



# The New Way to Shine:

## A Guide to Greening Your Cleaning

These days, the ways in which you can become more environmentally friendly may seem overwhelming. The good news is that there are several “quick fixes” that can drastically improve the overall health of both you and the environment. Specifically, re-vamping your—and your organization’s—green cleaning practices can avert instances of pollution, respiratory illness, infertility, and even cancer.

Improving employee health and the surrounding environment will result in greater profit for organizations. This added value will be seen in the form of increased customer loyalty and employee productivity, as well as decreased health insurance payments and absentee days. This paper will examine the chemicals to avoid and the illnesses that they induce in addition to the eco-friendly products to choose and step-by-step instructions on switching the way in which your cleaning practices operates. Finally, you will be presented with the business case for employing eco-friendly cleaning, followed by product and value comparisons.

© 2010 Strategic Sustainability Consulting  
Kiersten Gilbert  
[www.sustainabilityconsulting.com](http://www.sustainabilityconsulting.com)  
[info@sustainabilityconsulting.com](mailto:info@sustainabilityconsulting.com)





# Contents

<b>EXECUTIVE SUMMARY.....</b>	<b>1</b>
<b>WHY SHOULD I CHANGE MY CLEANING PRACTICES?.....</b>	<b>3</b>
Chemical Toxicity .....	3
Health Impacts .....	4
Environmental Impacts.....	6
<b>HOW CAN THIS AFFECT MY BUSINESS?.....</b>	<b>8</b>
Employee Health .....	8
Consumer Preference .....	9
<b>IN WHAT OTHER WAYS CAN MY COMPANY BENEFIT FROM MAKING THE SWITCH?.....</b>	<b>10</b>
LEED.....	10
<b>HOW DO I MAKE THE SWITCH? .....</b>	<b>11</b>
Brands.....	11
Eco Labels and Certifications .....	13
<b>FACTORS TO CONSIDER IF YOU ARRANGE THE CLEANING SERVICES OF YOUR BUILDING .....</b>	<b>17</b>
<b>QUESTIONS FOR YOUR PROPERTY MANAGER OR JANITORIAL COMPANY.....</b>	<b>18</b>
<b>A CHECKLIST FOR SWITCHING CLEANING PRACTICES .....</b>	<b>19</b>
<b>COST COMPARISON WORKSHEET.....</b>	<b>20</b>
<b>CONCLUSION.....</b>	<b>21</b>
<b>ADDITIONAL RESOURCES .....</b>	<b>22</b>
<b>REFERENCES.....</b>	<b>23</b>



# Executive Summary

This paper examines the importance of using sustainable cleaning products within the workplace. Using common, chemical-laden cleaners, rather than those that can be deemed sustainable, is dangerous due to the toxins that they emit. Volatile organic compounds (VOCs) are the most prevalent forms of toxic chemical found in cleaning products. VOCs are hazardous because they appear in the form of carcinogens, neurotoxins and hormone disruptors. Additionally, VOCs react with other chemicals in the air to form more harmful chemical compounds, such as ozone (the main component of air pollution).

Petroleum based (petro) chemicals, another form of chemical compound that is commonly found within cleaning products, combine to form more hazardous emissions, negatively affect the immune and nervous systems, and cause cancer and asthma.

There are numerous health effects that result from the exposure to and inhalation of toxic chemicals. Asthma is one of the most prevalent; multiple medical studies have shown that fumes from cleaning products, especially those within an enclosed space with poor ventilation (i.e., office space), directly affect the respiratory system, and are leading triggers of asthma symptoms. Carcinogens are cancer-forming compounds and are frequently found in cleaning products. Carcinogens gain access to the immune system through inhalation. Phthalates are common ingredients in cleaners and are very harmful to reproductive systems, causing infertility and sperm damage. Chemical fumes also

act as hormone disruptors, particularly in children, causing early puberty that leads to a higher risk of adult illness.

Aside from the effects to human health, these emissions can harm businesses. Degraded employee health, as a result of poor indoor air quality, leads to financial loss through reduced worker productivity, increased sick days and increased healthcare payments. Total economic loss nationwide is estimated to be as high as \$168 billion each year. A lack of corporate environmental responsibility can also directly impact a business' profit. In a recent global study, more than 60 percent of consumers surveyed prefer to purchase goods and services from companies that partake in environmentally responsible practices. This trend is only going to grow. Thus, companies that do not take steps to become more environmentally friendly now risk falling profits in the future.

The most basic step in making a business' cleaning practices more sustainable is to swap common cleaners for environmentally friendly brands. There are several eco-minded brands to which companies of varying sizes can successfully switch. Eco Concepts and Sustainable Earth products are commercial-grade product lines, while Shaklee, Seventh Generation and Ecos are all suitable for smaller businesses. There are several certifications and labels available that will assist you in determining which brands are responsible and safe. GreenSeal measures the Life Cycle Assessment, and environmental

impact of a product throughout the manufacturing process. Greenguard measures products in terms of their chemical toxicity and effect on Indoor Air Quality (IAQ). Design for the Environment (DFE) designates products that use safer ingredients that have less of an impact on human and environmental health. EcoLogo only certifies products that have met stringent standards for allowable emissions levels. Cleaning Industry Management Standard (CIMS) is applicable to janitorial companies. CIMS ensures that participating organizations maintain high levels of environmental responsibility, and that these participants comply and adhere to the environmental expectations of their clients.

The factors to consider when changing your cleaning practices will depend on whether you employ the cleaning staff and supply the products, outsource the cleaning to a janitorial company, or have a property manager arrange the cleaning services. Regardless of the situation, you should consider reducing the number of weekly cleanings, switching product brands and cutting down on the office areas covered during each cleaning. If you outsource to a cleaning company, consider renegotiating your contract to require the use of safer products and fewer cleanings; if a property manager handles these arrangements, try to renegotiate your lease to include these provisions.

