Letters to the Editor

Responses to the Efficacy of 'Green' Cleaning Products Article

Dear Editor:

We the undersigned, representing a broad range of children's health, health care, cleaning industry, education, environmental and health professionals and others, read your recently published article, "Efficacy of 'Green' Cleaning Products with Respect To Common Respiratory Viruses and Mold Growth" (*JEH*, May 2009) with great interest, but in the end we were disappointed. We believe that its conclusions are misleading and do a disservice to Green Cleaning and the important efforts to make cleaning programs healthier for all building occupants while reducing the cleaning industry's impacts on the environment.

The whole purpose of cleaning—green or traditional—is not to eliminate all potentially harmful organisms from our environment. This is not an achievable task, nor would efforts to do so be prudent.

Rather, the purpose of cleaning is to protect public health by effectively managing the indoor environment at a level that is considered safe and healthy. What makes Green Cleaning different from traditional approaches is that in addition to meeting requirements for efficacy, safety, cost, appearance, and other standards, it drives innovation by targeting further reductions of potentially harmful impacts on both health and the environment. This compares to traditional programs, which often place a priority on reducing cost or the time necessary to perform a specific task.

The recent spread of H1N1 flu, in addition to ongoing issues to address building occupant exposures to mold spores and organisms such as *Clostridium difficile* (*C. diff.*) and antibiotic-resistant strains such as Methicillin-resistant *Staphylococcus aureus* (MRSA), have brought the need for proper sanitizing and disinfection to the forefront. We recognize that in schools, health care facilities and other buildings, regular cleaning procedures must include proper use of sanitizers and disinfectants. We need to remember, however, that disinfection is not synonymous with cleaning. Cleaning removes dirt and germs, while disinfecting kills germs. And while cleaning is sufficient in many cases, disinfection is important in areas where disease transmission is likely.

We believe that the article is misleading in several key areas and would like to discuss these particular points.

- **For a true test of efficacy, green cleaners must be compared to equivalent traditional cleaners.**
  The article states that "antimicrobial efficacy of Green Cleaning products has generally not been established in these areas." The reality is that general purpose cleaners (GPCs), green or not, are not designed to be antimicrobials. We would be surprised if GPCs were effective as such. Rather than comparing green GPCs to disinfectants, the author should have asked, "Are Green Cleaning products as effective as traditional cleaners?" The answer is a resounding yes.
- **Antimicrobial products are by federal law prohibited from making green claims.**
  The primary reason we do not see certified "green" antimicrobial products is because the current policy of the U.S. Environmental Protection Agency prohibits making such claims. The fact that the author found only one Green Seal–certified product containing antimicrobial active ingredients is not surprising when you realize that green certified products cannot legally be sold as antimicrobials.

  While sanitizers and disinfectants cannot be labeled "green," they play an important role as part of a Green Cleaning program. A good green program includes guidelines for the selection of preferable disinfectants (e.g., more moderate pH, lower in VOCs, more concentrated, etc.) along with the proper use of such products. State policies that require Green Cleaning in schools include such guidelines and do not supersede existing public health requirements for use of disinfectants.
- **Protecting public health does not require completely disinfecting all environments.**
  We couldn't help but think that the author is not making an argument against Green Cleaning, but rather making an argument in favor of making disinfectants a greater part of all cleaning programs. The truth is that disinfection is not the sole purpose of cleaning.

