

# Green Chemistry in the Cleaning Industry

By Arely Castellón

Yale University is a big proponent of Green; they teach it – green chemistry and green engineering. The Director of the program, Paul Anastas, together with a fellow scientist, developed the Twelve Guiding Principles of Green Chemistry. These Principles provide clear direction as to the value of implementing green chemistry in commercial buildings. Green chemistry is an innovative, financially driven science-based approach to reduce or eliminate the use and generation of hazardous substances to human health and the environment. For those facility or property managers looking at Energy Star Ratings for their building or even LEED certification, green chemistry is the only way to go!

**A**mong the goals of the Guiding Principles of Green Chemistry is to encourage those in management positions, such as Facility and Property Professionals and their janitorial vendors, to use green chemistry as part of their every day cleaning. It makes sense in twelve ways! Following is a brief summary of Paul Anastas' principles most applicable to commercial buildings:

- **Prevent Waste And Pollution**

It is logical that it is better to prevent waste than to treat or remove it! Hazardous chemicals are still frequently flushed and poured into drains, terminating at waste treatment plants and their containers end up in landfills. Green chemistry looks at production, usage, and discard, resulting in effective products that will not create waste.

- **Optimize Product Processes**

Concentrated green chemicals with accurate dispensing and dilution systems result in smaller containers (many are tamper proof). Recyclable containers are best.



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- **Eliminate The Hazard**

Old world cleaning taught us to reduce chemical exposures to lower levels, while green chemistry reduces the hazards by removing toxic ingredients that include air contaminants, irritants, corrosives, and carcinogens which can harm people and the environment. It stands to reason if the chemical does not contain hazardous ingredients, the hazard is eliminated.

- **Quality Products**

Green chemistry products must be equal or better than traditional cleaners, and at least one of three certifications will ensure this. The EcoLogo, EPA Design for the Environment, or Green Seal designations ensure green chemistry standards have been met. It is especially important to avoid the use of volatile organic compounds (VOCs) which are emitted as gases from traditional cleaning products. Some of the VOCs can negatively affect both short and long term health. There are alternatives!

- **Design For Energy Efficiency**

Not only do concentrated green chemicals provide efficient design, they should serve to conserve water and energy. Transportation costs are reduced because of the reduced size. When diluting the product, water usage is exact, especially in combination with green cleaning tools, including mop handles with built-in tanks, which reduce the need for mop-buckets that must be emptied and refilled constantly.

- **Design For Degradation**

Chemical products should be designed so at the end of their function they do not persist in the environment, but instead break down and readily biodegrade into innocuous substances.

- **Minimize The Potential For Accidents**

The elimination of harmful chemicals is the best way to minimize the potential for accidents. Green chemistry assures that products are designed to be safer and less toxic than current and still widely used alternatives. Sustainable cleaning products eliminate unnecessary solvents and other ingredients that have potentially negative impacts on human health and the environment, due to optimum product formulation, thereby reducing the potential for accidents.

No one who reads this will disagree with any of these principles, as they are logical and in keeping with the growing interest in reducing toxic chemicals and their impact on human health and the environment. However, the reality is that most Facility and Property Management Professionals don't regularly check the products being used in their facilities. The most commonly used products or ingredients are as follows:

- Bleach – The ultimate non-green product, used as a standalone cleaner or as an ingredient in other cleaners. Hydrogen peroxide or oxygen bleach are non-toxic alternatives.
- Glass Cleaner with Ammonia – Ammonia is irritating to the lungs, toxic and an unnecessary ingredient to clean glass and mirrors, given other good non-ammonia alternatives.
- Wood Polish - Often contains flammable toxins like nitrobenzene.
- Concentrated Disinfectants –Quaternary ammonium chlorides (“quats”) can be corrosive, creating health hazards, and then poured into toilets and drains, spreading the toxicity. Hydrogen peroxide or oxygen bleach are non-toxic alternatives.



**I**n summary, the real challenge is determining the role each Facility and Property Manager wants to play with regards to the health and well being of their employees, tenants, visitors, vendors, buildings, and community. Green chemistry is here to stay and eventually everyone will go green. Will you be a leader in this green effort or will you be a follower and convert only when industry pressure or prestige demands a change? An important financial consideration is that there is no additional cost for green cleaning vs. traditional cleaning! At SparkleTeam, we can work with you to start the change today!

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