

The ChildSafe Guidelines

“Green” Cleaning Products for Schools

Introduction

The increasing incidence of environmentally mediated illness in children, combined with emerging science that links many of these illnesses with exposures to chemical toxins, has precipitated an increased interest in “green” cleaning products for use in schools and other facilities where children spend time.

The identification and selection process for “green” products for use in children’s environments is complicated by optional disclosure requirements for manufacturers and an absence of national standards. Decision makers, when confronted with this task, must seek out the most protective criteria for children, recognizing that these requirements will necessarily be more stringent than those for adults.

To help facilitate this process, we present here a set of guidelines based on federal standards that schools and child care facilities can use to make environmentally preferable and child-safe purchases.

Why Children Are Uniquely Vulnerable

The ChildSafe Guidelines have been developed to address the unique vulnerability of children, who are at greater risk from toxic exposures because of their immature and rapidly developing physiology and their natural behavioral patterns. They live in their environments in ways adults do not; they play on floors, sprawl on desk and table surfaces, and engage in hand-to-mouth behavior. Pound for pound, children take in more contaminants than adults, increasing their risk.

Researchers have found that early exposures to environmental toxins appear more likely to produce chronic disease than similar exposures encountered later in life. (Studies also show that a developing fetus is particularly at risk from maternal exposures to certain chemicals – a fact which is of special concern to pregnant women working in schools.)

Furthermore, many schools and child care facilities are cleaned every day, leaving behind fresh residues of cleaning chemicals on surfaces with which children come into direct contact. Some chemicals found in cleaning products become airborne when used and can trigger asthma attacks in affected individuals and possibly contribute to the onset of the disease.

How Exposure Impacts Health

Routes of children’s exposure to cleaning chemicals include inhalation, skin absorption and ingestion. Health impacts from cleaning products used in schools can result from either acute or chronic exposures. Acute exposures (significant one-time exposures) may burn the eyes or skin, cause blindness, poisoning, headaches and respiratory and gastrointestinal ailments. Chronic exposures (frequent low-dose exposures over a longer period of time) can lead to asthma, allergies, certain types of cancer (including brain cancer, leukemia, testicular cancer), learning and behavioral disorders, endocrine disruption (including early puberty), chemical sensitivity and kidney or liver damage.

Moreover, a significant percentage of a student and school staff population may have a specific or general chemical hypersensitivity; that is, they react adversely to extremely low levels of one or more types of chemical exposures. For example, many cleaning products contain fragrances which are common triggers for asthma attacks. Sensitive populations include those with allergies or asthma, individuals with upper respiratory infections (colds, sore throats, etc.) and those on medication for chronic illnesses.

Conclusion

Environmentally mediated disease is a growing, yet preventable public health threat. The unique vulnerability of children to environmental toxins, especially those to which they are exposed every day, requires the most careful analysis of products used in their environments. These ChildSafe Guidelines were developed for this purpose.

* * *

The ChildSafe Guidelines for “Green” Cleaning Products

Type I – General Purpose Cleaners

These include products used daily for general cleaning, including all-purpose surface cleaners, cleaning pastes, window and mirror cleaners and dust mop treatments. These products must pose no or minimal health risks to children from inhalation, skin absorption, accidental ingestion or eye and skin contact. Choose products that:

- Have no or low VOC content (less than 1% as used)
- Are non-reactive, non-caustic and non-corrosive (preferably with a pH of 4.0 to 9.0)
- Are not delivered in aerosol cans with petrochemical propellants
- Do not contain known, probable or possible carcinogens, mutagens or teratogens as designated by federal law
- Do not contain known or suspected endocrine modifiers, alkyl phenyl ethoxylates (APEs), dibutyl phthalate, diethyl phthalate or ingredients that are toxic to the liver or kidneys in environmentally relevant doses
- Do not contain added fragrances (non-functional fragrances)
- Do not contain non-food-grade dyes
- Do not contain disinfectant or antibacterial chemicals (e.g., triclosan)
- Do not contain 2-butoxyethanol

Note: In consideration of broader sustainability issues and possibly human health implications, the use of bio-based products is recommended.

Type II – Sanitizers & Disinfectants

These are products used to sanitize and disinfect in bathrooms, gymnasias, nurses’ offices, kitchens, etc. (Note: Disinfectants are registered pesticides and should never be used for sanitizing or general cleaning purposes or when children are present.)

- Disinfectant products should be used only for body fluid spills, in areas where there is a high potential for direct contact with body fluids, or when a public health concern or regulation of the Department of Health or Center for Disease Control requires their use. They should be used only after a surface has been cleaned thoroughly and then allowed to remain on the surface for the required dwell time (usually about 10 minutes).
- Chlorine-based products (e.g. sodium hypochlorite), quaternary ammonium compounds (quats) (e.g., ammonium chloride) or phenolics (e.g., o-phenyl-phenol) are the most common types of disinfectants, with quats being less hazardous than the others. As stated above, products containing these chemicals should never be used for any purpose other than disinfecting because of their significant toxicity and corresponding high risk to humans and the environment.
- Sanitizers should be used in areas where there is a desire to reduce microbes to a safe level and where the use of a stronger, more toxic disinfectant product is not indicated. Stabilized hydrogen peroxide is an effective, well-known sanitizer and an ingredient in many general purpose cleaners.

