at the property line. (T&ES)
13. Supply deliveries, loading, and unloading activities shall not occur between the hours of 11:00pm and 7:00am. (T&ES)
14. The applicant shall require its employees who drive to use off-street parking and/or provide employees who use mass transit with subsidized bus and rail fare media. The applicant shall also post DASH and Metrobus schedules on-site for employees. (T&ES)
15. The Director of Planning and Zoning shall review the special use permit one year after approval and shall docket the matter for consideration by the Planning Commission and City Council if (a) there have been documented violations of the permit conditions which were not corrected immediately, constitute repeat violations or which create a direct and immediate adverse zoning impact on the surrounding community; (b) the director has received a request from any person to docket the permit for review as a result of a complaint that rises to the level of a violation, or (c) the director has determined that there are problems with the operation of the use and that new or revised conditions are needed. (P&Z)

STAFF: Barbara Ross, Deputy Director, Department of Planning and Zoning;  
Nathan Randall, Urban Planner.

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Staff Note: In accordance with section 11-506(c) of the zoning ordinance, construction or operation shall be commenced and diligently and substantially pursued within 18 months of the date of granting of a special use permit by City Council or the special use permit shall become void.

#### IV. CITY DEPARTMENT COMMENTS

Legend: C - code requirement R - recommendation S - suggestion F - finding

##### Transportation & Environmental Services:

- R-1 All waste products including but not limited to organic compounds (solvents) shall be disposed of in accordance with all local, state and federal ordinances or regulations and not be discharged to the sanitary or storm sewers or be discharged onto the ground. (T&ES)
- R-2 The applicant shall control odors, smoke and any other air pollution from operations at the site and prevent them from leaving the property or becoming a nuisance to neighboring properties, as determined by the Department of Transportation and Environmental Services. (T&ES)
- R-3 The applicant is not permitted to use toxic or hazardous chemicals to clean clothes. (T&ES)
- R-4 The applicant shall maintain compliance with all with all Local, State and Federal environmental regulations that apply to the dry cleaning operation. (T&ES)
- R-5 All loudspeakers shall be prohibited from the exterior of the building, and no amplified sounds shall be audible at the property line. (T&ES)
- R-6 Supply deliveries, loading, and unloading activities shall not occur between the hours of 11:00pm and 7:00am. (T&ES)
- R-7 The applicant shall require its employees who drive to use off-street parking and/or provide employees who use mass transit with subsidized bus and rail fare media. The applicant shall also post DASH and Metrobus schedules on-site for employees. (T&ES)
- R-8 Litter on the site and on public rights-of-way and spaces adjacent to or within 75 feet of the premises shall be picked up at least twice a day and at the close of business, and more often if necessary, to prevent an unsightly or unsanitary accumulation, on each day that the business is open to the public. (T&ES)
- C-1 The applicant shall comply with the City of Alexandria's Solid Waste Control, Title 5, Chapter 1, which sets forth the requirements for the recycling of materials (Sec. 5-1-99). (T&ES)

In order to comply with this code requirement, the applicant shall provide a completed Recycling Implementation Plan (RIP) Form within 60 days of City Council approval. Contact the City's Recycling Program Coordinator at (703) 746-4410, or via e-mail at

[commercialrecycling@alexandriava.gov](mailto:commercialrecycling@alexandriava.gov), for information about completing this form.  
(T&ES)

- C-2 The applicant shall comply with the City of Alexandria's Noise Control Code, Title 11, Chapter 5, which sets the maximum permissible noise level as measured at the property line. (T&ES)

Code Enforcement:

- F-1 No Comments Received

Police Department:

- R-1 The applicant is to contact the Crime Prevention Unit of the Alexandria Police Department at 703-838-4520 regarding a security survey for the business and a robbery awareness program for all employees. (Police)





# APPLICATION

## SPECIAL USE PERMIT

**SPECIAL USE PERMIT #** 2011-0032

**PROPERTY LOCATION:** 407 East Braddock Road, Alexandria, Virginia

**TAX MAP REFERENCE:** part of 054.04 06 01, 02 & 03 **ZONE:** CSL-Commercial Service Low

**APPLICANT:**

Name: Yates Holdings, L.L.C.

Address: 317 East Braddock Road, Alexandria, Virginia 22301


**PROPOSED USE:** Dry Cleaning Operation

[  ] **THE UNDERSIGNED**, hereby applies for a Special Use Permit in accordance with the provisions of Article XI, Section 4-11-500 of the 1992 Zoning Ordinance of the City of Alexandria, Virginia.

[  ] **THE UNDERSIGNED**, having obtained permission from the property owner, hereby grants permission to the City of Alexandria staff and Commission Members to visit, inspect, and photograph the building premises, land etc., connected with the application.

[  ] **THE UNDERSIGNED**, having obtained permission from the property owner, hereby grants permission to the City of Alexandria to post placard notice on the property for which this application is requested, pursuant to Article IV, Section 4-1404(D)(7) of the 1992 Zoning Ordinance of the City of Alexandria, Virginia.

[  ] **THE UNDERSIGNED**, hereby attests that all of the information herein provided and specifically including all surveys, drawings, etc., required to be furnished by the applicant are true, correct and accurate to the best of their knowledge and belief. The applicant is hereby notified that any written materials, drawings or illustrations submitted in support of this application and any specific oral representations made to the Director of Planning and Zoning on this application will be binding on the applicant unless those materials or representations are clearly stated to be non-binding or illustrative of general plans and intentions; subject to substantial revision, pursuant to Article XI, Section 11-207(A)(10), of the 1992 Zoning Ordinance of the City of Alexandria, Virginia.

Land, Clark, Carroll, Mendelson & Blair, P.C.  
 Duncan W. Blair  4/29/2011  
 Print Name of Applicant or Agent Signature Date

524 King Street 703 836-1000 703 549-3335  
 Mailing/Street Address Telephone # Fax #

Alexandria, Virginia 22314 dblair@landclark.com  
 City and State Zip Code Email address

**ACTION-PLANNING COMMISSION:** \_\_\_\_\_ **DATE:** \_\_\_\_\_

**ACTION-CITY COUNCIL:** \_\_\_\_\_ **DATE:** \_\_\_\_\_

OWNERSHIP AND DISCLOSURE STATEMENT  
Use additional sheets if necessary

1. Applicant. State the name, address and percent of ownership of any person or entity owning an interest in the applicant, unless the entity is a corporation or partnership, in which case identify each owner of more than ten percent. The term ownership interest shall include any legal or equitable interest held at the time of the application in the real property which is the subject of the application.

Name	Address	Percent of Ownership
1. Yates Holdings, L.L.C.	317 East Braddock Road Alexandria, VA 22301	100%
2.		
3.		

2. Property. State the name, address and percent of ownership of any person or entity owning an interest in the property located at 515 Mt. Vernon Avenue, unless the entity is a corporation or partnership, in which case identify each owner of more than ten percent. The term ownership interest shall include any legal or equitable interest held at the time of the application in the real property which is the subject of the application.

Name	Address	Percent of Ownership
1.		
2.		
3.		

