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# Appendix K

## National Trade Publications Articles

These “green” housekeeping articles offer some commonsense approaches to how we conduct our business. All of them stress that protecting the environment, indoors or out, is not just good for Mother Nature—it is also good for the pocketbook.

We start with an article by Paul Amos, an interview with Stephen Ashkin, whom you met earlier in the text. Ashkin takes an unbiased look at the country’s growing mold problem. In the next article, he offers some quick, but very important tips to improve your indoor air quality (IAQ).

Next we hear from the esteemed Michael Berry on the causes of poor IAQ in an interview by Michael McCagg, Managing Editor of *Cleaning and Maintenance Distribution Online*. McCagg then explores the subject of water softening and addresses the subject of odor control in a second article.

Roger McFadden contributes an excellent piece on chemicals and the restroom. The hazard value chart he

presents should be used by every executive housekeeper and purchasing agent in the hospitality and health care industries.

Finally, we hear from a very distinguished reader of *Cleaning and Maintenance Management Online*, Arthur B. Weissman, President and CEO of Green Seal, who acquaints us with the mission and goals of this most worthy organization.

All of these articles have been provided by Humphrey Tyler, Founder of National Trade Publications, Inc. National Trade Publications is the parent company CM B2B Trade Group, which publishes *Cleaning and Maintenance Management* magazine, *Cleaning and Maintenance Management Online*, *Cleaning and Maintenance Distribution* magazine, and *Cleanfax* magazine. As noted in Chapter 10, page 208, Mr. Tyler has generously offered the readers of this text a free subscription to *Cleaning and Maintenance Management*. Thanks to him and to the rest of his fine staff.

## Exclusive Interview: Stephen Ashkin

*By Paul Amos, Executive Editor*

This article first appeared in *Cleaning and Maintenance Management Online 2003* and is presented here through the generosity of CM B2B Trade Group, a subsidiary of National Trade Publications, Inc.

One of the nation's premier experts on IAQ (indoor air quality) and indoor health issues shares his thoughts on the "mold hysteria."

**CM i-Focus:** At the CM Seminars and Conferences ([www.cmexpo.com](http://www.cmexpo.com)) at the ISSA show you presented a seminar focusing on a "non-hysterical look at mold." Would you characterize the current nationwide view of mold contamination as "hysteria"?

**Stephen Ashkin:** The definition of "hysteria" from the Random House Dictionary is: An uncontrollable outburst of emotion or fear. Many of the recent new reports that use headlines such as "Attack of the Killer Mold" that appeared in the *Washington Post* certainly contribute . . . to a "hysterical" view of the problem since they are based on emotion and fear, rather than sound science.

From the cleaning industry's perspective, I think we have to be very concerned about this. While mold may, in fact, be a real problem, it is just one of many issues we need to address along with managing bacteria, pesticides, slip/fall issues, ergonomics, environmental impacts, etc.

Our society—including the public at-large and regulators—needs to come to the realization that mold is the result of poor maintenance and cleaning, and is not the cause of the problem. Thus, if our industry finds resources are being pulled away from general cleaning and poured into mold remediation and prevention, this focus on mold may result in unexpected, but very serious consequences that may be more serious from a health perspective than solving the mold problem.

**CM:** Is mold a legitimate health threat to building occupants? How does mold impact IAQ? What evidence is there to suggest mold harms humans?

**Ashkin:** There seems to be a great deal of evidence that high levels of molds, its spores and the toxins they produce do indeed affect people's health. While I am not a doctor, my research indicates there is little scientific/medical evidence to suggest that molds, including the so called "killer molds" cause death except in the cases where people have existing health conditions.

However, the health effects often resemble the flu and can trigger asthma attacks, which can be deadly, are very serious and affect building occupant health and performance. Thus, I think we have to be careful of the extremes. While I don't want us to go to the one extreme

that says "mold kills," nor do I want to suggest that it is not a real problem to both health and the building itself.

Mold is serious, as are many problems the cleaning industry deals with on a daily basis. Perhaps the best thing that may come of this "mold hysteria" is to again remind us the fundamental mission of the cleaning industry is to protect health without harming the environment—rather than just cleaning as cheaply as possible to maintain appearances and minimize occupant complaints.

**CM:** How important do you consider certification to the mold remediation industry? What advice would you give to a person interested in becoming a professional mold remediator?