Note: The development of safer products for sanitizing and disinfecting is a priority for many manufacturers, and products using new technologies (e.g., stabilized hydrogen peroxide for sanitizing) have recently emerged, along with products which utilize natural oils and extracts, including tea tree, thyme and eucalyptus oils and grapefruit seed extract. A new generation of steam cleaners are being developed that can sanitize and disinfect without the use of any toxic chemicals.

Type III – Floor Cleaning

Products used for floor stripping and finishing, heavy duty carpet cleaning, etc., should only be used when facilities are vacant, preferably during summer vacation or over extended holiday breaks when buildings can be properly ventilated before children and staff return to school.

- Floor stripping products typically contain highly toxic, highly caustic and highly corrosive chemicals. Their high VOC and pH levels require them to be used with extreme caution, even when following the guidelines above.
- Products for sealing and finishing floors should not contain styrene (a possible carcinogen as defined by the EPA), which becomes airborne when buffing.
- Products for sealing and finishing floors should not contain heavy metals such as zinc, chromium or nickel.
- Products for routine carpet maintenance should not contain petroleum solvents or 2-butoxyethanol. **Type I** products in combination with hot-water extraction usually perform well for this purpose. If (as described above) heavy duty or restorative carpet cleaning with solvents is indicated, follow guidelines above in bold print for this type of product.

***Note:** Although traditional products in this category are inherently toxic, some progress has been made to provide safer alternatives. The Canadian third-party certification organization Environmental Choice (www.environmentalchoice.com) lists a “green” floor-care program that is available in the United States. It may also be appropriate to suggest here that there are many new flooring alternatives that should be considered for new construction which eliminate the need for toxic cleaning and maintenance products. Finally, the use of carpeting in schools is not recommended because of the high VOC content of most new carpeting and the fact that carpets retain many types of allergens and chemicals that are easily tracked in on shoes.*

When possible, all cleaning products used in schools should:

- Be accompanied by **full disclosure** of ingredients from the manufacturer. (Material Data Safety Sheets [“MSDS”])* for each individual product are required by law to be available for inspection, but they do not provide complete information.)
- Have a health rating of 0 or 1 as designated by the Hazardous Materials Information System (HMIS) and/or National Fire Protection Association (NFPA).**
- Be dispensed through automatic systems to reduce employee exposure.
- Be provided in concentrate form in recycled or recyclable containers.
- Be non-flammable and non-corrosive.
- Be biodegradable.
- Not contain substances which contribute to greenhouse gases, smog or ozone depletion.

* When evaluating MSDS data it is important to understand that EPA regulations require that chemical manufacturers submit test data regarding the potential health effects of new products only for full grown adults weighing more than 150 pounds. Furthermore, manufacturers are only required to list acute health effects of those products, not the potential long-term (chronic) health risks such as cancer, endocrine disruption, neurological or reproductive effects. Finally, manufacturers are not required to disclose inert ingredients.

** HMIS and NFPA rating systems take into account a product’s health effects, fire hazard, reactivity and specific hazards and score them from 0 to 4, with 0 being the safest. There is a fee for testing, and displaying the results on a MSDS is not mandatory.

* * *

These guidelines are based on recommendations by the Environmental Protection Agency (EPA) in its “Final Guidance on Environmentally Preferable Purchasing” and the U.S. Department of the Interior’s “Environmentally Preferable Green Cleaning Chemical Model.”

Definition of Terms

“Bio-based” means a commercial or industrial product in which more than 50% of the ingredients (other than water) are biological or renewable domestic agricultural (plant, animal or marine) or forestry materials.

“Biodegradable” refers to products made of substances that will decay relatively quickly as a result of the action of microorganisms (e.g., bacteria) and break down into elements such as carbon that are recycled naturally.

“Disinfectant” is any product designed to kill microbes.

“Carcinogen” is a cancer-causing agent.

“Mutagen” is any agent, such as ultraviolet light, radioactive elements or chemical ingredients that can induce or increase the frequency of mutation in a living organism.

“Sanitizer” is any product designed to reduce the number of microbes.

“Teratogen” is any agent such as a virus, a drug or radiation that adversely affects and causes malformations of a developing fetus or embryo.

“Petrochemical” is any product derived from crude oil or a petroleum distillate.

“Volatile Organic Compounds (VOCs)” are organic chemicals that have a high vapor pressure and easily form vapors at normal temperature and pressure. Aerosol spray can propellants, petroleum distillates and solvents are examples of VOCs. VOCs are a significant source of indoor air pollution. “Low” VOC levels must meet or be less volatile than the California Code of Regulations’ maximum allowable VOC levels for appropriate cleaning product categories.

* * *

Resources

These experienced individuals have implemented successful “green” cleaning programs in school districts using the highest child-protective standards:

Mike Sheehan
Director of Facilities
Baldwin Union Free School District
960 Hastings Street
Baldwin, NY 11510
516-377-9312

David Kincaid
District Consultant
Great Neck Public Schools
45 Lakeville Road
Great Neck, NY 11020
516-773-1465

A short video, **“The ChildSafe School: Green Cleaning,”** is available from **Grassroots Environmental Education** (516-883-0887) or via our website, www.grassrootsinfo.org.