3. Business or Financial Relationship. Each person or entity listed above (1 and 2), with an ownership interest in the applicant or in the subject property is required to disclose any business or financial relationship, as defined by Section 11-350 of the Zoning Ordinance, existing at the time of this application, or within the 12-month period prior to the submission of this application with any member of the Alexandria City Council, Planning Commission, Board of Zoning Appeals or either Boards of Architectural Review.

Name of person or entity	Relationship as defined by Section 11-350 of the Zoning Ordinance	Member of the Approving Body (i.e. City Council, Planning Commission, etc.)
1. Yates Holdings, L.L.C.	None	Alexandria Planning Commission and Alexandria City Council
2.		
3.		

NOTE: Business or financial relationships of the type described in Sec. 11-350 that arise after the filing of this application and before each public hearing must be disclosed prior to the public hearings.

As the applicant or the applicant's authorized agent, I hereby attest to the best of my ability that the information provided above is true and correct.

4/1/2011 Jason Yates JASON YATES Jason Yates  
Date Printed Name Signature

Development Special Use Permit with Site Plan (DSUP) # 2010-0023

State the name, address and percent of ownership of any person or entities owning an interest in the applicant, unless the entity is a corporation or partnership in which case identify each owner of more than ten percent.

Yates Holdings, L.L.C. is a Virginia limited liability company. The people or entities owning an interest of more than 10% is: Jason A Yates. It is anticipated that the dry cleaners will be owned and operated by a limited liability formed and owned by Jason A. Yates to be known as Yates Corner Green Cleaners, LLC.

**NARRATIVE DESCRIPTION**

- 2. The applicant shall describe below the nature of the request in detail so that the Planning Commission and City Council can understand the nature of the operation and the use, including such items as the nature of the activity, the number and type of patrons, the number of employees, the hours, how parking is to be provided for employees and patrons, and whether the use will generate any noise.

Yates Holdings, L.L.C. is a Virginia limited liability company, is requesting a special use permit to use and occupy approximately 1,500 square feet of space on the ground level in the tenant space designated 407 East Braddock Road in the commercial building to be constructed pursuant to DSUP 2010-0023 for a dry cleaning operation. The exact configuration of the space has not been defined, but it is on eastern end of the building, fronting on East Braddock Road and across the parking lot from the proposed new 7-11 building. The exact layout of the space to be occupied by the dry cleaners has not been established, but will be consistent with the typical plan submitted with this application.

The dry cleaners will use the GreenEarth ® system for cleaning clothes (see [www.GreenEarthCleaning.com](http://www.GreenEarthCleaning.com)) The GreenEarth ® system replaces hazardous chemicals with an odorless, non-toxic, non-hazardous EcoSolv™ organic silicone based solvent.

The GreenEarth ® system is a dry-dry, refrigerated, closed system. Clothes are cleaned in a closed drum once the cleaning process is completed the "used" solvent is distilled and returned to a holding tank for reuse. The residue, dirt from the clothes and a small amount of residual solvent, is stored onsite in and periodically disposed of by a state licensed waste hauler.

- 3. How many patrons, clients, pupils and other such users do you expect? Specify time period (i.e., day, hour, or shift).

The Applicant anticipates the dry cleaning operation will have approximately fifty (50) patrons per day.

- 4. How many employees, staff and other personnel do you expect? Specify time period (i.e., day, hour, or shift).

**Approximately six (6) individuals will be employed on a full or part time basis. The anticipated maximum number of employees on site at any one time is three (3).**

- 5. Please describe the proposed hours and days of operation of the proposed use:

Day: <b>Monday - Friday</b>	Hours: <b>6:00 am to 8:00 pm</b>
<b>Saturday</b>	<b>8:00 am to 5:00 pm</b>
<b>Sunday</b>	<b>9:00 am to 4:00 pm</b>

- 6. Please describe any potential noise emanating from the proposed use:

- A. Describe the noise levels anticipated from all mechanical equipment and patrons.

State the name, address and percent of ownership of any person or entities owning an interest in the applicant, unless the entity is a corporation or partnership in which case identify each owner of more than ten percent.

**It is not anticipated that noise levels generated by the GreenEarth ® dry cleaners will exceed permitted levels under the Alexandria City Code.**

- B. How will the noise from patrons be controlled?

**It is not anticipated that noise will be a source of complaints; as such, no extraordinary noise mitigation and control measures are warranted.**

- 7. Describe any potential odors emanating from the proposed use and plans to control them:

**It is not anticipated that offensive odors will emanate from the use of the property as a GreenEarth ® system dry cleaning facility.**

- 8. Provide information regarding trash and litter generated by the use:

- A. What type of trash and garbage will be generated by the use?

**The type of volume of trash and garbage generated by the dry cleaning facilities will be mainly paper products. Trash and garbage will be deposited and stored in the commercial dumpster on the dumpster pad shown on the site plan. The residue from the GreenEarth ® dry cleaning process, dirt from the clothes and a small amount of residual solvent, will be stored onsite in five gallon containers and periodically disposed of by a state licensed waste hauler.**

B. How much trash and garbage will be generated by the use?

**The dry cleaning facility will generate approximately less than one dumpster per day.**

C. How often will trash be collected?

**Trash and garbage will be collected by a commercial collector three (3) days a week.**

D. How will you prevent littering on the property, streets and nearby properties?

**Not Applicable.**

9. Will any hazardous materials, as defined by the state or federal government, be handled, stored, or generated on the property?

Yes.             No.

If yes, provide the name, monthly quantity, and specific disposal method below:

**Small quantities of materials (spotting liquids) defined as hazardous, generally recognized to be appropriate for use by dry cleaning facilities in the operation of the business, will be stored in a small containment tank, used as solvents, and disposed of in accordance with applicable regulations. As stated, the GreenEarth ® system does not use hazardous materials in its dry cleaning process.**

10. Will any organic compounds, for example paint, ink, lacquer thinner, or cleaning or degreasing solvent, be handled, stored, or generated on the property?

Yes.             No.

If yes, provide the name, monthly quantity, and specific disposal method below:

**Small quantities of organic compounds, generally recognized to be appropriate for use by dry cleaning facilities in the operation of the business, will be stored, used as solvents, and disposed of in accordance with applicable regulations. As stated, the GreenEarth ® system does not use hazardous materials in its dry cleaning process.**

11. What methods are proposed to ensure the safety of residents, employees and patrons?

**The location and the proposed hours of operations of the dry cleaning facility should provide a safe environment for its patrons and staff. It is not**

anticipated that extraordinary security measures will be required for customers. The facility will be equipped with a security system.

**ALCOHOL SALES**

12. Will the proposed use include the sale of beer, wine, or mixed drinks?

Yes.  No.

If yes, describe alcohol sales below, including if the ABC license will include on-premises and/or off-premises sales. Existing uses must describe their existing alcohol sales and/or service and identify any proposed changes in that aspect of the operation.

**PARKING AND ACCESS REQUIREMENTS**

13. Please provide information regarding the availability of off-street parking:

A. How many parking spaces are required for the proposed use pursuant to section 8-200 (A) of the zoning ordinance?

**Four (4) parking spaces are required by CSL zone regulations for the dry cleaning facility as non-retail personal service use.**

B. How many parking spaces of each type are provided for the proposed use:

**The required parking for the dry cleaning facility will be provided on the above grade parking deck and the below grade surface parking**

C. Where is required parking located?  On-site  off-site (check one)

If the required parking will be located off-site, where will it be located?