  The author cites the Centers for Disease Control and Prevention (CDC) as saying the "routine use of TSDs on high touch-point surfaces" is appropriate. However, the conclusion reached in the cited document (CDC, 2003, *Guidelines for Environmental Infection Control in Health-Care Facilities*) actually counters the author's argument. The CDC states that "most cleaning needs to be done with soap and water or a detergent/disinfectant" and that "the actual physical removal of microorganisms and soil by wiping or scrubbing is probably as important, if not more so, than any antimicrobial effect of the cleaning agent used."
- **Green Cleaning reduces occupational exposure to harmful chemicals.**
  The author acknowledges the potential adverse health impacts of exposure to traditional cleaning chemicals and writes that "occupant impacts can generally be avoided by following label requirements, treating areas while unoccupied, and providing adequate ventilation." This may be true in a perfect world, and for products such as disinfectants it is technically a violation of federal law if users do not follow manufacturer's directions. Even with proper procedures, however, many routes of exposure cannot be controlled. Sticky valves, accidental droppage, improper training, and work spaces with limited or no ventilation are all real possibilities. To provide a healthy work environment, we need to use the least toxic products that can get the job done, and this is especially true when alternative green technologies are effective and cost competitive.

In conclusion, we are concerned that the readers of your respected *Journal* will be misled and steered away from the benefits of Green Cleaning. The author of the article in question works in the field of industrial hygiene, a field devoted to the prevention of environmental factors that may cause sickness. Let's remember that ensuring the health of our communities requires that we not only

address exposure to mold and biological agents, but also reduce exposure to potentially harmful chemicals.

Thank you,

Steven Ashkin
Executive Director
Green Cleaning Network
www.greencleaningnetwork.org

Mark Bishop
Deputy Director
Healthy Schools Campaign
www.greencleanschools.org

Editor's Note: More than sixty supporting organizations signed on to HSC's letter to the Journal of Environmental Health. *To view the signatories, please visit www.healthyschoolscampaign.org/?170*

Dear Editor:

We are writing regarding the article in the May 2009 issue of the *Journal of Environmental Health* titled, "Efficacy of 'Green' Cleaning Products with Respect To Common Respiratory Viruses and Mold Growth," by Ed Light.

The main premise of this paper, that green cleaning products should be evaluated as if they were disinfectants, is flawed. First of all, antimicrobial products are registered as pesticides under Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) and the U.S. Environmental Protection Agency does not currently allow third party organizations, such as Green Seal, to certify "green" or "safe" claims about pesticides.

It is not surprising that Mr. Light found Green Seal–approved products that "do not claim antimicrobial capability." The previous version of Green Seal's GS-37 standard, which Mr. Light references in his paper, stated in the definitions for general purpose, carpet, and glass cleaners, "This category does not include any products required to be registered under FIFRA, such as those making claims as sterilizers, disinfectants, or sanitizers." The current version of the GS-37 standard, released in August 2008, states in its scope: "The standard does not apply to … enzymatic or microbially active products, or products required to be registered under the Federal Insecticide, Fungicide, and Rodenticide Act, such as those making claims as sterilizers, disinfectants, or sanitizers." We think this is quite clearly stated and should have raised a red flag among those reviewing the manuscript prior to publication.

Secondly, cleaning and disinfecting are not the same thing. Proper (and effective) disinfection takes place only after thorough cleaning. For example, New York State's Office of General Services states it very clearly in their *Guidelines and Specifications for the Procurement and Use of Environmentally Sensitive Cleaning and Maintenance Products for all Public and Nonpublic Elementary Schools*: "Clean first, then disinfect or sanitize only when and where necessary. Surfaces must be cleaned thoroughly, whether or not disinfectants are used." In addition, the Centers for Disease Control and Prevention (CDC) states in its *Guideline for Disinfection and Sterilization in Healthcare Facilities, 2008:* "Because maximum effectiveness from disinfection and sterilization results from first cleaning and removing organic and inorganic materials, this document also reviews cleaning methods."

Many of the ingredients found in disinfectants are hazardous to health. Some are known to cause asthma, a health endpoint for which there is usually no known exposure threshold, in which case OSHA-permissible exposure limits are not protective. Therefore, limiting the use of disinfectants to only when they are necessary and finding the least toxic alternatives among disinfectants are essential exposure prevention strategies.