The process of switching cleaning practices should include a pollution calculation, which can be found using the Green Cleaning Pollution Prevention Calculator (Green Cleaning Pollution Prevention Calculator; FedCenter Home). Performing a cost comparison is another helpful strategy in deciding which product brands are financially viable options. The comparison evaluates the intrinsic value gained by switching product brands. This added value includes improved IAQ, (and thus, increased productivity) and reduced loss of profit from sick days and healthcare payments. Consumer demand also adds value to changing your environmental practices. A growing number of consumers now seek out companies that employ environmentally responsible practices. Competitive advantage and profit can be forgone when a company fails to alter its practices accordingly.



# Why Should I Change my Cleaning Practices?

Standard household cleaning agents are some of the most toxic substances currently in production. Many of these products contain VOCs, petroleum-based chemicals, and carcinogens, with their emissions placing both environmental and human health at risk. Yet despite the proven harmful effects of these substances, nearly all under-the-sink cabinets in the country house a veritable who's who of poisons. These poisons are masked by the very same promise that they themselves obliterate: to make the home, office, or classroom a safer and healthier environment.

## CHEMICAL TOXICITY



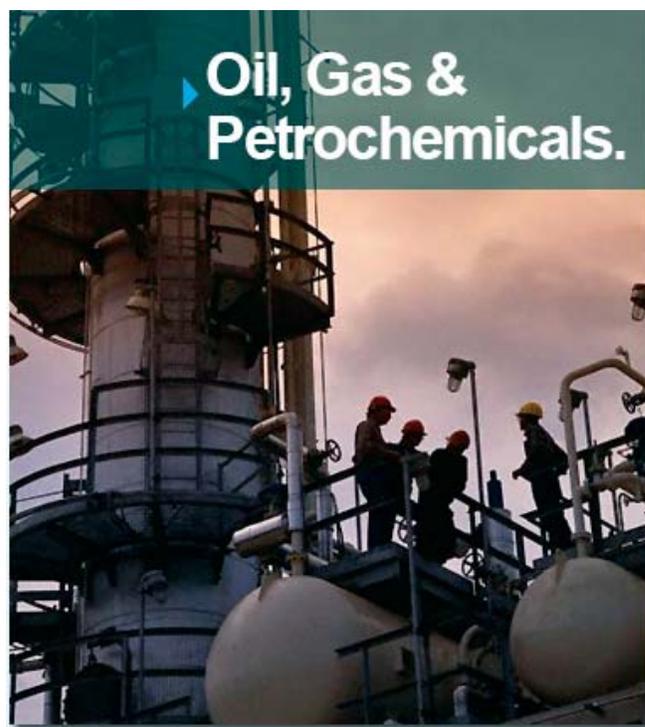
Cleaning products that litter the shelves of grocery stores host scores of chemical components that have been proven to have adverse effects on the health of both humans and the environment. There are hundreds of such chemicals, yet most can be categorized as either petro chemicals or VOCs.

## VOCs

VOC stands for Volatile Organic Compound. VOCs are a source of concern mainly due to the fact that

they can react negatively with the other gases in the air through photochemical reactions; as a result of these reactions, other, more hazardous gaseous compounds, are formed and enter the atmosphere (What are volatile organic compounds? Para 1-2). For instance, VOCs, when combined with certain contaminants (i.e.: chemicals emitted from cleaning products), can form ozone, the number one component in smog and the main enabler of global warming. Nearly all VOCs are some form of carcinogen, neurotoxin, or hormone disruptor (Toxic Cleaner Fumes Could Contaminate California Classrooms | Environmental Working Group, para 1-4).

## PETRO CHEMICALS



Petro chemical is the abbreviation for the term petroleum-based chemical; it is made from crude oil and natural gas. The most common forms of

petro chemicals found within cleaning products are ethylene, propylene, butadiene, benzene, toluene, xylene, and methanol (Ophardt, 2003). The health implications of these chemicals will be discussed in further detail, later in this paper. Petro chemicals can work in a similar fashion to VOCs, in the sense that they combine with other petro chemical fumes to form stronger, more toxic emissions (M.Ed., R. P., & MD, W. S).

## HEALTH IMPACTS

### ASTHMA

Chemical exposure through the use of cleaning products has become one of the leading causes of asthma. When cleaning products are in use, the chemicals emit vapors that enter the airways and aggravate the lungs and respiratory system. Certain products can even emit these vapors through their packaging.



A study published by the American Journal of Respiratory and Critical Care Medicine was

conducted over the course of nine years and followed the amount of new-onset asthma cases that were directly related to the use of household cleaners. Results of the study showed that, of the 3,503 participants, 1,459, or 41.7%, experienced new-onset asthma symptoms at the end of the study. These symptoms were associated with the use of cleaning sprays, specifically those sprays used on glass and furniture, and in air fresheners. The study also showed that, as the number of cleaning sprays used weekly increased, the number of participants without asthma significantly decreased (Zock, J., Plana, E., Radon, K., Sunyer, J., Dahlman-Hoglund, A., Norback, D., et al).

According to the World Health Organization, as referenced by the American Academy of Allergy Asthma and Immunology, 11% of asthma cases around the world are the direct result of workplace conditions, including exposure to fumes and gases (AAAAI - Statistics).



A report prepared for the California Air Resources Board, compiled by the combined efforts of the Department of Civil and Environmental Engineering at the University of California at Berkeley and the Indoor Environment Department, documented the findings of a study of occupational asthma, allergy, and/or respiratory irritation. Five of six case reports revealed that carpet shampoo or floor cleaner was responsible for the appearance of allergy, asthma, or respiratory irritation (Nazaroff, W. M., Coleman, B. K., Destailats, H., Hodgson, A. T., Liu, D., Lunden, M. M., et al, p. 7).

