

# **Health and Environmental Benefits of Green Cleaning Products**

## **Protecting our Children, Teachers, School Workers, and the Environment**

*Compiled by Environmental Working Group and Regional Asthma Management and Prevention*

One in five Californians spend their day at school, including students, teachers, and staff. Alarming, the California Air Resources Board found significant environmental health concerns in many of California's classrooms [1]. Some of these concerns stem from the very products used to keep the school clean. As a result, school children and staff are unnecessarily exposed to chemicals commonly found in traditional cleaning products, chemicals that have been linked to asthma and other respiratory problems, cancer, reproductive and neurological harm, hormone disruption, water pollution, smog, and damage to the ozone layer.

Schools are becoming increasingly aware that healthy and environmentally friendly facilities foster academic achievement and staff well-being [2, 3]. Proactive school districts across the state have examined their cleaning practices to develop strategies for improving student and staff health and reducing their impact on the environment. One strategy that has repeatedly proven successful across California is transitioning to the exclusive use of certified green cleaning products. Certified green cleaning products are used to clean offices, schools, and institutions, and must meet a number of health and environmental standards. These standards include special considerations for exposures to children in schools and day-care facilities.

### **Green cleaning products do not contain ingredients that cause asthma**

One in six children in the state has been diagnosed with asthma [4]. It is the most common chronic disease among school-aged children, and is the leading cause of school absences due to chronic illness nationwide [5, 6]. Work-related asthma is high for educational service workers, including teachers, instructional aides, and janitors; a recent study of California and three other states notes many teachers specifically link exposures to cleaning products with development of work-related asthma [7]. Several more studies confirm that occupational and home use of conventional cleaning products is associated with increased risk of asthma [8-10]. Certified green cleaning products are prohibited from containing asthmagens (chemicals that cause asthma) and have limits on some asthma triggers (chemicals that exacerbate existing asthma).

Cleaning products also contribute to asthma indirectly, by releasing a host of volatile organic compounds (VOCs) that form ozone. Ozone is the primary component of smog that can trigger asthma. A six-month study of fourth graders in 12 Southern California communities documented an 83% increase in respiratory-related absences when daytime ozone levels increase by 20 parts per billion [11]. Children who grow up in smoggy regions have permanently scarred lungs, and feel lifelong effects of diminished lung capacity [12]. In California, cleaning products release 32 tons of ozone-forming VOCs into the air each day [13]. Certified green cleaning products must meet strict limits regarding the levels of volatile chemicals emitted, reducing their contribution to smog and asthma.

### **Green cleaning products reduce unnecessary use of harmful “antibacterial” agents**

Certified green hand soaps do not contain antibacterial ingredients. A U.S. Food and Drug Administration scientific advisory panel determined that “antibacterial” soaps are no better than regular soaps at killing germs or reducing the spread of infection [14]. The American Medical Association recommends avoiding “antibacterial” products at home, as they may promote bacterial resistance to antibiotics [15]. Triclosan, an antibacterial agent often found in liquid hand soap, may disrupt thyroid and estrogen hormones [16, 17], and forms toxic byproducts in tap water and the environment [18, 19]. The Centers for Disease Control has found that triclosan contaminates the bodies of 75% of the American population [20], due to widespread use of “antibacterial” products.

### **Green cleaning products are safer for workers**

Conventional cleaners can pose safety risks to custodians, especially from injuries like chemical burns to eyes and skin. Nationally, custodial chemical injuries cost on the order of \$25 million each year in lost time and workers compensation [21]. Certified green cleaners meet standards that specifically address health and safety concerns of custodial workers, ensuring reduced on-the-job injury. For example, green cleaning products cannot be corrosive to skin or eyes. Ingredients in green cleaners must also meet specific criteria regarding acute and inhalation toxicity, absorption through the skin, and combustibility. Certified products must have appropriate health and safety labels, and training is available to ensure workers use products safely.

## Green cleaning products are better for the environment

Green cleaning products must meet stringent criteria to ensure they are environmentally preferable. Certified products are free of ozone-depleting chemicals, less toxic to aquatic life, less likely to build up in the body, have fewer smog-producing chemicals degrade quickly in the environment, and are more concentrated to reduce greenhouse gas emissions from shipping. Products must even meet criteria concerning recyclable packaging.

## Green cleaning products do not contain chemicals of concern common in traditional cleaning products:

- **Carcinogens, mutagens, and reproductive toxins** specifically identified as known, probable, reasonably anticipated, or possible human toxins by many state, national and international agencies.
- **Heavy metals** like lead, chromium, and selenium can cause neurodevelopmental damage in children [22] and cancer [23], as well as ecological harm [24].
- **2-Butoxyethanol** is a widely-used ingredient that damages red blood cells, causing anemia [25]. It may also be a carcinogen and reproductive toxin [25]. Typical home cleaning using 2-butoxyethanol products leads to air contamination exceeding established health-based limits for the workplace [26].
- **Phthalates** are frequently found in fragrances in cleaning products. Dibutyl phthalate is also used in floor finishes and window cleaners. Children exposed to phthalates in indoor settings face increased risk of asthma and allergies [27]. Human studies link alarming health effects to phthalate exposure, including male reproductive system abnormalities [28] and hormone disruption [29, 30].
- **Alkylphenol ethoxylates** break down into alkylphenols, potent hormone-disrupting chemicals [31]. A Centers for Disease Control study found that the bodies of at least 51% of Americans are contaminated by alkylphenols [32]. These chemicals survive wastewater treatment to enter rivers, lakes, and the ocean, harming aquatic life [33]. The E.U. and Canada have banned these chemicals in cleaners.

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