In addition, finding the least toxic alternatives among general cleaners is also desirable to protect health. Unfortunately, there are many unregulated "green" claims being made to sell cleaning products. One way that consumers, including employers, can find safer alternatives is to seek out products that have been certified by third-party organizations that issue openly published standards. As an example, criteria for GS-37 certification include a prohibition of ingredients known to cause allergic-type asthma, toxicity and corrosivity limits, limits on ingredients that can cause indoor air pollution, and limits on chemicals that can be absorbed through the skin. These are valuable and relevant attributes to consider in choosing products.

This paper would have been useful had it compared antimicrobial pesticides to each other or compared "green" versus conventional cleaners. Because it takes the illogical leap, however, of evaluating green cleaning products for something that they very clearly are not designed to do, it confuses the consumer, adds nothing valuable to the discussion about cleaning products and practices, and, worst of all, may increase the number of unnecessary hazardous chemical exposures.

Thank you for this opportunity to share our comments and concerns.

Sincerely,

Justine Weinberg, MSEHS, C.I.H.
Occupational Health Surveillance and Evaluation Program
California Department of Public Health,
Occupational Health Branch/Public Health Institute

Robert Harrison, M.D., M.P.H.
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California Department of Public Health,
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Jennifer Flattery, M.P.H.
Occupational Health Surveillance and Evaluation Program
California Department of Public Health,
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Letters to the Editor

Dear Editor:

I am writing on behalf of Green Seal with an additional point of clarification regarding your recently published article, "Efficacy of 'Green' Cleaning Products with Respect To Common Respiratory Viruses and Mold Growth (*JEH*, May 2009)."

Since 2005, the U.S. Environmental Protection Agency's (U.S. EPA's) Antimicrobials Division has interpreted the labeling requirements under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) such that environmental claims—in particular, third-party environmental certifications—have not been permitted on FIFRA-registered products. As a result, Green Seal does not certify products that have been FIFRA-registered as disinfectants, sanitizers, mildewcides, fungicides, etc. In truth, the scope of our environmental standard for industrial and institutional cleaners (GS-37) excludes such products:

> This standard establishes environmental requirements for industrial and institutional general purpose, restroom, glass, and carpet cleaners. For purposes of this standard, industrial and institutional cleaners are defined as those cleaners intended for routine cleaning of offices, institutions, warehouses, and industrial facilities. Furthermore, the criteria in this standard include consideration of vulnerable populations in institutional settings such as schools, daycare facilities, nursing homes, and other facilities. The standard does not include cleaners for household use, food preparation operations, or medical facilities. *The standard does not apply to* air fresheners, enzymatic or microbially active products, or *products required to be registered under the Federal Insecticide, Fungicide, and Rodenticide Act, such as those making claims as sterilizers, disinfectants, or sanitizers* (emphasis added).

In light of these important details, it was a rather remarkable premise to take hard surface cleaners that have not been registered with the U.S. EPA as antimicrobial products and come to the conclusion that they do not, in fact, disinfect or sanitize. I am certain that a similar examination of 27 "non-green" (i.e., traditional or conventional) hard surface cleaners that were also not registered as antimicrobial products would result in the exact same conclusion. Therefore, Mr. Light's article embodies the proverbial "apples to oranges" comparison and is based upon a fundamentally flawed assertion from the outset.

Given the influence of a respected journal such as yours, we sincerely hope that you will take the necessary steps to correct the erroneous conclusions with respect to "green" cleaners and "green" cleaning that readers may draw from Mr. Light's inappropriate comparison.

Sincerely,

Mark T. Petruzzi
Vice President of Certification and Strategic Relations
Green Seal

Dear Editor:

We are writing to express concern about the misleading premise, substance, and recommendations of the article, "Efficacy of 'Green' Cleaning Products With Respect to Common Respiratory Viruses and Mold Growth (*JEH*, May 2009)." Our technical comments can be read in full at www.cleaningforhealthyschools.org.

First, the premise of the author's study, in which 27 Green Seal–certified cleaning products were "evaluated for virucidal and fungicidal activity," is flawed since certified green cleaners are not allowed by the U.S. Environmental Protection Agency (U.S. EPA) to make antimicrobial claims (U.S. EPA, 2002).