**Ashkin:** Because of the seriousness of the problem and the increased liability and legal issues relative to mold and mold remediation, I think if a contractor is looking to do mold remediation that . . . this issue must be taken very, very seriously.

No business should get involved in an area, especially one wrought with these types of problems, without the appropriate training and expertise. Thus, I think certification is important for any company looking to perform mold remediation. The caveat is to make sure the certification program is well recognized and provides the type of training and credentials necessary should your company get swept into a lawsuit.

**CM:** If a facility manager discovers significant mold contamination within a building, what steps should he/she take to deal with the problem? Should he/she seek professional guidance?

**Ashkin:** If the mold contamination is "significant" then by all means it is best to bring in the experts. While many building managers are quite capable of handling the problem themselves, because of the liability and other potential problems, I think it is just good business to get a qualified third-party in to do the work.

The challenge here is to recognize what is meant by "significant mold contamination" as opposed to the work people can do themselves (for example, we don't need a third-party contractor to remove a single ceiling tile) and how to identify a "qualified third-party."

**CM:** Mold has existed on earth for millions of years. Why has it suddenly become such a big issue? Why didn't we hear about toxic mold 50 years ago?

**Ashkin:** There seem to be a number of contributing factors to the increase in mold related problems. Some of them include:

- The reduction in the amount of cleaning that has taken place in an effort to reduce cleaning costs, which allows normally occurring molds to amplify to levels where they can affect people's health.
- Changes in building designs and construction methods and materials which result in buildings with less ability to handle moisture. As a result, when moisture intrudes in the building—mold happens.
- The reduction in the amount of fresh air to reduce the cost to heat and cool our buildings is suggested as a contributor to the overall building-related problems.
- There seems to be an overall increase in the sensitivities that children and other sensitive people are experiencing. For example, the incidents of asthma have increased by 80 percent since the 1980s. Thus, whatever is contributing to these types of sensitivities is being associated with molds.
- Finally, while I think most organizations do an outstanding job, I believe at times the media, law firms, testing labs, advocacy groups, and certain companies that sell services that are benefitted by an increased concern over mold are “fueling the fire” and intentionally contributing to the heightened awareness of the problem.

**CM:** What's the future of this issue? Should we expect government regulation of mold remediation? Will insurance companies be able to cap mold coverage limits?

**Ashkin:** The government frequently acts when the public is enraged. Thus, we may very well see some type of government action taking place. A bill was introduced last year in Congress—U.S. Toxic Mold Protection Act and commonly called the “Melina Bill”—which stalled but is likely to be reintroduced. Texas, New York and other states are also looking at some type of legislation.

But the issue with mold is extremely complicated and it is going to be very, very difficult to establish standards, laws and requirements. As for insurance companies, we are already seeing restrictions, caps and other efforts on their part. But more important than government regulations, I think building owners are very, very concerned about the issue.

This creates a true opportunity for companies who can really help building owners manage the indoor environment, which includes managing the moisture and cleaning the surfaces to control mold and other potentially harmful agents (such as bacteria, viruses, pests, vermin, etc.) resulting in a clean, healthy, safe and productive indoor environment.

## Monitor Your Products to Improve IAQ

Improving indoor air quality requires more than combating mold and improving ventilation systems.

*By Stephen Ashkin*

Even common products can contribute to poor indoor air quality.

Chemical products can evaporate indoors, leaving their toxic contaminants for us to breathe, and create health problems for the young and old alike, as well as those with chronic respiratory problems.

Cleaning products are not immune from being lumped into this category.

While cleaning is an important means of eliminating the stuff that makes us sick, and generally we need to do more of it, cleaning products themselves can add contaminants to the indoors.

### Proactive Reading

That's why it's vital to read those product labels and Material Safety Data Sheets (MSDS) before you buy cleaning products and avoid those that caution us about "respiratory irritation" and/or have a high VOC content.

Some additional product considerations:

- **Use trigger sprayers as opposed to aerosols.** Aerosols containers are terrific for some applications like wasp sprays, but the propellants are unnecessary pollutants indoors for cleaning products.

- **Use water-based as opposed to solvent-based products**, such as in furniture polish and dusting products.
- **Use hydrogen peroxide-based products approved by EPA to kill mold**, rather than chlorine-containing products for mold and mildew removal. Chlorine is a known respiratory irritant, burns eyes and skin, damages fabrics and when mixed with other commonly used household products can create deadly fumes.
- **Use mechanical means rather than chemicals for cleaning** when possible. For example, use micro-fiber wiping cloths as opposed to chemical-based dust control products. Of course, improving IAQ is a much broader issue.