The Association of Occupational and Environmental Clinics, as reported by the Environmental Working Group, also states that ingredients found in cleaning supplies can cause asthma, particularly in children (as they are often more susceptible to asthma than adults). The article lists two classes of commonly found chemicals that are capable of leading to the development of asthma, including: ethanolamines, listed as monoethanolamine, diethanolamine or triethanolamine, and quaternary ammonium compounds, such as benzalkonium chloride and alkyl dimethyl benzyl ammonium chloride (Classroom asthma, Children's Asthma created by cleaning supplies | Environmental Working Group, para 4-16).

### **CANCER**

Many VOCs and petroleum-based chemicals have been found to cause cancer among adults and children. VOCs are often highly toxic carcinogens, or combine with other gases to form carcinogens, and can accumulate inside the body after gaining access through airways. Use of these chemicals in indoor environments results in increased potency

and toxicity, due to a lack of ventilation in enclosed areas, and the fact that they are not able to disperse as they would outdoors. It is for this reason that chemicals within cleaning products are excessively harmful (Volatile Organic Compounds | Indoor Air Quality | US EPA). According to the Environmental Protection Agency, "Concentrations of many VOCs are consistently higher indoors (up to ten times higher) than outdoors" (Volatile Organic Compounds | Indoor Air Quality | US EPA, para 1).

### **NERVOUS SYSTEM DAMAGE**

Petroleum-based chemicals can cause severe damage to the immune and nervous system by "impairing proper DNA expression, weakening DNA repair, accelerating gene loss, degeneration of the body's detoxification defenses as well as gradual weakening of the brain's primary defense (the blood brain barrier)," as found by Drs. Richard Pressinger and Wayne Sinclair, through their research at the Universities of Florida and South Florida (M.Ed., R. P., & MD, W. S , para 1). Their medical research found that these chemicals affect the human body by causing neurological disorders, autoimmune disorders, and child behavior disorders such as learning disabilities, mental retardation, hyperactivity and ADD. Chlorine bleach is one of the substances most toxic to the brain and nervous system. Other known toxins include benzyl and isopropyl alcohol (Classroom asthma, Children's Asthma created by cleaning supplies | Environmental Working Group para 39).

### **REPRODUCTIVE SYSTEM DAMAGE**

Phthalates are some of the most toxic chemicals due to their potentially destructive effects upon the

human reproductive system. Several animal studies have shown the dangerous effect of phthalates, including infertility in females, abnormalities in the male reproductive system, altered sex hormone levels in infant males, and sperm damage in men. These chemicals typically cause damage by first contaminating dust, and then entering the respiratory system through inhalation (Classroom asthma, Children's Asthma created by cleaning supplies | Environmental Working Group, para 26).

There are several other common chemicals that negatively impact the reproductive system. Glycol ethers impair fertility and development, can reduce sperm count in males, and cause birth defects during pregnancy (Classroom asthma, Children's Asthma created by cleaning supplies | Environmental Working Group, para 28). They are categorized as hazardous air pollutants, by the EPA's 1990 Clean Air Act Amendments, and as toxic air contaminants, by California's Air Resources Board. (Greensfelder, L., & Relations, M. (n.d.). 05.22.2006). Quaternary ammonium compounds, often used in disinfectants, can affect fertility as well (Classroom asthma, Children's Asthma created by cleaning supplies | Environmental Working Group para 24). Chlorine bleach also has the potential to cause reproductive harm when it enters waterways and turns into organochlorines (How to clean your house without hurting the planet | Grist, para 16).

## HORMONE DISRUPTION

Hormone disruption causes children to experience puberty at an unnaturally early age; it often places them at risk for adult illnesses, including breast cancer and polycystic ovary syndrome, which increases the risk of obesity and diabetes. Early

puberty also increases the risk of psychiatric and behavioral problems. Phthalates, ethylene glycol and alkylphenol ethoxylates are especially toxic hormone disruptors (How to clean your house without hurting the planet | Grist, para 8-9) and (Classroom asthma, Children's Asthma created by cleaning supplies | Environmental Working Group para 33-36).

## ENVIRONMENTAL IMPACTS

### AIR



As previously mentioned, the majority of VOCs and petroleum-based chemicals react with other contaminants in the air, forming more toxic and polluting emissions that are then added to the already noxious atmosphere. Ozone is a common culprit that enters houses and office buildings through ventilation systems, pairs up with indoor chemicals, and creates poisonous gasses. Terpenes are one of ozone's favorites, merging to form formaldehyde in environments where it may have previously been absent (Nazaroff, W. M., Coleman, B. K., Destailats, H., Hodgson, A. T., Liu, D., Lunden, M. M., et al, p. 2-3). Not all chemicals necessitate a mate in order to wreak havoc. Most

chemicals are potent on their own; they merely become even more destructive when teaming up.

## WATER



Aside from the detrimental effects of chemicals entering waterways, including groundwater contamination and pollution, chemicals can also cause damage in much more serious ways. Chemical contamination of drinking water can result in cancer and serious birth defects (Erin Brokovich, anyone?). The wastewater runoff from industrial facilities is not separate from the day-to-day activities of humans; those chemicals discarded from manufacturing sites are the same ones found in tile, counter, and glass cleaners.