In contrast to what the article states, "green" cleaning products are not typically marketed as "natural materials to replace bleach and phenolics." Rather, Green Seal–certified glass, surface, and floor cleaners are marketed as replacements for conventional products designed for the same purpose.

The article inaccurately states that "green" cleaning advocates often recommend avoiding the use of disinfectants altogether, misrepresenting the positions of the Montgomery County Public School District's 2006 *Healthy, High Performance Cleaning Program* and the Healthy Schools Network, whose 2002 *Sanitizers and Disinfectants Guide* states that "schools follow all public health laws and regulations regarding the use of sanitizers and disinfectants (Healthy Schools Network, 2002)." Similarly, Hospitals for a Healthy Environment (H2E), whose founding members include the American Hospital Association, does not call for eliminating disinfectants. Instead, it addresses the "over-disinfection" of noncritical care areas.

The author also selectively presents the position of the American Society for Healthcare Environmental Services (ASHES) by omitting the first section of its 2006 position statement, which says, "ASHES supports cleaning procedures that are friendly to the environment (ASHES, 2006)" and failing to cite more recent statements by ASHES that explain its support for green cleaners and its concerns about using disinfectants in noncritical areas such as floors (Healthcare Purchasing News, 2008).

The article downplays the hazards of volatile organic compounds (VOCs), which are often emitted at higher levels from conventional cleaners, by asserting that they "are normally present in indoor air at the parts per billion level." It cites a 2007 newsletter by Air Quality Sciences, but did not cite other AQS reports contradicting the author's conclusion about the safety of VOCs in indoor air, such as, "Indoor air pollution in schools can pose a serious threat to children's health. Among the pollutants of greatest concern are volatile organic compounds (VOCs) that emit from building materials, furnishings, finishes and cleaning products (Air Quality Sciences, n.d)."

Other scientific studies link exposure to cleaning products with health effects. For example, a study of 1,915 confirmed cases of work-related asthma in four states found 12% associated with exposure to cleaning products used in schools, medical facilities, hotels and other facilities (Mazurek et al., 2008; Rosenman et al., 2003).

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Further, conventional cleaning products contain chemicals that can harm custodial workers and building occupants, including children. For example:

- 2-Butoxyethanol is a common cleaning product ingredient that can damage red blood cells, leading to anemia;
- phthalates frequently found in cleaning product fragrances and emulsifiers are linked to increased risk of male reproductive system abnormalities (Swan et al., 2007), insulin resistance (Stahlhut et al., 2007), and altered thyroid hormone levels (Huang et al., 2007); and
- ethanolamines, found in some conventional glass cleaners and degreasers, are corrosive and considered "asthmagens (Association of Occupational and Environmental Clinics, 2009)."

The article states that "concerns for aquatic toxicity and general environmental protection are theoretical. . . ." Yet, U.S. EPA promotes cleaners devoid of alkylphenol ethoxylates (APEs) because these substances can breakdown into alkylphenols, "which persist in the environment, are highly toxic to aquatic organisms, and may be endocrine disruptors . . . (U.S. EPA Design for the Environment, 2008)."

The author specifically supports using phenolic and chlorinated disinfectants without addressing their potential health risks. Bleach is highly corrosive to the skin, eyes, and respiratory system; o-phenylphenol is known to cause cancer (California Office of Environmental Health Hazard Assessment, 2008); both can cause respiratory sensitization (Association of Occupational and Environmental Clinics, 2009). Meanwhile, he downplays the efficacy of peroxide-based disinfectants, even though some are registered with U.S. EPA as broad-spectrum, hospital-grade disinfectants capable of killing bacteria (including MRSA) and viruses, including strains linked to the common cold (rhinovirus) and flu (influenza) (JohnsonDiversey, Inc., 2009).

The author does a disservice by dismissing "routine cleaning" as an essential element of an effective disinfection protocol. This contradicts the Centers for Disease Control and Prevention's (CDC's) current *Guideline for Disinfection and Sterilization in Healthcare Facilities* (CDC, 2008).