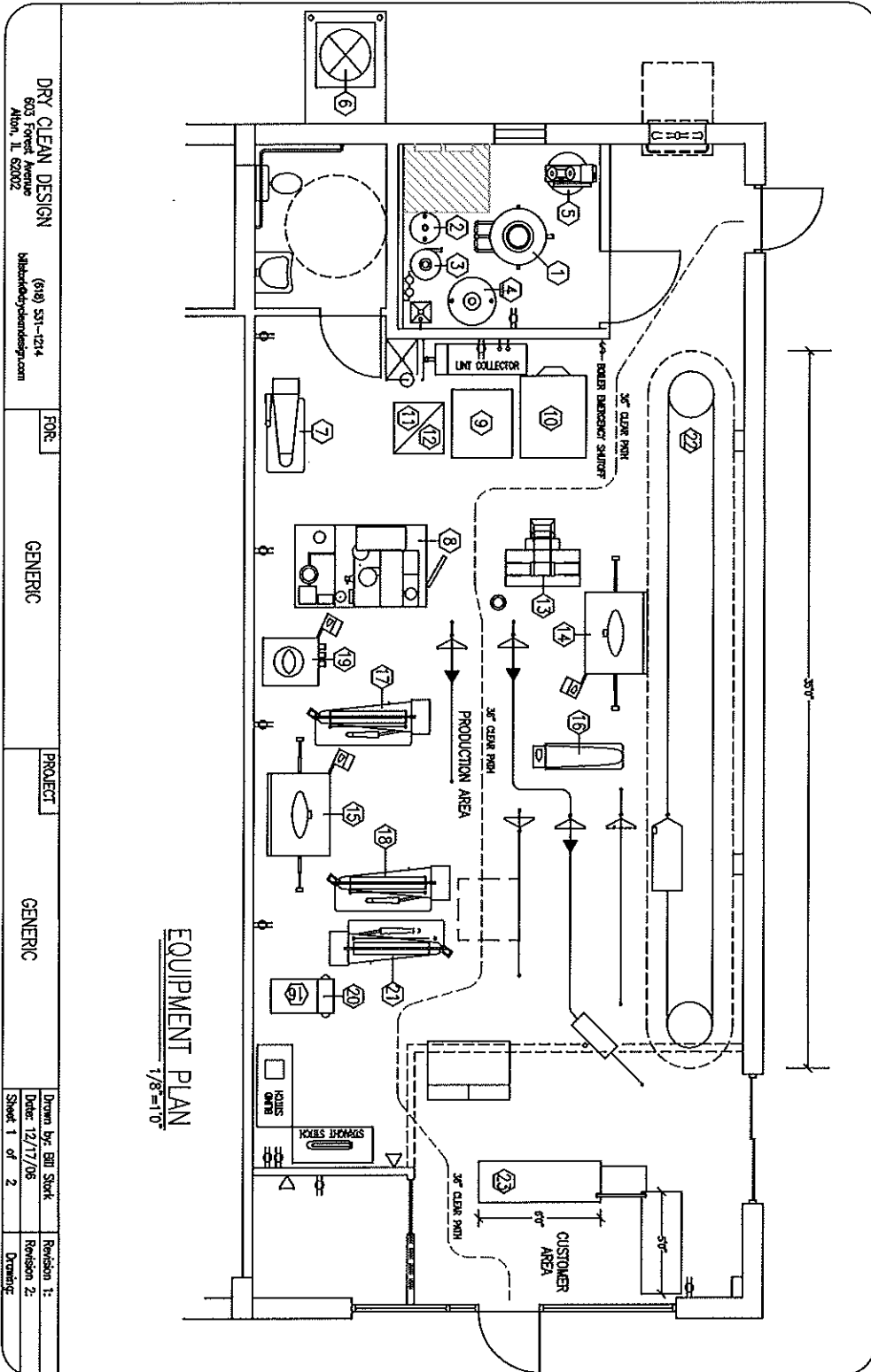
Pursuant to section 8-200 (C) of the zoning ordinance, commercial and industrial uses may provide off-site parking within 500 feet of the proposed use, provided that the off-site parking is located on land zoned for commercial or industrial uses. All other uses must provide parking on-site, except that off-street parking may be provided within 300 feet of the use with a special use permit.

D. If a reduction in the required parking is requested, pursuant to section 8-100 (A) (4) or (5) of the zoning ordinance, complete the PARKING REDUCTION SUPPLEMENTAL APPLICATION.

**Development Special Use Permit with Site Plan (DSUP) # 2010-0023**

14. Please provide information regarding loading and unloading facilities for the use:
- A. How many loading spaces are required for the use, per section 8-200 (B) of the  
Zoning ordinance? **None**
- B. How many loading spaces are available for the use? **One (1) shared.**
- C. Where are off-street loading facilities located? **The common loading space is adjacent to the proposed convenience store.**  
**On the surface parking facility for the Yates Corner project.**
- D. During what hours of the day do you expect loading/unloading operations to occur?  
**It is anticipated that loading and unloading activities will occur Monday – Friday 9:00 a.m. – 3:00 p.m.**
- E. How frequently are loading/unloading operations expected to occur, per day or per week, as appropriate?  
**It is anticipated that there will be approximately deliveries 1 per week.**
15. Is street access to the subject property adequate or are any street improvements, such as a new turning lane, necessary to minimize impacts on traffic flow?

**Yes.**



DRY CLEAN DESIGN  
603 Forest Avenue  
Arlon, IL 62002

(618) 531-1214  
bill@drycleandesign.com

FOR:

GENERIC

PROJECT

GENERIC

Drawn by: Bill Stark	Revision 1:
Date: 12/17/06	Revision 2:
Sheet 1 of 2	Drawn by:



**EQUIPMENT KEY**

- 1 Boiler/Steamer
- 2 Return Tank and Pump
- 3 Blowdown Tank
- 4 Gas Water Heater
- 5 I/R Air Compressor
- 6 Chiller
- 7 4201 Spotting Board
- 8 Ipurg DC Machine
- 9 ICM23 Imesa Washer
- 10 ICD34G Imesa Dryer
- 11 Wascomat Stacked Washer
- 12 Wascomat Stacked Dryer
- 13 6311 Collar Cuff Press
- 14 5029 Princess Ultra Shirt Finisher
- 15 5202 Shirt Finisher
- 16 2010 Touch Up Board With Iron
- 17 3454 Finishing Board
- 18 3454 Finishing Board
- 19 5122 Rotating Form Finisher
- 20 5304 Tensioning Topper
- 21 3454 Finishing Board
- 22 Conveyor
- 23 P.O.S. Computer
- 24 Exhaust Fan

# GREENEARTH® CLEANING FACT SHEET

WWW.GREENEARTHCLEANING.COM

TOLL FREE 877-926-0895

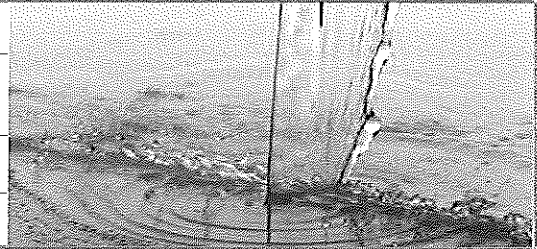
## Composition and Properties

Modified liquid silicone. Clear, odorless liquid. Specific gravity of .95. Chemically inert.