*Stephen Ashkin is a principal of the Ashkin Group, Bloomington, Indiana, and is a consultant in green cleaning and IAQ matters. He is also a former vice president of chemical maker Rochester Midland Corporation. He can be reached at (812) 332-7950.*

**From the October 2002 edition of *Cleaning and Maintenance Management* magazine.**

## Berry: Chemical Mismanagement Causes Poor IAQ

by Michael McCagg, Managing Editor

This article first appeared on January 15, 2003, in *CM i-Focus on IAQ* and is presented here through the generosity of CM B2B Trade Group, a subsidiary of National Trade Publications, Inc.

LATHAM, NY— In the CM B2B Trade Group's new *CM i-Focus on IAQ*, Dr. Michael Berry addresses some of the issues linking cleaning chemical usage to indoor air quality (IAQ) problems. The following are excerpts from the interview. For the full interview and additional information on IAQ issues, visit the *CM i-Focus on IAQ*.

**Michael McCagg:** What is the link between poor indoor air quality (IAQ) and the chemicals used by cleaning personnel in the building?

**Dr. Michael Berry:** It's not the answer you think. The link is mismanagement, ignorance and misrepresentation of the cleaning product. Cleaning chemicals are technologies and if they have been properly formulated and properly used, they do not contribute to poor IAQ, they enhance indoor air quality. Really what you are dealing with (in instances of poor IAQ), is ignorance and a mismanagement issue and some violation of the business standards and product formulation.

**MM:** If ranked by importance against other factors (such as mold) in terms of impacting IAQ, where does cleaning chemical usage rank?

**MB:** If it's a properly formulated chemical, it's a minimal risk. What's on the top of your list are biopollutants. They are probably the biggest problems today and have been historically. Biopollutants such as bacteria, Legionella, Pontiac fever, TB or anthrax are tops on the list. Then you have very well established allergens, such as dust mites, cockroaches, and cats. Then you have your other allergens, mold. They are the risk factors that you really have to consider first.

**MM:** What types of cleaning products or their ingredients are the worst offenders when it comes to damaging IAQ?

**MB:** Today, as opposed to 20 years ago, most of the carcinogens have been taken out of cleaning products. Your issue with cleaning chemicals today is more how well do they do their job? Chemicals don't clean, they are a machine. The biggest problem is how well they carry out that supporting function in terms of maximum extraction and minimum residue. If they are leaving behind large amounts of residue, that can become a problem. Well formulated products that have been tested don't pose a problem.

**MM:** What is the most important thing cleaning professionals can do to improve IAQ in the buildings they clean?

**MB:** To understand what cleaning is, which is basically the extraction and removal of unwanted substance from an environment to maximize the removal of unwanted substances which, when concentrated, can cause problems and to minimize residue—things left behind including water, chemicals or other particles. Maximum extraction, minimum residue, that's what must be accomplished.

**MM:** How can a cleaning professional convince his/her boss or a building owner that IAQ is a real threat and that additional funds for quality cleaning and green cleaning products are needed to improve IAQ?

**MB:** If the boss doesn't understand it by now, I would fire the boss and get a new job, but the value of cleaning is found in many different factors. Cleaning:

- Is an insurance policy—it reduces the likelihood of crisis down stream

- It preserves the value of real estate and valuable property

- It creates a good image

- It Promotes productivity

- It Allows the use of space over and over again

- It Guards against disease and adverse effects

- It Allows people to live indoors in a comfortable, secure and productive way

It's the best investment you can make for the management of an indoor environment and that's the message that needs to be made clear by the industry as a whole.

**MM:** How do carpets impact IAQ? Do carpets or hard floors promote a healthier indoor environment? Why is there still so much confusion surrounding this issue?

**MB:** Clean carpets pose no problems at all. In fact, a carpet has one attribute in that it traps and holds dust. Dirt poses a problem whether it's in carpeting or on a hard surface. The confusion is caused because there is not a good block of research to educate the public with. There is a lot of opinion using little data, but very little sound research to point to.

*Michael Berry, Ph.D., is an author and well-known advocate of IAQ issues. He served as deputy director of the National Center for Environmental Assessment at Research Triangle Park. Today, he's a research professor at the University of North Carolina, where he's doing work in the Environmental Studies program.*

—M.M.