Dish and laundry detergents and all-purpose cleaners have a very low degree of biodegradability, and remain toxic when they enter waterways via kitchen and bathroom drains. These toxins then go on to harm aquatic wildlife (How to clean your house without hurting the planet | Grist). A study conducted by the Environmental Working Group tested wastewater in the San Francisco Bay area. Results showed that 95% of samples taken had high levels of chemical saturation, particularly of phthalates, bisphenol-A, and triclosan. Chemical presence in the water causes hormone and reproductive disruption in fish populations that affects their ability to reproduce and maintain population levels. These detrimental health effects are then passed on to the fish population's predators upon consumption (Sutton, R., PhD., Jackson, J., & 2007, J. (n.d.)).

# How Can This Affect my Business?

## EMPLOYEE HEALTH



Chemical emissions from common cleaning products pollute the air inside of buildings, contributing to poor Indoor Air Quality (IAQ). This, in turn, creates an unhealthy work environment that often leads to increased health issues among workers, and amplifies the effects of sick building syndrome (SBS). As mentioned within previous sections of this paper, exposure to toxic emissions from cleaning products can result in respiratory illnesses, cancer and degradation of the immune and nervous systems.

Poor IAQ has been shown to have a direct correlation to diminished health in humans, and thus causes an increased number of employee sick days and healthcare payments. Additionally, diminished health contributes to decreased productivity in the workplace. All of these factors lead to financial loss.



A report compiled by the Lawrence Berkeley Library in 2000 calculates the estimated nationwide financial toll upon businesses caused by deficient IAQ. The report states that “four common respiratory illnesses cause about 176 million days lost from work and an additional 121 million work days of substantially restricted activity” (Fisk p. 3). The estimated annual cost of respiratory illnesses alone in this country is \$70 billion; the value of lost work is \$34 billion, and the cost of healthcare payouts is \$36 billion. The report also estimates that reduced respiratory illnesses among workers can result in financial gains between \$6 and \$14 billion. Financial gains incurred due to reduced cases of allergies and asthma are estimated to be between \$2 to \$4 billion (Fisk p. 3-5).

According to a 2005 study conducted by the American College of Allergy, Asthma, and Immunology, 50 percent of all related illnesses are caused or aggravated by poor IAQ. Poor IAQ also causes an additional six sick days, per 10 workers, per year. This, and other IAQ-related health issues, can cost up to \$168 billion, in the U.S., each year (Duran, A. (n.d.), para. 2-3).

These studies, and many others, prove that inadequate IAQ has a direct, negative impact on the overall health, efficiency and productivity of a workplace. The bottom line: improved Indoor Air Quality will benefit your company. Your employees will not only appreciate the efforts made on behalf of their well being, their work performance will increase and overall company costs will decrease.

## CONSUMER PREFERENCE

WPP, a marketing communications services group, published a global survey in June, 2010 that recorded consumers' opinions about "green" brands. Over 9,000 people in eight countries were surveyed. The results showed that over 60 percent of consumers prefer to purchase goods and services from companies who employ environmentally responsible practices (Press releases - WPP. (n.d.)). Consumer demand, as a whole, is shifting towards the green end of the spectrum and, in order to maintain a competitive advantage in your respective market, your business practices must shift as well.

# In What Other Ways Can my Company Benefit from Making the Switch?

## LEED

Existing buildings can apply for and receive Leadership in Energy and Environmental Design (LEED) certification from the U.S. Green Building Council. LEED is most commonly applied to new construction; however, the U.S. Green Building Council has expanded the program so that existing buildings can achieve LEED status through renovation.



There is a checklist of features, all worth one point, that buildings can incorporate. In order to obtain LEED EB (Existing Building) status, the building must earn a minimum amount of points. Indoor Environmental Quality is listed as one of

the tested features, and in order to earn points, a healthy Indoor Air Quality is required. A LEED certification checklist can be found at the U.S. Green Building Council website (USGBC: U.S. Green Building Council. (n.d.)). Thus, if you are considering or are already in the process of achieving LEED certification, this is another manner in which improving the IAQ of your workspace will benefit your company (USGBC: LEED for Existing Buildings. (n.d.)).

If you are not currently pursuing LEED certification, or if there are no plans to do so, consider the fact that government incentives are offered in several states that make achieving LEED status financially beneficial for companies. Tax breaks, tax credits, fee reductions and grants are examples of various incentives offered by cities and states throughout the country; information pertaining to your particular location can be found on the U.S. Green Building Council website (USGBC: U.S. Green Building Council. (n.d.)).

# How do I Make the Switch?

In order to switch your cleaning practices to those that are more environmentally responsible, you first need to consider the nature of your cleaning services. Either you make use of in-house cleaning, and are responsible for hiring your staff and supplying the cleaning products, outsource to a janitorial company, or allow a property manager to arrange your cleaning services. This section offers helpful information for each of these scenarios so that, regardless of the structure of the services, you will be able to make the switch to green cleaning. A brief overview of trustworthy cleaning brands, followed by a breakdown of those eco labels for which you should look when choosing products, provides a foundation for navigating the world of eco-friendly products.

## BRANDS<sup>1</sup>

Now that the chemical proliferation in standard cleaning products has been exposed, it is time to address the product brands that make a significant effort to both lessen their impact on the earth and ensure the safety of consumers. These companies source all natural ingredients and avoid using synthetic chemicals, petroleum, and VOCs. Some of these companies utilize fair wage practices, 100 percent recyclable packaging, complete biodegradability, no animal testing, organic ingredients, and renewable energy while also supporting various other environmental organizations.

<sup>1</sup> Disclaimer: SSC does not endorse any of these products; we merely offer them as a suggestion.

## FOR THOSE PURCHASING COMMERCIAL/ WHOLESALE PRODUCTS<sup>2</sup>

The following brands were developed specifically for the commercial sector in order to provide an environmentally safe alternative for janitorial companies. The brands meet industry standards for performance and effectiveness, and are available for wholesale purchase.

