Benefits of Certified Green Cleaning Supplies

A Fact Sheet for School Administrators and Parents

Why do cleaning supplies matter?

Healthy air is essential for any classroom. Yet a Department of Education survey showed that 1 in 5 U.S. public schools have unsatisfactory indoor air quality, and 1 in 4 have inadequate ventilation [1]. A 2004 California Air Resources Board study found that nearly all classrooms tested contained hazardous contaminants such as formaldehyde at levels above government guidelines [2]. Some of these exposures stem from the very products used to keep schools clean. Children and staff are exposed to chemicals in traditional cleaning supplies that have been tied to asthma, cancer, reproductive and developmental toxicity, hormone disruption, and neurotoxicity.

One successful strategy for improving classroom air is cleaning schools with certified green cleaning supplies that must meet health and environmental standards. Eight states have passed laws requiring or encouraging use of green cleaning supplies in schools.

Green cleaning supplies dramatically reduce air pollution:

In EWG-sponsored tests that compared cleaning a model classroom using three ordinary cleaners with three certified green products, "green cleaning" released less than one-sixth the total air pollution emitted by conventional cleaning. Individual product tests show that on average, certified green general purpose cleaners tested emitted less than one-fifth as many air contaminants as ordinary products and contained just one-quarter as many chemicals tied to serious health concerns [3].

Green cleaning supplies do not contain ingredients known to cause asthma:

Asthma is the most common chronic disease among school-aged children and the leading cause of school absences due to chronic illness [4, 5]. Work-related asthma is also high for teachers, instructional aides and janitors [6]. Several studies suggest that occupational and home use of conventional cleaning products is associated with increased risk of asthma [6-9]. Certified green cleaning supplies are prohibited from containing ingredients that cause asthma and have limits on some chemicals that exacerbate existing asthma.

Green cleaning supplies 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 limiting the spread of infection [10]. The American Medical Association recommends avoiding "antibacterial" products at home, as they may promote bacterial resistance to antibiotics [11]. Triclosan, an antibacterial agent often found in liquid hand soap, may disrupt thyroid and estrogen hormones [12, 13] and forms toxic byproducts in tap water and the environment [14, 15]. The Centers for Disease Control has found that triclosan contaminates the bodies of 75 percent of the American population [16].

Green cleaning supplies perform well and are safer for workers:

Certified green cleaners must meet independent performance standards assuring they are effective. They also meet standards that address health and safety concerns for workers. These include criteria for acute and inhalation toxicity, absorption through the skin, and combustibility. Certified products must have safety labels, and training is available to ensure workers use them safely. Conventional cleaners can pose far greater safety risks to custodians, especially from injuries such as 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 [17].

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

- **carcinogens, mutagens, and reproductive toxins -** identified by state, national and international authorities as known, probable, reasonably anticipated or possible human toxins.
- **heavy Metals** - such as lead and cadmium that can cause neurodevelopmental damage in children [18] and cancer [19]. Floor finishes in particular may contain heavy metals as hardening agents.
- **2-butoxyethanol** - a widely-used solvent that damages red blood cells, causing anemia [20]. It may also be a carcinogen and reproductive toxin [20]. Typical home cleaning using 2-butoxyethanol products leads to air contamination exceeding established health-based limits for the workplace [21].
- **phthalates** - 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 [22]. Numerous studies find that people exposed to higher levels of phthalates face increased risk of male reproductive system abnormalities [23] and hormone disruption [24, 25].
- **alkylphenol ethoxylates** - common detergent-like ingredients that break down into potent hormone-disruptors called alkylphenols [26]. A Centers for Disease Control study found that the bodies of at least 51 percent of Americans are contaminated by alkylphenols [27]. The E.U. and Canada have banned these chemicals in cleaners.

Green cleaning costs the same:

Green cleaning need not cost more – in fact, some schools have saved money by making the switch. In California, Fairfield-Suisun Unified School District officials estimate that green cleaning saved them as much as 20 percent [28]. Schools can save by simplifying their cleaning product inventory, using concentrated products and automatic dilution to reduce waste and by taking advantage of long-term supply contracts [29].

New York and Illinois, the first states to mandate green cleaning in schools, have seen no cost rises [29]. The New York State Office of General Services has not heard any complaints from the state's ~750 school districts about the cost of green cleaners. Only four of Illinois' nearly 900 districts have requested exemptions from green cleaning requirements due to economic hardship.