## Water Softening Is a Green Cleaning Strategy: Reduce Chemical Usage and IAQ Concerns through Water Treatment

*By Michael McCagg, Managing Editor*

(This article is presented through the generosity of CM B2B Trade Group, a division of National Trade Group, Inc.)

From the February 2003 edition of *Cleaning and Maintenance Management* magazine.

Want to reduce cleaning chemical usage by 50 percent and address building occupant concerns over chemical usage and its impact on indoor air quality (IAQ)? Encourage building owners or facility administrators to buy a water filtration system.

Though not commonly thought of as an area of concern for cleaning professionals, water filtration can be a valuable tool to cleaners battling budget woes, IAQ concerns and building occupants' demands to adopt green cleaning practices.

### Cut the Chems!

"You can save at least 50 percent of any type of cleaning product used to remove dirt, greases, anything," said Joe Harrison, Technical Director, Water Quality Association. That's because impurities in the water—calcium, iron, lead, etc.—engage the cleaning agents in the chemical. In turn that reduces the effectiveness of the agents, requiring more of the chemical to be used, said Harrison.

One cleaning educator advises cleaning professionals in buildings where hard water is a problem to increase chemical concentration by one level in dilution control systems.

Roger McFadden, a chemist and vice president of Coastwide Laboratories, Wilsonville, OR, said, "Unless controlled, hard water can diminish the effectiveness of a variety of cleaning products."

### More Green Chemicals

Water filtration systems allow the use of more environmentally friendly and safe for humans cleaning chemicals, said green cleaning advocate Steve Ashkin, The Ashkin Group, Bloomington, IN.

The Soap and Detergent Association (SDA) said hard and impure water in buildings:

- Leads to the creation of "soap scum" and films on surfaces
- Creates spots on glass and windows
- Causes calcium and other buildup on metals and restroom fixtures
- Aids in the development of rust
- Leaves dull, discolored appearances on porcelain and chrome

To combat these problems, cleaning professionals often turn to more aggressive chemicals, such as acids, for cleaning. In some instances, said James Stewart, supervisor, Janitorial Services, BMG Entertainment, Indianapolis, that practice creates even more problems for cleaning professionals as the mineral deposits in the toilets and urinals capture the acids and create running water stains.

At the same time, those more aggressive chemicals are typically dangerous for cleaning professionals to use and can pose health problems for building occupants. Ashkin said that installation of a water filtration system, though, allows for the usage of more environmentally friendly, benign and safer chemicals.

### IAQ Rewards

Because the byproduct of water filtration systems is reduced chemical usage and usage of safer, environmentally friendly chemicals to clean, water filtration systems can be considered a method to reduce indoor air quality (IAQ) issues. "People tend to overlook it, but it's a really good strategy," said Harrison.

With concerns over cleaning chemical usage and its impact on indoor air quality (IAQ) reaching all-time high levels, cleaning professionals can tap into this as a new marketing method, said Ashkin. Ashkin noted that the US Green Building Council considers water filtration in the certification of a building as "green."

### Cleaning Rewards

Cleaning professionals can realize other rewards beyond the budgetary savings from less chemical usage and healthier environment created by water filtration systems. Areas where filtered water is key to increased productivity for cleaning include:

- Windows
- Stone surfaces
- Laundry operations
- Cooling systems and boilers

The bottom line, said Harrison, is "water is the main thing in making water work better in washing and cleaning."

## Controlling Odors at the Source

### Hydrogen peroxide based cleaning solutions can eliminate the need for deodorizers

by **Michael McCagg, Managing Editor**

From the April 2002 edition of *Cleaning and Maintenance Management* magazine.

While a debate has long raged in the industry over the use of deodorizers—do they serve to cover-up improper cleaning or as an added tool to proper cleaning—one thing is certain: If a foul odor is left in a room after it has been cleaned, the cleaner will be blamed for not doing his or her job thoroughly.

An emerging way to tackle odor and other concerns without adding the expense of a deodorizer is use of hydrogen peroxide-based cleaners. The all-purposed cleaning systems are gaining in popularity among in-house and contract cleaners surveyed by *Cleaning & Maintenance Management* because of their ability to clean almost any surface and control odors.

“Hydrogen peroxide is a natural odor neutralizer—it has extra oxygen that always wants to link up with foul odors,” said Roger McFadden, a jan-san industry consultant and vice president of Coastwide Laboratories Inc., Wilsonville, OR.