### ECO CONCEPTS



Eco Concepts' goal is to offer commercial-grade cleaning products without imposing a toll upon human and environmental health. All products are non-toxic and non-caustic; they contain no carcinogens, phosphates or chlorine bleach, and VOC levels are low enough to meet the strict standards of DFE and GreenSeal. All ingredients are derived from renewable sources and are completely biodegradable. Eco Concepts is also certified by

<sup>2</sup> Note: at the time of research, all of these companies are in good standing.

GreenSeal, DFE and the U.S. Green Building Council, which will assist users in obtaining LEED certification (Green Cleaning Products-Environmental Friendly Cleaning Supplies-Eco-Friendly Cleaners. (n.d.)).

### SUSTAINABLE EARTH



Coastwide Laboratories developed the Sustainable Earth line of products as a competitive alternative to harmful commercial products currently in the market. The products sold are both DFE and GreenSeal certified and contain no carcinogens, phosphates or known nervous system toxins; the products' VOC levels are also low enough to comply with DFE and GreenSeal standards. All packaging is #2 recyclable, which is accepted by most state recycling programs. Also noteworthy is that the Sustainable Earth disinfectant meets hospital standards for bactericides and virucides. It kills MRSA, HIV, HBV & HCV, Influenza, E. Coli and Salmonella, making it a viable alternative for those facilities requiring hospital-grade disinfectants, or even those simply necessitating a basic disinfectant, such as daycare centers (Coastwide Laboratories - Solutions for Industrial and Commercial Cleaning. (n.d.)).

### FOR THOSE PURCHASING CONSUMER PRODUCTS

Are you a small business using consumer-sized products found on supermarket shelves? The following brands supply products that are suitable to the size of your operation:

### SHAKLEE



Shaklee is the number one natural nutrition company in the U.S. and also the first Certified Climate Neutral cleaning brand in the world. This means that Shaklee offsets 100% of its carbon emissions. The company makes nutrition and beauty products, but for the purposes of this paper, we will focus on their cleaning products. Shaklee offers all-purpose cleaner, scouring powder, dish detergent, dishwasher detergent, disinfecting wipes, and virtually any other cleaning product needed in an office. The products are free of parabens, triclosans, phthalates, sodium lauryl sulfate, propylene glycol, VOCs, formaldehyde, BPAs, chlorine bleach, butyl cellosolve, toluene and petroleum distillates. Surfactants in Shaklee's products are biodegradable. Additionally, the company does not utilize animal testing and produces 100 percent recyclable packaging, wipes and dryer sheets (Healthy Home. (n.d.)).

## ECOS



Ecos pays special attention to what it calls the “responsible sustainability” of the company’s products. Ecos considers issues such as fair wages, the ecosystem in which ingredients are grown, and whether or not the utilized plant ingredients sustain endangered wildlife. The oils used in Ecos’ products are certified organic by the National Organic Program and all cleaners are plant-based. Only recycled paper is used in the company’s products, all products are biodegradable, and there are no toxins, petrochemicals, bleach, ammonia or phosphates used. Ecos also won the Socially Responsible Business Award in 2003 (J. K. (n.d.). Earth Friendly Products).

## SEVENTH GENERATION



Perhaps the most widely recognized and available eco-friendly brand of cleaning products is Seventh Generation. The company’s products utilize plant-based active ingredients, are hypoallergenic, non-toxic and biodegradable. Every ingredient used in all of the products is made available to the public on the company website. The packaging for Seventh Generation’s products is completely recyclable. The company website even features two handy little counters totaling the number of trees and gallons of petroleum saved by the purchase of sustainable products rather than those utilized by conventional competitors. Seventh Generation strives to ensure that all natural resources are renewed so that no ecosystem is degraded as a result of its manufacturing practices. The company also donates 10% of its profits to select non-profit organizations (Green Cleaning Products -Diapers -Laundry Detergent -Non toxic Cleaners. (n.d.)).

## ECO LABELS AND CERTIFICATIONS

The world of eco labels and certifications is often very confusing and frustrating for consumers. It is difficult to know which seals and certifying organizations are trustworthy, and to distinguish them from those making bogus claims. Consumers often blindly place their trust in these labels, without understanding the environmental practices in which the companies are or are not participating. Below you will find a list of reputable and trustworthy eco labels and certifications that are applicable to the cleaning supplies sector. If you are responsible for purchasing your own cleaning supplies, search for products certified by at least one of these organizations. If your cleaning services are arranged by a property manager, or if you outsource to a janitorial company, attempt to renegotiate your

lease or contract to require the use of products listed above, or brands that you have researched and are certified by one of the following organizations:

### GREEN SEAL



Green Seal offers both a label and a certification for consumer products. The certification process uses a life-cycle approach, and evaluates a product, company or organization's environmental impact through all aspects of the manufacturing process. Green Seal is backed by Eco Metrical and the Greenguard Environmental Institute, adding validity to the label and certification. Green Seal has been deemed more valid since including governmental groups, industry, manufacturers, and purchasing groups in the standards-making process. There is an ongoing monitoring process, and a label or certification can be revoked if a company no longer complies with the required standards. There are different categories of products identified, and for each category, there is an established set of standards that must be met in order to achieve certification. Green Seal is a legitimate certifying organization because of its status as a non-profit, independent, third party certification organization. Green Seal utilizes standards based on scientific findings for each product category. All of the company's operations are

transparent, up-to-date and available to the public, and Green Seal requires the same information from any company seeking certification (Green Seal. (n.d.)).