Same base ingredient used in many shampoos and conditioners, skin creams, deodorants and other personal care products.

Flash point: 170°F / Fire point: 190°F / Boiling Point: 410°F

Surface tension: 17.42 dynes/cm at 77°F (25°C)



## Safety and Environmental Benefits

Non-toxic (oral, dermal, inhalation), determined by EPA Study protocol.

Non-Irritating to skin, non-sensitizing. No immunosuppressant effects.

Not regulated by EPA, RCRA, CERCLA or California Prop 65.

Non-VOC. Specifically exempted by EPA.

Listed by EPA as "SNAP" material, a good substance to use in place of ozone-depleting chemicals.



Affirmed by California Air Resources Board as an acceptable dry cleaning solvent alternative, and based on the available exposure information, the use of D<sub>5</sub> in GreenEarth's patented dry cleaning process will not pose a health risk to the public living near businesses using D<sub>5</sub>.

If released to the environment, degrades to sand (SiO<sub>2</sub>) and trace amounts of H<sub>2</sub>O and CO<sub>2</sub>.

Comprehensive independent testing on waste streams and exposure levels. Over 30 million dollars of testing and research confirms that GreenEarth's liquid silicone is ecologically friendly and safe to use.

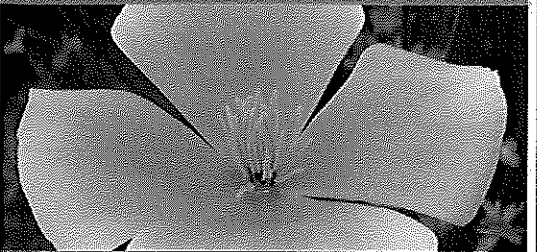
No special permits required; may qualify as alternative technology for special state funding or tax breaks.

## Cleaning, Production and Cost Benefits

Great cleaning: whites and colors. Low surface tension for faster penetration and soil removal. No odor. No shrinkage.

Cycle time: 47-65 minutes in dry to dry Class IIIA machine.

Gentle on all fabrics. No special handling for buttons, trims, sequins or other difficult garments. Significantly reduced claims: fewer damaged garments, fewer assembly errors due to less stragglers.



Not aggressive toward dyes. Mix colors and fabrics, minimal load classification. Full loads. Increased productivity and efficiency.

Soft hand. Very little wrinkling or lint. Static-free. Decreased labor costs: less finishing and sorting time required.

Significantly lower disposal costs. Lower utility costs. Excellent solvent mileage, up to 2,000 pounds per gallon reported.

## License Costs and Benefits

\$2,500 Annual Affiliation fee per machine. Second machine at same location is \$1,250. GreenEarth Cleaning is a patented process. Any dry cleaner using silicone in their dry cleaning machine must have a license from GreenEarth. License also grants rights to the use of GreenEarth's trademarked name and logo in store marketing.

Operational, technical and marketing support. Wide variety of high quality, customizable marketing materials. 24/7 website store locator.

## Equipment Required

Runs in Class IIIA machine, with or without distillation. Filtration system can be cartridge, spin disk, all carbon, powder/clay or Kleen-Rite. Can run in most hydrocarbon machines.

GreenEarth does not sell machines, solvent or detergent. These can be selected from a variety of qualified vendors.

# Alternative systems at-a-glance

	Perac	N Propyl Bromide	Hydrocarbon	Solvent	CO2	100%Wet Cleaning	GreenEarth Cleaning
Chemical Properties	Halogenated Hydrocarbon	N Propyl Bromide	Hydrocarbon	Glycol-ether CO2 (rfs)	Carbon dioxide	H2O	Solvents
Solvent Chemical Structure	Carbon Organic	Carbon Organic	Carbon Organic	Carbon Organic	MA Organic	MA Inorganic	Solvent Inorganic
Odor	Strong ether-like smell	Strong ether-like smell	Slight petroleum smell	Strong paint-like smell; gas is odorless	Odorless	Odorless	Burdens
Commercial Introduction	1940s	2005	1993	2007	1983	1984	1993
# U.S. sites	20,000+	<100	5,000+	<10	<40	<50	800+
Machine System Cost	\$50,000-75,000	\$40,000-75,000	\$45,000-95,000	\$175,000-300,000+	\$125,000+	\$50,000+	\$45,000-95,000
IFI 2007 Ratings	Poor	Average	Average	Good*	Excellent	Excellent	Excellent
Contamination	Poor	Poor	Average	Excellent	Excellent	Excellent	Good
Health Issues	Excellent	Excellent	Good	Bad	Bad	Excellent	Good
Equipment Cost	Excellent	Average	Average	Bad*	Bad*	Average	Good
Operating Cost	Excellent	Average	Excellent	Good*	Good*	Poor	Excellent
Variety of Garments	Yes	NA	Yes	Yes	Yes	Yes	Yes
Does it clean?	Yes	No	No	No	No	Yes	Yes
Extensive, openly reported testing	Yes	No	No	No	No	Yes	Yes
Physical Properties	Clear liquid	Clear liquid	Amber liquid	Liquid, colorless gas	Colorless gas	Clear liquid	Clear liquid
Surface Tension** (dynes/cm-2)	32	25.9	248-68°F	248-77°F	NA	72.7°F	17.4
Solvent KB Value***	89	25	27	65-75	NA	NA	<20
Specific Weight (water=8.3lbs/gal)	13.6	11.0	6.6	NA	NA	6.3	7.9
Viscosity	2	48	2,160°F	NA	NA	89-25C	4,000ST
Flash Point	None	None	42-147°F	<200°F	None	None	170°F
Machine Class	IV	III	III	III	Pressure Vessel	III	III
VOC, HAP, TAC	Yes	Yes	Yes	Yes	No	No	No
Permits Required	Yes	Yes	Yes	Yes	Sometimes	Rarely	Rarely
Claims	Baseline	Higher than perc	Less than perc	Similar to perc	Similar to perc	Higher than perc	Significantly less than perc
Shrinkage Issues	Some	Some	Some	Possibly	Some Acetate/Tricel	Yes	None
Color Fastness	Average	Poor	Good	Good	Good	Good	Exceptional
Hard of Garment	Average	Poor	Good	Good	Good	Good	Exceptional
Pre-sort Necessary	Yes	Yes	Yes	Yes, wet wash some garments	Yes	Yes	Limited
Problem Garments	Silk, beads, trims, vinyl, buttons, leather, cashmere	Silk, beads, trims, vinyl, buttons, leather, cashmere	Beads, trims, vinyl, buttons, certain colors	Too early to tell	Acetate, Tricel, elastic, beads, trims, buttons	Wool, rammed fiber, 6-ships, items with water soluble dyes	None
Finishing	Baseline	Similar to perc	Similar to perc	Similar to perc	Significantly higher than perc (cool drying creates more wrinkling)	Significantly higher (garments must be dried 80°F, then flipped and stretched)	Significantly less than perc; less wrinkling, lint & static, large % can be finished
Cycle Time	35-55 minutes	35-45 minutes	47-65 minutes	45 minutes	35-45 minutes	28 minutes (20% residual moisture)	47-65 minutes
Operational & Technical Support	No	No	No	Yes	No	No	Yes
Marketing Support	None	None	None	None	None	None	Significant
Fees & Royalties	NA	NA	NA	NA	NA	NA	\$2.5M license for 1st machine (additional machines \$1.25M)

\* Reported modification by IFI, Inc. based on liquid form industry reports reviewed by Pro-Clean, Inc. (now at the site of the IFI equipment). Solvent was not with infrequent exception. \*\* Surface tension has a direct correlation to dyeing ability. The lower the surface tension, the higher the wetting and penetrating ability for dyeing to take place.