#### Restrooms

For veterans of the maintenance industry, the true testing ground for a product's effectiveness is the elementary school boys' restroom. “The boys' restroom is a real problem area,” agrees Elk Grove's Linda Lopez. “It's difficult to get rid of the odor created by urine.”

When Lopez was piloting the hydrogen peroxide product in select schools, she was particularly interested in its performance in the boys' restroom. “We sprayed the product on the floor, walls, partitions, and urinals and waited for a few minutes to let the product work. We wiped it down, sprayed again and walked away.

“We did this for just three to five days, and the odor was completely eliminated. It wasn't just masked. It was gone. No other product or system we've ever used has delivered these results,” she said.

Patrick Stewart, president/CEO of EnvirOx products, Georgetown, IL, said hydrogen peroxide systems work in restrooms because of the oxidization process:

- The hydrogen peroxide penetrates urine—the largest source of unpleasant odors in restrooms.
- It then has a chemical reaction to the bacteria in the urine, preventing their multiplication.

#### Carpeting

An area where deodorizers are often utilized, carpeting can also be seen as a major test for the deodorizing ability of hydrogen peroxide solutions. McFadden said the hydrogen peroxide solutions work well on carpeting in that they eliminate the odor in one application, as long as dwell time is adhered to.

“It is great on carpets and it is used by my cleaners to address carpet spots in a nightly and timely manner,” said Carol Bush, an area manager for Central Property Services, Pittsburgh.

#### Money Savings

Besides the obvious savings of not having to purchase a separate deodorizing system, hydrogen peroxide-based cleaning systems offer money savings:

- Reduced labor from having to apply/maintain a deodorizing system
- Reduced chemical purchases—most hydrogen peroxide systems are multi-purpose systems. Bush said that she uses the systems for everything but stripping and finishing.

#### Environmentally Speaking

Hydrogen peroxide-based cleaning solutions are also considered environmentally preferable and can help facilities or cleaning companies meet “green” cleaning standards federal, state and other facilities are adopting.

*Alien P. Rathey, Rathey Communications, West Jefferson, North Carolina, contributed to this article.*

## Chemical Safety in the Restroom

### Eliminating hazardous chemicals and locating safer alternatives for restroom care

*by Roger McFadden*

This article first appeared in the May 2002 edition of *Cleaning & Maintenance Management* magazine and is presented here through the generosity of CM B2B Trade Group, a subsidiary of National Trade Publications, Inc.

Proper restroom cleaning maintains a high level of appearance, eliminates unpleasant odors, elevates the image of custodial staff and improves the overall health and safety of the facility. Proper restroom care requires:

- Establishing cleaning standards
- Developing guidelines
- Communicating expectations
- Effective training
- Selecting the right chemical cleaning products
- Including all stakeholders

The latter is extremely important to the appearance of the facility and the health of cleaning workers.

Cleaning product selection should be based upon more than a pleasant fragrance, an attractive color or cheap price. The cost of overlooking the safety and environmental impact of a chemical cleaning product can be enormous. Using hazardous acids, caustics or volatile solvents can result in on-the-job chemical injuries, contaminated indoor air and damaged restroom fixtures.

#### Select Safe and Effective Products

An organized and well-planned restroom care program will select and use cleaning products that:

- Are effective
- Are safe for workers
- Protect surfaces being cleaned

A trend is emerging to eliminate acids, replace glycol ethers and find sustainable earth alternatives, ("green" alternatives) to traditional restroom cleaning products. But most cleaning products are formulated using a mixture of chemical ingredients. This makes their environmental, health and safety (EHS) assessment complicated.

For example, if isopropyl alcohol were being considered for use in a cleaning operation, EHS professionals would review a variety of scientific and medical databases about isopropyl alcohol and make an informed choice about its safety. However, if isopropyl alcohol were formulated with five other chemical ingredients into a glass cleaner, the potential adverse health effects of the cleaning cocktail would need to be considered.

Since the US Department of Labor's Occupational Safety and Health Administration (OSHA) does not require full disclosure or exact percentages of all ingredi-

ents on Material Safety Data Sheets (MSDS), this can be a problem for EHS professionals.