### GREENGUARD



The Greenguard Environmental Institute acts as a certifying organization that focuses on products used in indoor environments, and their impact on indoor air quality. The organization measures the emissions and toxicity of chemicals present in products, including cleaning agents, and screens products for carcinogens, irritants, reproductive toxins and the presence of VOCs. The organization works in conjunction with Air Quality Sciences, Inc., TUV Rheinland LGA, Bureau Veritas. Greenguard is also accredited by the American National Standards Institute. Quarterly monitoring tests are performed, and annual re-certification is required in order to maintain certification. Products awaiting certification are tested at Greenguard facilities for chemical emissions by scientific professionals from partner organizations. Greenguard has established allowable emissions levels for specific chemicals, be they VOCs, formaldehyde, aldehydes or carcinogens; and, product test results must meet these standards in order to achieve certification. GEI makes all of its operations transparent and available to the

public. Greenguard's emissions testing procedures are fully disclosed, in addition to specific limits of allowable emissions levels, which create the basis for the certification standards. GEI is also an accredited, non-profit, third party certification organization; these qualities make the certification reputable and legitimate (GREENGUARD Environmental Institute - Healthy Indoor Environments (n.d.)).

### DFE (DESIGN FOR THE ENVIRONMENT)



This label is awarded through the Environmental Protection Agency (EPA); the label is earned after a product meets established standards. This label is used to identify products containing ingredients considered to be the least harmful to human and environmental health, in that class of chemicals. A general screen is performed to identify safer ingredients; this screen is based upon peer-reviewed materials, primary source materials, hazardous chemical lists and Agency databases. The screen allows for a line to be drawn at the “low end of concern” in terms of hazardous chemicals. This is based on toxicology reports from the EPA and the UN’s Globally Harmonized System for the Classification and Labeling of Hazard Substances. Surfactants are measured for their rate of biodegradability and level of aquatic toxicity;

if there is a higher level of aquatic toxicity, then a faster rate of biodegradability is required to offset it. Solvents in cleaning products examine the following: carcinogenicity, acute mammalian toxicity, reproductive and developmental toxicity, repeated-dose toxicity, neurotoxicity, and environmental fate and toxicity. In order to achieve certification, products must utilize the safer ingredients identified by the screen in place of other, more harmful chemical alternatives (Design for the Environment (DfE) Home | US EPA. (n.d.)).

### EcoLOGO



The EcoLogo measures the effects of consumer products on human and environmental health. Products are compared with others in the same category, and the whole life cycle of the product is analyzed to ensure that every stage of manufacture works in compliance with the standards set by the organization. Standards are established according to input from government officials, academics, non-profit organizations, scientific experts, industry representatives and members of the public. Manufacturers must comply with the requirements established for the category containing their particular product. There are thousands of product categories and limits are established for, among other

things, VOCs, emissions, carcinogenic chemicals and toxins. These limits are described in explicit detail so that there is no confusion in terms of allowable limits for manufacturers (Ecologo Program. (n.d.)).

## CIMS



For those organizations outsourcing cleaning, it can be more difficult to regulate the products being used in an office building, and thus more difficult to control the toxic emissions to which you are exposed. However, there is a cleaning industry standard by which cleaning and janitorial companies can be certified, ensuring that the companies perform according to a higher standard of operation, including environmental impacts. This standard is known as CIMS.

CIMS, or Cleaning Industry Management Standard, allows companies to establish a certified management standard in order to ensure quality and customer

dedication. This certification can be obtained by any janitorial company and the standards are consensus-based and decided by a majority vote (Green Seal participated in developing the standard). Health, Safety and Environmental Stewardship are built into the standard, and the standard complies with the provisions established by the Occupational Safety and Health Administration's Hazard Communication Standard. All companies seeking certification must develop, implement and maintain a written hazard communication program and have an environmental policy "appropriate to the nature, scale and environmental impact of the organization's services." Pollution prevention is required of companies, and every company certified by CIMS is reviewed once every two years. Any company employed by another company must have a written plan for complying with customer requirements (ISSA - Cleaning Industry Management Standard (CIMS). (n.d.)).



# Factors to Consider if you Arrange the Cleaning Services of Your Building

- How many times each week are you requiring your workspace to be cleaned?
- Are you requiring all areas to be cleaned each time?
- What product brands do you provide for the cleaning of your building?
  - Review the product brand's website for a list of harmful ingredients (A lack of transparency by the company can be a bad sign.)
- Consider purchasing a different brand, such as one mentioned in this paper, or one found during your own research; choose the line of products that will best meet the needs of your workspace.
- Evaluate the real cleaning needs of your office space.
  - Is daily cleaning really necessary?
  - Do all areas really need to be cleaned every time?
  - Bathrooms most likely require daily cleaning, but the kitchen area could be cleaned every other day, while the workspace may be able to be cleaned twice each week
- If not, consider switching to a less-frequent cleaning schedule, or simply clean on an as-needed basis



# Questions for Your Property Manager or Janitorial Company

- How many times per week is the building cleaned?
  - Does it need to be cleaned so frequently?
- Is every area cleaned each time?
  - If so, do they need to be?
- What cleaning product brands are used in the cleaning of this office building?
- How many different types of cleaners/ individual products are used each cleaning?
  - Can any of these products be consolidated (i.e.: use a multi-surface cleaner)?
- How long does each cleaning last (how long is the cleaning team exposed to fumes)?
- For how long during each cleaning are cleaning products actually in use?
- Would you be willing to switch to a less-frequent cleaning schedule, or simply on an as-needed basis?
- Would you be willing to switch cleaning products?
  - Request specific brands that will work best for your workspace