\*\* No value is a measure of the amount of the solvent allowed to be used in dry cleaning. Can depend on ability. Cannot be used without proper heat & low pH water. Avoids the use of high pH water. Avoids the use of high pH water. Avoids the use of high pH water. Avoids the use of high pH water.

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### 1. What is GreenEarth?

GreenEarth Cleaning is the world's largest brand of environmentally friendly dry cleaning. The GreenEarth brand name refers to an exclusive dry cleaning process that replaces the petrochemical solvents traditionally used in dry cleaning with liquid silicone. Liquid silicone is an odorless, colorless solution that is an excellent carrier for detergents, has ideal properties for fabric care and is better for the environment. The GreenEarth Cleaning process is patented, and its name and logo are trademarked (there are no "generic" forms of GreenEarth). Any dry cleaning in silicones (in any percentage) is covered under GreenEarth's intellectual property.

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### 2. Why is it better for the earth?

The liquid silicone used in the GreenEarth process is a safe, natural byproduct of sand. Liquid silicone degrades into sand (SiO<sub>2</sub>) and trace amounts of water and carbon dioxide if spilled or released to the environment. It is recognized as safe for air, soil and water, not classified as a volatile organic compound (VOC) by the U.S. EPA, and doesn't contribute to smog formation. The EPA does not regulate silicone's use in dry cleaning or any of its many other applications.

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### 3. Why is it better for clothes?

Cleaning in GreenEarth silicone solution is different in two important ways. First, it has very low surface tension, and is very light in weight. Surface tension is what causes water to "bead up" on fabric. GreenEarth's low surface tension allows it to more effectively penetrate the

fabric fibers and lubricate away the dirt particles. And because it weighs a lot less than perc, silicone cleans and rinses more gently, reducing wear and tear on fabrics. Second, liquid silicone is chemically inert, meaning it does not chemically react with textile fabric or dyes during the cleaning process. This minimizes abrasion to and/or swelling of fabric fibers, eliminates traditional issues with removal of dyes and optical brighteners, helps maintain the soft hand of garments, and prevents shrinkage. Result? A wider variety of clothes can be safely cleaned with GreenEarth. Delicate silks, suede and leather trims, beads, sequins, painted garments, specialty buttons and trims, couture garments, heirloom fabrics and other "problem" items are no problem at all. And, unlike petroleum based solvents like perc or hydrocarbon, liquid silicone is odorless, so there is no lingering chemical smell on clothes.

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#### 4. Why is it better for people?

Traditional dry cleaning leaves a telltale chemical odor on clothes, but clothes cleaned in GreenEarth have absolutely no odor. Clothes are fresh and clean right out of the bag. Most people find petrochemical residue distasteful, but some people with asthma and skin sensitivities find it can make them sick. GreenEarth solution is non-allergenic and non-irritating; it is so safe you could rub it on your skin. In fact, you probably already do. That's because GreenEarth solution is pure liquid silicone, the same base ingredient found in everyday shampoos, conditioners, skin lotions and antiperspirants.

GreenEarth is also beneficial to people who work in or live near dry cleaning stores, because they no longer have to worry about the dangers of exposure to perc (short for perchloroethylene, the petrochemical used by most cleaners). According to the EPA, over-exposure to perc can lead to headaches, dizziness, skin and eye irritation and other health effects, including an increased risk of cancer. Seniors, young children and pregnant women are especially vulnerable. People who work in or live near a GreenEarth dry cleaning store have absolutely nothing to worry about. GreenEarth's cleaning system is safe to work with, safe to dispose of and safe to breathe. Employees especially love working in an odorless dry cleaning shop.

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#### 5. Why is it better for dry cleaners?

The cost of a dry cleaning machine capable of running GreenEarth is similar to that of a perc machine today, so capital equipment costs are not more expensive. Most dry cleaners operating with hydrocarbon can actually convert to GreenEarth without having to buy a new machine. And, it is easier for dry cleaners to operate profitably with GreenEarth. Why? Because it produces a noticeable difference that is highly marketable. Items cleaned in GreenEarth require less labor to process and finish. Costs for utilities, damage claims, permitting fees and disposal can also be lower.

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#### 6. How many GreenEarth Affiliates are there?

There are more than 1500 active licenses worldwide. A little more than half are in the United States. Every new Martinizing franchise introduced since 2003 utilizes the GreenEarth technology; the Oxxo and Tide Dry Cleaners franchise locations also use GreenEarth exclusively. To find a GreenEarth affiliated dry cleaner, visit [www.greenearthcleaning.com](http://www.greenearthcleaning.com) and click on the "Find a store" button in the upper right of the page.

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#### 7. What is the regulatory outlook for dry cleaning and GreenEarth?

Dry cleaning is under increasing regulatory scrutiny. In 2006, the EPA issued new regulations that banned new construction of perc dry cleaners in residential (co-located) buildings and instituted a phase out of perc use at co-located dry cleaners. In 2008, California became the first state to ban both the use of perc and the purchase of new perc machines, a move widely regarded as the beginning of the end of perc solvents in the U.S. New Jersey has chosen to offer a "carrot" instead of a stick and is incentivizing dry cleaners to remove and/or replace perc machines with grants as high as \$56,000. Massachusetts, New York, Texas and Toronto all have perc bans under consideration. If the industry continues to drag its feet when it comes to adopting "more environment friendly alternatives", regulators can be expected to grow increasingly concerned and increase legislative pressure.