#### Double Trouble

The relationship between the chemistry of one chemical and another is important. Recently, I visited a custodial closet near an area where office workers complained about unpleasant odors causing headaches and respiratory discomfort. I opened the door and immediately recognized a chemical odor that was related to ammonia and chlorine being mixed. An investigation of the closet revealed leaking containers of an aqua ammonia detergent dripping into a bucket filled with a sodium hypochlorite (chlorine bleach) mildew remover. A review of the two chemicals' MSDS indicated they should be kept away from each other. This accident could have had serious consequences on workers there.

#### Avoid High Levels of Corrosive Acids and Alkalis

Hydrochloric acid (HCl) and phosphoric acid are effective ingredients sometimes used to formulate tub, tile, toilet and shower room cleaners. These acids are aggressive and are capable of damaging, among other surface areas:

- Toilets and urinals
- Sinks
- Metal
- Mirrors
- Floor tiles
- Grouting

Acid toilet bowl cleaners typically have an acid content between nine and 25 percent, which may be effective in removing tough deposits from toilets and urinals, but can etch the toilet bowl and urinal surfaces. That makes them more receptive to minerals deposits and soils.

#### Avoid Hydrofluoric Acid and HF Salts

Hydrofluoric acid (HF) and its salts are sometimes used to formulate specialty mineral stain removers. These chemicals are effective in removing the toughest of mineral stains, but can severely damage:

- Porcelain
- Porcelain enamel
- Glass
- Glazed ceramic tiles

Care should be taken to control the contact time of products formulated with these ingredients. Proper cleaning and care of these surfaces can prevent the need to use these HF based products. Additionally, some mild abrasive solutions that contain cerium oxide . . . can be used to remove these deposits without the risk to workers and surfaces.

### Use Quaternary Disinfectant Cleaners

Using chlorine bleach to clean restrooms is not a good idea. In fact, it is a bad idea. Quaternary disinfectant cleaners are currently the best choice for cleaning and disinfecting the restroom environment. Many of these products are effective against a broad spectrum of disease causing microorganisms including:

- Streptococcus
- Staphylococcus
- Pseudomonas aeruginosa
- HIV-1
- HBV
- Herpes Simplex 1 and 2
- A variety of strains of Influenza viruses

Read the product label and literature to confirm what organisms your disinfectant cleaner will kill. Many institutions do not use household chlorine bleach because it:

- Lacks detergency
- Adversely reacts with other chemicals to create toxic byproducts and gases
- Attacks hard surfaces
- Discolors fibers and colored surfaces
- Damages floor finishes
- Rapidly loses its strength
- Is expensive to use

### Treat Toilets Like Teeth

There would be significantly less root canals and expensive dental care needed if patients would properly brush and floss. The same is true in caring for toilets and urinals. When toilets and urinals are properly cleaned and

brushed daily, they are less likely to need expensive and hazardous remedies, such as acid cleaners. It takes unsightly rings and deposits long periods of time to form under normal water and plumbing conditions. These conditions can be prevented with milder cleaning products and proper daily cleaning.

### Locate Safer Alternatives

Research is being done and databases are being developed to assist in comparing the relative hazards of ingredients used in cleaning products. One database that is particularly interesting is the Indiana Relative Chemical Hazard Score (IRCHS). This is a scoring method developed by Purdue University that evaluates an ingredient and assigns a chemical hazard value based upon the average of the Environmental Hazard Value and the Worker Exposure Hazard Value. The lower the score, the more favorable the evaluation. This allows individuals to compare the relative hazard value of ingredients in various cleaning products.

### Better Efficiency

A basic rule should be, use the least amount of cleaning products necessary to meet your specific needs. The least number of cleaning products are needed when a restroom is properly cleaned and maintained.

### Planning Reduces Risks

Hazardous chemical cleaning products have found their way into many restroom care programs because the other elements of the cleaning process have failed. For example, when toilets are not properly cleaned because of poor planning or ineffective training the result is mineral buildups and stains. A well-planned restroom care program will prevent the stains and eliminate the need for hazardous chemicals.

The basic rule should be to select chemical cleaning products that are effective and yet safe for workers, building occupants and environmental surfaces.