# A Checklist for Switching Cleaning Practices

- Calculate the pollution produced by your office building using the Green Cleaning Pollution Prevention Calculator, taking into account the recommended actions. ([www.fedcenter.gov/janitor/buildinginfo.asp](http://www.fedcenter.gov/janitor/buildinginfo.asp))
- Research the product brands mentioned, or find a different option, that could meet the needs of your office, while being a financially viable option.
- Perform a cost comparison between those possible brands and the ones currently being used by your cleaning team in order to make a financially sound decision.
- If you clean yourself, or provide the products for an in-house cleaning team:
  - Use the rest of the cleaning products currently being used and then recycle the containers, if possible.
  - As you run out of certain products, replace them with those that have less of an environmental impact, such as one of the brands mentioned in this paper.
  - Assess the cleaning needs of your office space for the possibility of switching to a less-frequent cleaning schedule or cleaning only on an as-needed basis.
- If you outsource to a janitorial service, or if the property manager arranges the cleaning service:
  - Inquire about cancelling your current contract; if you are not able to do so, try to renegotiate your contract to require different cleaning products and improved ventilation.
  - If you are able to cancel your contract, search for a CIMS certified janitorial company.
  - If your cleaning arrangements are handled by a property manager, renegotiate your lease to require the use of cleaning products that promote a healthier indoor environment. The Green Lease Toolkit is a helpful resource for negotiating a “greener” lease.



# Cost Comparison Worksheet

In calculating the cost of switching product brands, there are additional factors to consider aside from the pure financial aspect. There are several categories of value, described below, but there may be further categories that directly relate to your business. Values for green cleaning products can only be assigned by those calculating the cost for their respective companies; these values are based on how much you value the payoff. For instance, if you are already working towards LEED certification, the value of the tax breaks/rebates (if they are available in your area) may be worth more than the value of consumer demand for environmentally responsible companies. The worksheet can be used as a type of grid in which values achieved can be checked off for each type of product.

- Improved IAQ
  - Financial gains from increased worker productivity
  - Decreased healthcare payments
  - Decreased loss due to sick days
- Consumer Demand
  - As previously mentioned, a growing proportion of consumers are purchasing from environmentally responsible companies. Not changing your business practices to meet this consumer expectation could result in decreased profit later on.
- Government Incentives
  - If you are considering or are in the process of achieving LEED status, switching cleaning products contributes to improved IAQ, a component of LEED certification. Financial gains can be made through the numerous tax breaks and rebates offered as a result of achieving LEED certification.

Product	Valuing Factors					
	Improved Overall Employee Health	Increased Worker Productivity	Decreased Healthcare Payments	Decreased Sick Days	Increased Profits from Complying With Consumer Demand	Financial Gain from Government Incentives
GLASS CLEANER	✓		✓	✓		
TOILET BOWL CLEANER	✓		✓	✓		
AIR FRESHENER		✓				
DISINFECTANT	✓		✓	✓		
ALL-PURPOSE CLEANER	✓		✓	✓		



# Conclusion

The main goal of this paper is to convey the fact that consumers need to be informed in order to make wise choices. It is more than an issue of “environmentalism”—the health of both you and your family are at stake. As a woman, learning that chemicals in cleaning products can cause infertility and birth defects has inspired me to look more closely at the products that I choose, and the toxic substances they contain. Hundreds more scientific and medical studies have been performed to evaluate the effect that these substances have on the environment and upon humans. These studies all convey the same message: unnatural substances have detrimental effects, and contribute no positive benefits to those with whom they come in contact.

One of the easiest methods for eliminating poisonous chemicals from your life is to switch cleaning products. Don't immediately throw out every Clorox and Windex product in your house; but, when it is time to restock, purchase a product that is just as effective and not nearly as harmful.



# Additional Resources

- To calculate the amount of pollution created by the cleaning practices taking place in your workspace, the Green Cleaning Pollution Prevention Calculator is a helpful tool. ([www.fedcenter.gov/janitor/buildinginfo.asp](http://www.fedcenter.gov/janitor/buildinginfo.asp))
- For recycling locations in your area (for items not collected by Waste Management), this website allows you to choose the type of item and search by zip code.
- To identify hazardous ingredients, this website provides a list of commonly found chemicals, the effects they cause and the products in which they are found.