1. NCES (National Center for Education Statistics). 2007. Public School Principals Report on Their School Facilities: Fall 2005. January 2007. nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2007007
2. CARB (California Air Resources Board). 2004. Environmental Health Conditions in California's Portable Classrooms. November 2004, California Department of Health Services. www.arb.ca.gov/research/indoor/pcs/leg_rpt/leg_rpt.htm
3. EWG (Environmental Working Group). 2009. Greener School Cleaning Supplies = Fresh Air + Healthier Kids. www.ewg.org/schoolcleaningsupplies/
4. Akinbami L. 2006. The state of childhood asthma, United States, 1980-2005. Adv Data (381): 1-24.
5. EPA (Environmental Protection Agency). 2009. Asthma Facts. www.epa.gov/asthma01/pdfs/asthma_fact_sheet_en.pdf
6. Mazurek JM, et al. 2008. Work-related asthma in the educational services industry: California, Massachusetts, Michigan, and New Jersey, 1993-2000. Am J Ind Med 51(1): 47-59.
7. Medina-Ramon M, et al. 2006. Short-term respiratory effects of cleaning exposures in female domestic cleaners. Eur Respir J 27(6): 1196-1203.
8. Arif AA, Delclos GL, Serra C. 2009. Occupational Exposures and Asthma among Nursing Professionals. Occup Environ Med 66(4): 274-278.
9. Bernstein JA, et al. 2009. Evaluation of cleaning activities on respiratory symptoms in asthmatic female homemakers. Ann Allergy Asthma Immunol 102(1): 41-46.
10. FDA (Food and Drug Administration). 2005. Non-Prescription Drugs Advisory Committee Meeting, October 20, 2005. Department of Health and Human Services, Food and Drug Administration, Center for Drug Evaluation and Research. p. 1-386.
11. Tan L, et al. 2002. Use of antimicrobial agents in consumer products. Arch Dermatol 138(8): 1082-1086.
12. Veldhoen N, et al. 2006. The bactericidal agent triclosan modulates thyroid hormone-associated gene expression and disrupts postembryonic anuran development. Aquat Toxicol 80(3): 217-227.
13. Gee RH, et al. 2008. Oestrogenic and androgenic activity of triclosan in breast cancer cells. J Appl Toxicol 28(1): 78-91.
14. Lindstrom A, et al. 2002. Occurrence and environmental behavior of the bactericide triclosan and its methyl derivative in surface waters and in wastewater. Environ Sci Technol 36(11): 2322-2329.
15. Fiss EM, Rule KL, Vikesland PJ. 2007. Formation of chloroform and other chlorinated byproducts by chlorination of triclosan-containing antibacterial products. Environ Sci Technol 41(7): 2387-2394.
16. Calafat AM, et al. 2008. Urinary concentrations of triclosan in the U.S. population: 2003-2004. Environ Health Perspect 116(3): 303-307.
17. Barron T, Sutherland L. 1999. Environmentally preferable janitorial products: Issues and opportunities. Pollut Prevent Rev 9(4): 17-25.
18. Grandjean P, Landrigan PJ. 2006. Developmental neurotoxicity of industrial chemicals. Lancet 368(9553): 2167-2178.
19. NTP (National Toxicology Program). 2002. 10th Report on Carcinogens. ehp.niehs.nih.gov/roc/toc10.html
20. NTP (National Toxicology Program). 2000. NTP Toxicology and Carcinogenesis Studies 2-Butoxyethanol (CAS NO. 111-76-2) in F344/N Rats and B6C3F1 Mice (Inhalation Studies). Natl Toxicol Program Tech Rep Ser 484: p. 1-290.
21. Nazaroff WW, et al. 2006. Indoor Air Chemistry: Cleaning Agents, Ozone and Toxic Air Contaminants. Prepared for the California Air Resources Board and the California Environmental Protection Agency. www.arb.ca.gov/research/abstracts/01-336.htm
22. Jaakkola JJ, Knight TL. 2008. The role of exposure to phthalates from polyvinyl chloride products in the development of asthma and allergies: a systematic review and meta-analysis. Environ Health Perspect 116(7): 845-853.
23. Swan SH, et al. 2005. Decrease in anogenital distance among male infants with prenatal phthalate exposure. Environ Health Perspect 113(8): 1056-1061.
24. Main KM, et al. 2006. Human breast milk contamination with phthalates and alterations of endogenous reproductive hormones in infants three months of age. Environ Health Perspect 114(2): 270-276.
25. Huang PC, et al. 2007. Associations between urinary phthalate monoesters and thyroid hormones in pregnant women. Hum Reprod 22(10): 2715-2722.
26. Bechi N, et al. 2006. Estrogen-like response to p-nonylphenol in human first trimester placenta and BeWo choriocarcinoma cells. Toxicol Sci 93(1): 75-81.
27. Calafat AM, et al. 2005. Urinary concentrations of bisphenol A and 4-nonylphenol in a human reference population. Environ Health Perspect 113(4): 391-395.
28. RAMP (Regional Asthma Management & Prevention). 2009. Breathing Easier: School Districts Make the Switch to Certified Green Cleaning Products. Oakland, CA. rampasthma.org/RAMP.GreenCleaningReport.4.09.pdf
29. GPI (Green Purchasing Institute), GSI (Green Schools Initiative). 2009. Frequently Asked Questions (FAQs) About the Cost of Certified "Green" Cleaners.