The outlook for GreenEarth is excellent. In 2008, after an exhaustive 18 month review of scientific data around the health and human safety of GreenEarth's D5 solution, California's Air Resources Board (CARB) affirmed GreenEarth as an acceptable dry cleaning solvent alternative and based on the available exposure information, the use of D5 in GreenEarth's patented dry cleaning process will not pose risk to the public living near businesses using D5. GreenEarth meets and exceeds all regulatory requirements and regulations in all states. The outlook for GreenEarth is also excellent in Canada, where a routine screening assessment of D5 silicone has been underway as part of its ongoing chemical safety program. Although our competitors would like consumers to think there is a regulatory concern, Canada's assessment is that the D5 silicone used in the GreenEarth process is not harmful to human health. And although Canada is evaluating whether or not to regulate the quantity or concentration of silicone in personal care products that can be rinsed down the drain and/or to minimize the release to the environment from industrial usage, GreenEarth's dry cleaning application of silicone is a closed loop system and not an identified concern. You can review a summary of the Canadian position in the following link:

[www.chemicalsubstanceschimiques.gc.ca/challenge-defis/summary-sommaire/balch-04-2/541-](http://www.chemicalsubstanceschimiques.gc.ca/challenge-defis/summary-sommaire/balch-04-2/541-)

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**8. Has there been much scientific testing and evaluation done on GreenEarth?**

GreenEarth Cleaning is the only alternative solvent to perform and openly report extensive testing on the environmental and safety profile of its cleaning system. Over \$30 million worth of independent testing and research has been done on D5 liquid silicone to confirm that there are no risks to public safety resulting from its use in all of its many applications, including dry cleaning. GreenEarth Cleaning also underwrote an independent, comprehensive 2002 IFI Fellowship Study which compared the GreenEarth system to the industry standard perc system. The IFI declared it to be "as effective as perc with no environmental concerns". Independent waste stream and air exposure testing confirmed that liquid silicone as used in daily dry cleaning operation exceeds all federal, state and local requirements for water and air safety.

Regulatory agency reviews of the available scientific data on D5 silicone also offer independent perspective on the health and human safety profile of the GreenEarth Cleaning process. Similar to the Illinois EPA's 2006 assessment of D5 silicone as an alternative solvent, the California Air Resources Board (CARB), which instituted a ban of perc solvent in 2008, conducted an exhaustive 18-month review of all available data on D5 and affirmed that GreenEarth's D5 silicone is an acceptable dry cleaning solvent alternative and based on the available exposure information, that the use of D5 in GreenEarth's patented dry cleaning process will not pose a risk to the public living near businesses using D5. In addition, an evaluation by Environment Canada, the governing regulatory agency in Canada, concluded, "D5 is not considered to be harmful to human health", and an evaluation by the United Kingdom's UK Environment Agency stated, "No risks are identified from the production and all uses of D5 for the air, water and the terrestrial compartments, nor for man exposed via the environment."

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**9. I've heard that GreenEarth causes cancer, is that true?**

Absolutely not. This rumor dates back to 2004-2005 news coverage around the release of a voluntary two-year bioassay study commissioned by Dow Corning, a manufacturer of D5. News reporters like to create controversy, and a preliminary finding of this study allowed them to do just that. Follow-up research was conducted that determined that D5 liquid silicone poses no risk to human health; however this research finding did not receive widespread news coverage—nor did subsequent scientific reviews by the Illinois EPA, California's Air Resources Board (CARB), the government of Canada and the UK. Here is what matters:

The EPA does not recognize D5 silicone as a potential carcinogen or toxic air contaminant.

The EPA does not regulate the use of D5 in dry cleaning or any other application.

The California Air Resources Board conducted an extensive 18 month review of the health and safety research and ruled that use of D5 in dry cleaning does not pose an adverse health risk for the public.

The Government of Canada conducted a thorough review of all the available D5 data and determined that D5 is not considered to be harmful to human health.

An evaluation by the United Kingdom's UK Environment Agency concluded that D5 is safe for the air, water and soil as well as for humans.

More than 50 different studies on D5 demonstrate there is not a human health concern.

D5 is one of the most extensively studied materials in consumer applications.

D5 has been used safely for more than 40 years in many different applications.

D5 can be shipped without any D.O.T. "hazardous materials handling" requirements.

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**10. What are the facts of the bioassay research?**

As part of its commitment to the safe use of silicone, Dow Corning commissioned a two year Combined Chronic/Carcinogenicity Study on D5 silicone. What is important to understand is that the study was designed to test the potential effects of D5 as a chemical, not the safety of its use in the GreenEarth dry cleaning application. In the GreenEarth Cleaning process, silicone is kept inside the machine and continuously recycled using a closed loop system.

The bioassay research tested the effects of chronic inhalation of D5 at various levels of exposure for varying lengths of time, on male and female lab rats. A small but statistically significant number of female rats in the test cell exposed at the highest possible exposure level for the longest possible time developed precancerous indicators (they did not develop cancer). The rats affected in the study were the female rats exposed to the highest achievable vapor concentration of D5, 160 parts per million (ppm), six hours a day continuously for two years. By contrast, people who work in a dry cleaning plant are exposed at the lowest measurable vapor concentration of D5, less than 1 ppm on a time-weighted average during an eight-hour workday.

In order to better understand the test findings, follow up research was conducted by the Silicones Environmental, Health and Safety Council (SEHSC), the same group that conducted the original test. This research concluded that the effects observed in the original study were

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rat-specific and concluded that D5 does not pose a health risk to humans. This is because silicone is "read" by the female rat pituitary as dopamine, a naturally occurring chemical that can upset the balance of progesterone and estrogen and in turn lead to uterine tumors. The biological pathway that causes rats to react this way does not exist in humans, and scientific experts concluded that there is no risk to human health. This conclusion was supported by a number of scientific experts, including the Society of Toxicologists.

The safety of a food or chemical is often a matter of degree. Fluoride, salt and aspirin are all chemicals that can be toxic at high levels, but because their intended applications do not exceed safe limits, and because they provide benefits when used appropriately, we use them every day without concern.

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#### 11. I am seeing a lot of "organic" dry cleaning claims, is GreenEarth organic?

No. And that is actually good. There is nothing green about organic dry cleaning methods. "Organic", as it relates to chemistry, refers to anything with a carbon backbone. Gasoline and asphalt are organic. Dry cleaners who market themselves this way are purposefully misleading the consumer.

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#### 12. What other environmentally friendly practices do you support?

We are very committed to sustainability. Not only do we advocate technologies to lower the dry cleaner's carbon footprint of utility consumption, we also help our Affiliates source eco-friendly packaging.

GreenEarth operates in a closed loop system, meaning the dry cleaning solution is continually recycled within the machine. The fluid is kept clean through use of a filtration system. Many of our Affiliates use a new cold-filtration technology that reduces utility demand (steam, electricity, water) for solvent purification by over 85% from typical dry cleaning processes. It works by substituting natural clay as a filtration medium—the impurities are adsorbed by the clay medium—eliminating the requirement for constant distillation and the associated energy needed to boil the fluid and then return the vapor back into a liquid.

Plastic bags are a serious environmental concern—they take up space in landfills, threaten wildlife, and can last for hundreds of years. We offer our Affiliates access to oxo-degradable poly bags distributed by First Films in the U.S. The EcoMax degradable bags look and feel just like regular plastic bags but have a special composition that allows them to break down naturally within just two years. To maximize the environmental benefit of all oxo-degradable plastics, they should be recycled instead of thrown away.

Wire hangers may not get as much publicity as plastic, but they are also an environmental problem. Every year, Americans throw away 3.5 billion wire hangers and 5 billion plastic hangers. An excellent alternative is the cardboard EcoHanger®, made from 100% recycled paper and plastic. EcoHangers are manufactured in the U.S. in EPA-regulated factories and are 100% recyclable.