# References

- AAAAI - Statistics. (n.d.). *AAAAI - American Academy of Allergy Asthma and Immunology* - [www.aaaai.org](http://www.aaaai.org). Retrieved June 16, 2010, from <http://aaaai.org/media/statistics/asthma-statistics.asp>
- Classroom asthma, Children's Asthma created by cleaning supplies | Environmental Working Group. (n.d.). *EWG Home | Environmental Working Group*. Retrieved June 17, 2010, from <http://www.ewg.org/schoolcleaningsupplies/classroomasthma>
- Coastwide Laboratories - Solutions for Industrial and Commercial Cleaning. (n.d.). *Coastwide Laboratories - Solutions for Industrial and Commercial Cleaning*. Retrieved June 18, 2010, from <http://www.coastwidelabs.com>
- Design for the Environment (DfE) Home | US EPA. (n.d.). *US Environmental Protection Agency*. Retrieved June 20, 2010, from <http://www.epa.gov/dfe/>
- Duran, A. (n.d.). The Real Cost of Poor Indoor Air Quality | North America > United States from [AllBusiness.com](http://www.allbusiness.com). *Business Resources, Advice and Forms for Large and Small Businesses*. Retrieved June 18, 2010, from <http://www.allbusiness.com/medicine-health/diseases-disorders-respiratory/10575380-1.html>
- Ecologo Program. (n.d.). *Ecologo Program*. Retrieved June 18, 2010, from <http://www.ecologo.org>
- Fisk, W. J. (n.d.). Review of Health and Productivity Gains From Better IEQ. [eetd.lbl.gov](http://eetd.lbl.gov). Retrieved June 22, 2010, from [eetd.lbl.gov/IE/pdf/LBNL-48218.pdf](http://eetd.lbl.gov/IE/pdf/LBNL-48218.pdf)
- Green Cleaning Pollution Prevention Calculator. (n.d.). *FedCenter - Home*. Retrieved June 20, 2010, from <http://www.fedcenter.gov/janitor/buildinginfo.asp>
- Green Cleaning Products -Diapers -Laundry Detergent -Non toxic Cleaners. (n.d.). *Green Cleaning Products -Diapers -Laundry Detergent -Non toxic Cleaners*. Retrieved June 20, 2010, from <http://www.seventhgeneration.com>
- Green Cleaning Products-Environmental Friendly Cleaning Supplies-Eco-Friendly Cleaners. (n.d.). *Green Cleaning Products-Environmental Friendly Cleaning Supplies-Eco-Friendly Cleaners*. Retrieved June 18, 2010, from <http://www.ecoconceptsusa.com>
- GREENGUARD Environmental Institute - Healthy Indoor Environments. (n.d.). *GREENGUARD Environmental Institute - Healthy Indoor Environments*. Retrieved June 20, 2010, from <http://www.greenguard.org>
- Greensfelder, L., & Relations, M. (n.d.). 05.22.2006 - Study warns of cleaning product risks. *University of California, Berkeley*. Retrieved June 21, 2010, from [http://berkeley.edu/news/media/releases/2006/05/22\\_householdchemicals.shtml](http://berkeley.edu/news/media/releases/2006/05/22_householdchemicals.shtml)
- Green Seal. (n.d.). *Green Seal*. Retrieved June 20, 2010, from <http://www.greenseal.org>
- Healthy Home. (n.d.). *Shaklee Corporation*. Retrieved June 21, 2010, from [www.shaklee.com](http://www.shaklee.com)
- How to clean your house without hurting the planet | Grist. (n.d.). *Grist | Environmental News, Commentary, Advice*. Retrieved June 18, 2010, from <http://www.grist.org/article/possessions-cleaning/>

- ISSA - Cleaning Industry Management Standard (CIMS). (n.d.). *ISSA*. Retrieved June 19, 2010, from [http://www.issa.com/?id=cleaning\\_industry\\_management\\_standard\\_cims&utm\\_source=hpb&utm\\_medium=web&utm\\_campaign=CIMS](http://www.issa.com/?id=cleaning_industry_management_standard_cims&utm_source=hpb&utm_medium=web&utm_campaign=CIMS)
- J. K. (n.d.). Earth Friendly Products. *Earth Friendly Products*. Retrieved June 20, 2010, from <http://www.ecos.com>
- M.Ed., R. P., & MD, W. S. (n.d.). Chemicals and Effects upon Health. *Chemicals and Effects upon Health*. Retrieved June 16, 2010, from <http://www.chem-tox.com>
- Nazaroff, W. M., Coleman, B. K., Destailats, H., Hodgson, A. T., Liu, D., Lunden, M. M., et al. (n.d.). Indoor Air Chemistry: Cleaning Agents, Ozone and Toxic Air Contaminants. *California Air Resources Board*. Retrieved June 19, 2010, from [www.arb.ca.gov/research/apr/past/01-336\\_a.pdf](http://www.arb.ca.gov/research/apr/past/01-336_a.pdf)
- Ophardt, C. E. (n.d.). Petrochemicals. *Elmhurst College: Elmhurst, Illinois*. Retrieved June 17, 2010, from <http://www.elmhurst.edu/~chm/vchembook/325petrochem.html>
- Press releases - WPP. (n.d.). *Advertising, Branding, Consumer Insights, Digital, Marketing, PR - WPP*. Retrieved July 3, 2010, from <http://www.wpp.com/wpp/press/press/default.htm>
- Sutton, R., PhD., Jackson, J., & 2007, J. (n.d.). Water pollution caused by cosmetic chemicals, cleaning supplies and plastics | Environmental Working Group. *EWG Home | Environmental Working Group*. Retrieved June 18, 2010, from <http://www.ewg.org/water/downthedrain>
- Toxic Cleaner Fumes Could Contaminate California Classrooms | Environmental Working Group. (n.d.). *EWG Home | Environmental Working Group*. Retrieved June 18, 2010, from <http://www.ewg.org/schoolcleaningsupplies/pressrelease>
- USGBC: LEED for Existing Buildings. (n.d.). *USGBC: U.S. Green Building Council*. Retrieved June 18, 2010, from <http://www.usgbc.org/DisplayPage.aspx?CMSPageID=221>
- USGBC: U.S. Green Building Council. (n.d.). *USGBC: U.S. Green Building Council*. Retrieved June 19, 2010, from <http://www.usgbc.org>
- Volatile Organic Compounds | Indoor Air Quality | US EPA. (n.d.). *US Environmental Protection Agency*. Retrieved June 16, 2010, from <http://www.epa.gov/iaq/voc.html>
- What are volatile organic compounds (VOCs) and where can I find out more about them?. (n.d.). *Find Answers (Page 1 of 16)*. Retrieved June 17, 2010, from [http://publicaccess.custhelp.com/cgi-bin/publicaccess.cfg/php/enduser/std\\_adp.php?p\\_faqid=2121](http://publicaccess.custhelp.com/cgi-bin/publicaccess.cfg/php/enduser/std_adp.php?p_faqid=2121)
- Zock, J., Plana, E., Radon, K., Sunyer, J., Dahlman-Hoglund, A., Norback, D., et al. (2007). The Use of Household Cleaning Sprays and Adult Asthma. *American Journal of Respiratory and Critical Care Medicine*, 176. Retrieved June 16, 2010, from <http://ajrccm.atsjournals.org/cgi/content/full/176/8/735>