The author is also at odds with current "best practice" guidance for mold remediation. U.S. EPA does not suggest using bleach to remediate mold. Instead, it recommends that mold be removed from nonporous (hard) surfaces by wiping or scrubbing with water and detergent (U.S. EPA, 2008).

Contrary to the author's recommendation that "green cleaning products should be evaluated for efficacy against pathogens," we recommend that cleaners be chosen based on their ability to clean and disinfectants be chosen based on their ability to kill pathogens. Certified green products should replace conventional cleaners, then followed by disinfectants, if necessary.

Sincerely,

Claire Barnett, Healthy Schools Network
Denise Bowles, AFSCME-International Union
Alicia Culver, Green Purchasing Institute
Chris Geiger, City of San Francisco Department of Environment
Deborah Moore, Green Schools Initiative
Julia Earl, Prevent Harm Minnesota
Rebecca Sutton, Environmental Working Group
Tolle Graham, Massachusetts Healthy Schools Network
at MA Coalition for Occupational Safety and Health

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Response to Third-Party Review of Cleaning Products Article

Dear Editor:

The May issue of the *Journal of Environmental Health* featured an article by Okumura ("The Use of Third-Party Review to Reduce Health and Environmental Hazards from Surfactants and Cleaning Products in the Janitorial Industry") that discussed the evolution of third-party review of cleaning products for listing on CleanGredients or recognition by the U.S. EPA's Design for the Environment (DfE) program. The article was informative and identified the benefit of environmentally preferable products, such as those recognized by DfE, but did not mention that formulators have a choice when seeking an approved third-party reviewer for the DfE program.

ToxServices is a scientific consulting firm that specializes in the review of a wide array of product formulations for human health effects and environmental toxicity and fate, and like NSF, is an approved third-party reviewer for DfE. More information about the DfE review process can be found at our Web site: www.toxservices.com/USEPA. We believe that an open, transparent process that includes the participation of multiple service providers benefits all stakeholders.

Sincerely,

Margaret H. Whittaker, Ph.D., M.P.H., D.A.B.T.
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The NEHA Credential

Dear Editor:

As a former chairman of the Missouri Board of Certification for Environmental Health Professionals, I have to agree for the most part with President Pantanges's article in the December *Journal* for all **future** environmental health professionals. It does create a dilemma, however, in that there are still some very capable and well qualified personnel out there who, although they may not meet the educational requirements to take the NEHA exam (or for that matter the exam that Missouri has developed), are excellent at what they do, so... where do we classify them? Many of these people have been working for many years in their counties. They have taken educational courses from FDA, their state, NSF, and other agencies including NEHA to keep themselves knowledgeable and "up-to-date" with current technology, but they simply do not have that piece of paper that says that they graduated from a college or university with an upper level mathematics course and 30 or more hours of science.

As a former chairman, this question has come to me time and time again. Our answer has always been that this is what NEHA requires for their credential, and so therefore this is what we must also require for ours, especially now that Missouri is one of the states that is encouraging accreditation, and this is in the accreditation standards (I was on the committee that made sure it was). Although like California, our exam is not accepted by NEHA for reciprocity, it is a very good stepping stone to practice for the NEHA exam, but I digress. *What do we tell these folks??*

I have asked a number of them if we offered a technician exam or something of the sort if they would be interested. Their response has been uniformly the same: "We do the same things that EH specialists do, so why shouldn't we have the same title?" I have to say, in some cases, I have seen these people do a better job than some EH specialists. I have also asked if they would like to continue their education, but again most of the time the answer has been no, mostly because of kids at home and money.

I would love to hear from some of you in other states to find out how you deal with this issue, or if it is an issue. Feel free to contact me at murraj1@lpha.mopublic.org or 660-263-6643 Ext. 3043.

Janet Murray, R.E.H.S.
Environmental Health Supervisor
Randolph County Health Department
President, Missouri Smallflows Org.

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