*Roger McFadden is an industry educator, consultant, and chemist and is vice president of Coastwide Laboratories, Wilsonville, Oregon. What follows is the aforementioned Hazard Value Chart based on the Indiana Relative Chemical Hazard Score in McFadden's Article.*

## Hazard Value Chart\*

Total hazard values for ingredients sometimes used to formulate cleaning and maintenance products, according to the Indiana Relative Chemical Hazard Score (IRCHS) established by Perdue University

CAS Number	Ingredient	Total Hazard Value
151-56-4	Aziridine	60.7
7664-39-3	Hydrofluoric acid	50.0
71-43-2	Benzene	48.0
50-00-0	Formaldehyde	43.1
127-18-4	Perchloroethylene	37.5
7647-01-0	Hydrochloric acid	36.7
7782-50-5	Chlorine	31.6
64-19-7	Acetic acid	29.8
7664-93-9	Sulfuric acid	29.3
108-88-3	Toluene	29.1
75-09-2	Methylene chloride	27.2
1332-21-4	Asbestos (friable)	25.6
84-74-2	Dibutyl phthalate	24.8
67-56-1	Methanol	24.7
7664-41-7	Ammonia	21.8
111-76-2	2-butoxyethanol (Butyl cellosolve)	20.5
1310-58-3	Potassium hydroxide	19.2
141-43-5	Monoethanolamine	17.2
7664-38-2	Phosphoric acid	17.2
7681-52-9	Sodium hypochlorite	16.8
64742-88-7	Stoddard solvent	16.6
6834-92-0	Sodium metasilicate	16.2
107-21-1	Ethylene glycol	16.0
67-64-1	Acetone	15.9
1341-49-7	Ammonium bifluoride	15.0
67-63-0	Isopropyl alcohol	14.2
57-55-6	Propylene glycol	14.2
4590-94-8	Dipropylene glycol methyl ether	13.4
1310-73-2	Sodium hydroxide	13.3
64-17-5	Ethyl alcohol (ethanol)	13.2
57018-52-7	Propylene glycol butyl ether	10.3
79-14-1	Glycolic acid	9.9
111-90-0	Carbitol cellosolve	9.2
68424-85-1	Quaternary ammonium chloride	8.2
5989-27-5	d-Limonene	7.8
7320-34-5	Tetrapotassium pyrophosphate	5.2
77-92-9	Citric acid	3.4
1066-33-7	Ammonium bicarbonate	2.1
7722-84-1	Hydrogen peroxide (7%)	1.9
113976-90-2	Alkyl polyglycoside surfactant	0.2
7732-18-5	Water	0.0

\* The lower the score, the more favorable the evaluation.

## Reader's letter: Green Seal has "green" history

This letter is in response to *CM e-News Daily/CMM Online's* ongoing coverage of the Unified Green Cleaning Alliance.

### Dear Editor:

*Green Seal* is a 13-year-old nonprofit environmental labeling organization, and Green Seal's standards are the only environmental standards for products and services that meet EPA's criteria for third party certifiers.

Green Seal operates under ISO 14020 and 14024, and is the US member of the Global Ecolabeling Network, the coordinating body of the world's 27 leading ecolabeling programs including Germany's Blue Angel and Scandinavia's Nordic Swan.

Any manufacturer anywhere in the world may apply for Green Seal certification. The Green Seal is a registered certification mark with the US Patent & Trademark Office that may appear only on certified products.

*Green Seal's Environmental Standard for Industrial and Institutional Cleaners (GS-37)* was developed over the course of a year, in accordance with internationally recognized procedures for setting environmental standards.

The standard was created through an open and transparent process, involved a balanced stakeholder committee, was made available for public comment, and represents a national-level consensus for identifying environmentally responsible Industrial & Institutional (I&I) cleaners in today's marketplace.

As a point of reference, the stakeholder committee for the I&I cleaners standard included representatives from:

- Seventh Generation
- 3M
- Spartan Chemical
- Clean Environment Co.
- Church & Dwight
- US Postal Service
- Aberdeen Proving Ground
- International Executive Housekeepers Association
- American Federation of State, County and Municipal Employees
- GSA
- City of Santa Monica, CA
- MN Office of Environmental Assistance
- MA Executive Office of Environmental Affairs
- US EPA
- UMass Toxics Use Reduction Institute (TURI)
- INFORM
- Global Toxics Campaign, WWF
- Washington Toxics Coalition
- Environmental Health Coalition

The current references to and uses of GS-37 include:

### General Federal Guidance

1) EPA put out a statement in late 2001 supporting 5 environmental standards, three of which are Green Seal's (Industrial Cleaners, Commercial Adhesives, and Degreasers) and two are from ASTM (Standard Guide for Stewardship for the Cleaning of Commercial and Institutional Buildings and Standard Practice for Data Collection for Sustainability of Building Products). The statement read, in part, "... the five standards listed below are based on scientific methodology that is accurate and reproducible and provide guidance to Federal purchasers which reflect life cycle considerations and address purchasers' needs under the National Technology Transfer and Advancement Act (P.L. 104-113), and OMB Circular A-119.