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#### 13. How does GreenEarth compare to other alternative cleaning methods like CO2, 100% professional wet cleaning and hydrocarbon?

CO2 and 100% wet cleaning are both recognized as very good choices environmentally, but less than one-third of one percent of dry cleaners utilize them. The problem for dry cleaners is that it is very difficult to make a living operating with either system exclusively. CO2 machines can cost up to three times as much as traditional machines. Wet cleaning requires more labor to produce and finish garments; thus both methods, although green, are considerably more expensive to operate.

Hydrocarbon solvent has, until recently, been popular as an alternative because it is affordable and petroleum-based, so the industry is familiar with it. The concern about hydrocarbon today is that it is not as "green" as some people thought originally. While certainly a big improvement over perc, hydrocarbon is classified as a volatile organic compound (VOC), and is a likely contributor to smog formation. It is not approved as a SNAP material and would likely require clean up if spilled. Like perc, hydrocarbon is also listed by the EPA as a neurotoxin and skin and eye irritant for workers. On the plus side, most machines designed to use hydrocarbon solvent are also designed to use GreenEarth solution, so operators can convert from hydrocarbon to GreenEarth without purchasing a new machine.

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#### 14. Do customers really care about eco-friendly dry cleaning?

Consumers today are increasingly concerned about the environment and the business practices of companies with which they do business. Demand for "green" products and services has risen dramatically, in fact, 49% of consumers feel that it is "important for companies to not just be profitable, but to be mindful of their impact on the environment and society," according to a recent study done by the National Marketing Institute.

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#### 15. I've heard that GreenEarth doesn't clean as well as perc, is that true?

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No. GreenEarth solution has different chemical properties than perc, so it interacts differently with detergents, additives and fabrics. When GreenEarth was first introduced, the process was unfamiliar, detergency had not yet been optimized to work with it, and cleaning results did vary. Water-soluble stains were a particular problem. With proper training on how to process garments in GreenEarth, and the advent of second, third and even fourth generation detergent additives developed with the help of industry partners, cleaning results, including removal of water-soluble stains, are consistently excellent. An independent evaluation of alternative solvents by the IFI in 2007 rated GreenEarth as "excellent" in the categories of cleaning and ability to handle a variety of fabrics and trims.

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#### 16. Does GreenEarth give me an edge with landlords?

Yes. GreenEarth's non-toxic, non-hazardous rating means no environmental liability issues. This allows operators to renew leases at current locations and obtain leases at locations that previously wouldn't allow dry cleaners.

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#### 17. Why does GreenEarth charge a licensing fee?

The GreenEarth Cleaning system is a patented process, and our name and logo are trademarked, so it is necessary to charge a licensing fee for our patents and trademarks. In return, we provide environmental, operational, technical and marketing advantages that deliver an outstanding return on that investment. Protecting the exclusivity of our brand and building a solid network of quality cleaners helps protect our Affiliates and the investment they make in GreenEarth.

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#### 18. Will my operating costs go up or down with GreenEarth?

Down. GreenEarth is gentler, with a much softer fabric hand and fewer wrinkles, so finishing and special handling costs will go down, as will expenses for damage claims. Operating expenses also go down in a number of ways. First, there is significantly less need to classify loads by color, which reduces the number of loads and the utility and supply costs to run them. Second, machines can be configured to use less energy (e.g. adding bleaching clay filtration), lowering your utility costs and your carbon footprint. Lastly, waste hauling costs are significantly lower and there is no need for environmental insurance.

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#### 19. What kind of sales increases can I expect with GreenEarth?

Some Affiliates have reported initial increases in sales as high as 50-70%. While results like this are not the norm, Affiliates who routinely market their difference report increases in net sales in the 10-25% range.

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#### 20. Am I limited on what machines or supplies I can use with GreenEarth?

No. GreenEarth solvent is available from a variety of sources and can be used in a variety of machines with a variety of detergents and spotting agents.

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#### 21. Can I clean more of my suede and leather trimmed, vinyl and beaded garments if I switch to GreenEarth?

Yes. The range of fabrics and trim combinations that can be successfully processed in GreenEarth exceeds those of all other solvents.

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#### 22. What do I need to do to convert to GreenEarth?

The first step will be to request an information booklet, either by phone (toll-free 877-928-0895) or online. Next you will want to learn about any local regulations you would need to comply with and assess your equipment and supply needs. GreenEarth has done extensive testing and has pre-approved a number of different machines, detergents and spotting agents, to make selection of a quality system easier. The next step is to talk. We won't be happy, and neither will you, if we don't share the same values and commitment to operational excellence. Partnering with like-minded business owners who put customers, quality and environmental responsibility first helps protect your investment and ours. We can also discuss licensing options in your territory. The final step is to sign a letter of understanding, making your official membership application official. Once you join as an Affiliate, you will receive a membership kit and we will begin working with you to make sure your installation and conversion go smoothly.

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#### 23. What exactly do I "get" for the licensing fee?

In addition to the right to use GreenEarth's patented process and trademarks, your license fee entitles you to ongoing operational, technical and marketing support. The marketing

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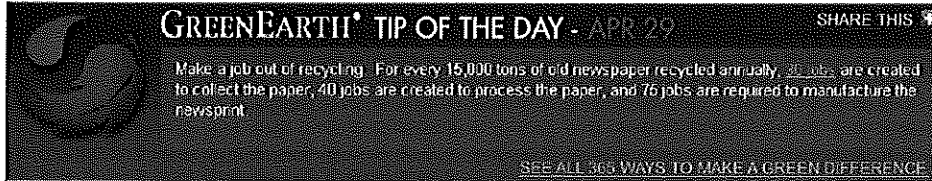
advantages of GreenEarth include a wide range of professionally developed, customizable marketing materials, access to top quality direct mail fulfillment services, a website that builds a quality image and a "find a store" feature that directs customers to Affiliate store locations 24/7. As a GreenEarth Affiliate, you will also be part of a worldwide network of quality cleaners who share information, ideas and best practices.

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#### 24. Will I still have to pay for waste disposal?

Most of our Affiliates have waste disposed as a non-hazardous waste product. The fee ranges from \$0 to 60% of the cost of hazardous waste disposal.

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**Relevant Historical Timeline of D5 and GreenEarth**

YEAR	ORGANIZATION	FINDING	OUTCOME
1943	Dow Corning	Unique properties of silicone help dry, damaged skin.	First use in personal care products: skin lotion.
1944-2009	Various	D5 silicone an ideal base ingredient in a variety of personal care products.	Widespread use in variety of personal care products.
1994	U.S. EPA	Direct final rulemaking: D5 specifically exempt from regulation as a Volatile Organic Compound (VOC).	D5 does not require regulation.
2000	California Industrial Hygienist Services (Roxanne Fynboh)	Air Sampling Analysis: no risk to employee health when used as dry cleaning solvent in dry-to-dry machines.	GreenEarth moves to market after 18 months of Affirmation Site Testing.
2000	Severn Trent Labs	Waste Stream Analysis: D5, used in dry-to-dry machines both by itself and in conjunction with additives, is not a hazardous waste.	GreenEarth classified by waste haulers as non-hazardous waste.
2003	Silicone Environmental Health & Safety Council (SEHSC)	Preliminary bioassay study: concern around precancerous indicators in female rats subjected to high continuous exposures of D5 over a two year period.	Additional research to determine relevance of findings.
2005	Silicone Environmental Health & Safety Council (SEHSC)	Follow-On research: disease pathway that exists in rats does not exist in humans; D5 poses no risk to human health.	SEHSC findings accepted by the Society of Toxicologists.
2006	EPA Region 8	GreenEarth has no known or expected health issues, requires no special handling or permits, is non-toxic whether contact is oral, dermal or from inhalation. The byproduct of the cleaning operation is so benign it is permissible for landfills.	GreenEarth's Colorado Mountain Cleaners recognized with the EPA's Environmental Achievement Award.
2006	Illinois Dry Cleaner Environmental Response Fund (DERTFI)	Typical exposure to D5, whether occupationally, to consumers or to the general public, would not result in a significant risk to human health. There are no significant environmental risks from the use of D5 in dry cleaning.	GreenEarth designated 'green' solvent in Illinois by DERTFI.
2008	California Air Resources Board (CARB)	Based on Office of Environmental Health Hazard Assessment (OEHHA) review, D5 as an alternative dry cleaning solvent does not pose an adverse health risk to the public. No regulation is required.	CARB affirmed GreenEarth as an acceptable alternative dry cleaning solvent that does not require regulation.
2009	Canadian Ministers of Environment & Health	Final Screening Assessment: amounts of D5 entering the environment do not pose a risk to human health.	No impact to dry cleaning application of D5 is anticipated.

**Key Facts About GreenEarth**

GreenEarth is the brand name for the patented process of dry cleaning with D5 (Decamethylcyclopentasiloxane).

D5 is exempted from regulation as a VOC by the U.S. EPA<sup>1</sup> as well as by the State of California.<sup>2</sup> D5 does not impact ozone, is not a greenhouse gas and does not interact with greenhouse gases.

GreenEarth has been affirmed by the California Air Resources Board (CARB) as an acceptable alternative dry cleaning solvent that will not pose an adverse health risk to the public and does not require CARB regulation.<sup>2</sup>

D5 is non-toxic (oral, dermal, inhalation), as measured by EPA protocol.<sup>3</sup>

GreenEarth utilizes D5 in a closed loop dry cleaning system. Employee exposure level is less than .5 ppm.<sup>4</sup>

D5 is non-irritating to skin and non-sensitizing. D5 has no immunosuppressant effects.<sup>5</sup>

D5 is not a hazardous waste under federal or state laws.<sup>6</sup> Not regulated by EPA, RCRA, CERCLA or California Prop 65.

D5 is listed by EPA as "SNAP" material, a good substance to use in place of ozone-depleting chemicals.

If released to the environment, D5 degrades to sand (SiO<sub>2</sub>) and trace amounts of H<sub>2</sub>O and CO<sub>2</sub>.<sup>7</sup> No special permits required (except in BAAQMD, where a permit is required not to have a permit).

**CITED RESEARCH STUDIES**

**1 59 Federal Register No. 192, October 5, 1994, pp. 50693-50696.**

In a final direct rulemaking, the EPA specifically exempted D5 from regulation as a Volatile Organic Compound (VOC).

**2 California Air Resources Board, 2008, Dry Cleaning Alternative Solvents: Health and Environmental Impacts Fact Sheet.**

After an exhaustive 18-month review of all available research, CARB concluded that D5 is not a VOC and that available exposure information indicates that the use of D5 as an alternative dry cleaning solvent will not pose a risk to the public living near businesses using D5.

**3 Battelle Northwest Toxicology 2001, Plotzke et al. 2002, Dow Corning Corporation 1999, 2003a, 2003b, 2003d, 2005b, Utell 2004, Anderson et al. 2005, Reddy et al. 2005a, 2005b.**

Multiple studies cite D5 as non-toxic regardless of exposure type (oral, dermal, inhalation).

**4 California Industrial Hygienist Services (CIH Services, Inc), 2000, SB32 Air Sampling Study, Environ International Corporation, 2006.**

Industrial Hygiene (IH) survey, consisting of both personal and area monitoring, measured employee exposures as both an 8-hour time-weighted average (TWA) as well as for Short-Term Exposure Limits (STELs) for particular tasks within the dry cleaning process. Based on measurement techniques prescribed by the Occupational Health and Safety Administration (OSHA) and the National Institute for Occupational Health & Safety (NIOHS), average employee exposure level was less than .22 ppm on an 8-hour time-weighted average (TWA) in approved dry-to-dry machines, well below estimated Margins of Safety (MOS) limits. Later corroborated by Environ evaluation of exposure to D5 for consumers, workers and the public prepared for the Silicones Environmental Health and Safety Council. Mean value for occupational exposure to D5 in workplace air was measured at .143 ppm for dry cleaners.

**5 Burns-Naas et al. 1998.**

D5 was not immunotoxic when administered by inhalation for 28 days at concentrations up to 160 ppm.

**6 Severn Trent Laboratories, 2000, Waste Streams Analysis.**

Sampling and analysis of D5 in dry-to-dry machines, done at intervals over a four-month period, concluded that D5 by itself (and also when used in conjunction with appropriate additives such as detergent, spotting chemicals, etc.) is not a hazardous waste under federal or California law. The residue sometimes referred to as "still bottoms", remaining after the D5 is distilled off for recycling into the dry cleaning process, contains all of the substances cleaned off the clothes as well as any other chemicals introduced into the process, and as such, may be a hazardous waste. Similarly, filter cartridges, designed to remove the larger particulate that may come into the process from soiled laundry, could also potentially lead to a hazardous waste, despite D5 itself being classified as non-hazardous.

**7 Dry Cleaner Environmental Response Trust Fund of Illinois (DERTFI), 2006, Assessment of the Human Health Risk and the Environmental Fate and Effects of GreenEarth® (Decamethylcyclopentasiloxane) Used in Dry Cleaning.**

The environmental fate and effects of D5, based on fugacity modeling assessments made of potential concentrations of D5 in the environment resulting from its use as a dry cleaning solvent, were investigated in order to determine potential risk for the general public as well as aquatic species. Using the Equilibrium Criterion (EQC) multimedia fugacity model (Mackay et al. 1996), it was determined that more than 99.9% of the emission of D5 resides in the air; intermediate exchange of D5 from air into other environmental compartments (water, soil, or sediment) was insignificant. About 22% of D5 was removed from the model environment by degradation in air, and 78% was removed by advective transport in air. Total residence time of D5 in the model environment was about 3.2 days. D5 will not partition to soil or water in remote regions because it does not have the potential for deposition in the biosphere after transport. While D5 is not soluble in water and tends to evaporate (Henry's Law Constant = 0.318 atm m<sup>3</sup> mol<sup>-1</sup>), chronic and acute aquatic toxicity tests were conducted under very stringent laboratory conditions. In most cases, the No Effect Concentrations (NOECs) were determined to be equal to or greater than the limit of water solubility. The environmental modeling and testing clearly indicate that there are no significant environmental hazards from the use of D5 in dry cleaning. Based on the extensive data available for D5, the safety of the GreenEarth system was supported.