"The following five environmental standards address environmental impacts in a manner consistent with EPA's guidance on environmentally preferable purchasing (FR Vol. 64, No. 161, pp. 45810-45858, 8/20/99). They address life cycle considerations and were developed through a voluntary consensus process. . . EPA recommends that Federal purchasers consider these standards when making purchasing decisions . . ."

This added further weight to considering Green Seal's standards as "national" environmental standards.

### Individual Federal Agencies

2) The Department of the Interior is adopting Green Seal Standard No. GS-37 for janitorial chemicals used at its offices and parks. DOI recommends following Green Seal standards, which are the best known and most widely accepted guidelines available.

"Green cleaning is still a relatively new concept, and managers who follow Green Seal standards, will be on the cutting edge of green cleaning . . ." (from a 2-day training course for Federal employees called "Greening the Janitorial Business").

3) EPA's EPP goals for 2005 and 2010 include "greening" all significant EPA janitorial and maintenance services contracts by 2010. One objective is that "All janitorial services contracts should meet ASTM Cleaning Stewardship for Community Buildings Standard and specify use of products which meet the Green Seal Cleaning Products Standard."

4) Aberdeen Proving Ground (US Army) funded GS-37 for use in identifying environmentally responsible institutional cleaners.

### State and Local Governments

5) The Center for a New American Dream Cleaning Products Work Group includes Massachusetts; Minnesota; Missouri; Washington; King County, Washington;

Phoenix, Arizona; Santa Monica, California; Seattle, Washington; and the Pacific Northwest National Laboratory.

They have all agreed to use the requirements of GS-37 as the requirements for cleaners in their next contracting cycle. The Massachusetts Request for Response for Environmentally Preferable Cleaning Products was recently issued and contains the Work Group contract language. Minnesota, Missouri, and Santa Monica are scheduled to issue their RFP shortly.

6) Pennsylvania is using Green Seal standards in state contracts currently and will be updating their cleaners contract to reference GS-37.

### **Green Building Efforts**

7) The Center for Health, Environment and Justice report “Creating Safe Learning Zones: The ABC’s of Healthy Schools” encourages schools to use products that meet GS-37, and the Healthy Schools Network is very close to adopting GS-37.

8) The US Green Building Council’s LEED Rating System for Existing Buildings (LEED-EB) gives a credit in the Green Housekeeping Section for using Green Seal Standard GS-37 approved cleaning products.

9) INFORM’s just-released report “Cleaning for Health: Products and Practices for a Safer Indoor Environment” recommends using GS-37 for specifying cleaning products.

All of the groups mentioned require that products meet or exceed the performance and environmental criteria contained in GS-37.

Previously, many of these groups had different requirements and ideas about what constituted “green,” but they are now using a common set of criteria.

This not only makes it easier for purchasers (who can now spend time developing contract language for other

categories where a life-cycle environmental standard does not currently exist), but also provides manufacturers with a single set of criteria instead of varying bidding requirements from numerous local, state, and federal agencies with “green” procurement programs.

With regard to Green Seal’s certification fees, for the cost of an ad in something like *CM/Cleaning & Maintenance Management*, a company can get Green Seal certification.

Incidentally, Green Seal’s evaluation fees have remained the same for the past six years.

As a non-profit environmental organization, our goal is to make the marketplace more sustainable while covering our expenses.

They are also flat fees, so there is no licensing fee or percentage-of-sales arrangement. Whether you sell one or one million products with the Green Seal, our fee is the same and we have no direct ties to that product’s success or failure in the marketplace.

Green Seal also does not accept general support funding from manufacturers—most of our funding comes from foundation and government grants.

The goal of aggregating the demand for environmentally responsible cleaners in one set of criteria has been getting closer all the time, and we are definitely seeing a response from manufacturers to this combined demand for products that meet GS-37.

Green Seal recently certified four institutional cleaners from Rochester Midland Corp., two from Hillyard Industries, and now has several other companies in the evaluation pipeline, so competitive bidding is assured.

**Arthur B. Weissman, Ph.D.**

President and CEO

Green Seal