

The Science Of Green Cleaning

How East Meadow School District mastered **cleaning for health**

By Patrick Pizzo, A.B.D., M.B.A.

ALTHOUGH THE EAST MEADOW School District, in Westbury, New York, has garnered a great deal of recognition for our green cleaning program, calling what we do “green” isn’t quite accurate. More appropriately, “cleaning for health” better describes the true intent of our program.

Cleaning for health entails finding the best products and procedures available and then implementing them correctly to produce the healthiest environment possible. In an effective cleaning program, green cleaning is not the intent, but it is often the result of using these best products and procedures.

Cleaning for health is our sustainable approach to

cleaning and building maintenance throughout the district, and it is the result of using the best products and implementing healthy cleaning procedures.

Efficacy First

The first priority in any cleaning program is to use the most effective products possible. In East Meadow, we started years ago with basic compliance to the New York State Green Cleaning Regulation. We’ve made so much progress since then that we would now consider that original program to be ineffective and not truly green.

But you have to start somewhere, and our approach was to quantify all products being used and create a baseline district-wide. From that starting point, we only switched to green products when, through testing and pilot protocol, we could identify a product which was more effective.

Proper product and procedure testing is important. Our testing is never limited to the superficial results that any product, green or not, can produce. Germ loads need to be measured, procedures evaluated and the new results analyzed against the baseline. Cleaning for health follows the results of scientific technology and peer reviewed data, not the marketing claims of manufacturers.

Identifying the best product includes researching the chemical components that comprise the product. Safety Data Sheets are important, but the chemicals contained in the product are what perform the task of cleaning, sanitizing or disinfecting.

For example, using traditional standards, biobased products and diluted petrochemicals may both be considered green, assuming they reduce health and environmental impacts compared to similar products. However, in East Meadow, diluted petrochemicals do not meet our standards for green cleaning. Why? Diluted petrochemicals may meet green standards if used as directed, but in practice are sometimes used outside the parameters of the manufacturers’ recommendations. Too often custodial staffs alter dilution rates in the false belief that doing so will have a better result.

Petrochemicals also produce volatile organic compounds



(VOCs), impacting indoor air quality (IAQ). And many petrochemical products do not break down in the environment. Instead, they accumulate, changing exposure rates, especially in classrooms that are cleaned often and have less space per occupant than is typical in office environments. Even at the recommended concentrations, petrochemical cleaners are designed for use in environments occupied by adults, versus children who are more sensitive to these chemicals.

Process And Procedures

The second priority in any good cleaning program is to find the most effective procedure for using the new products. All products, green or not, have manufacturer recommendations for proper use; not using any product correctly will decrease efficacy. This is an important point, as this is a mistake many maintenance people make — they change the product without changing the procedure. Often, when green products are not effective, the cause is the failure to alter cleaning procedures.

Cleaning products in general, and disinfectants in particular, are often over-used and over-applied. Identifying the best procedure includes identifying the most appropriate approach based on the objective.

If the goal is to remove soil, use a cleaner, which is designed to work as a surfactant, to break up and remove soil. If the intent is to sanitize, use a peroxide-based product or ionized water to decrease the germ loads. If the goal is to disinfect, use the disinfectant with the proper kill claim for the issue identified. And when training on the use of these products, always stress the correct dilution rate specified by the manufacturer.

It should be noted that the improper use of any cleaning product can adversely affect the health of students and staff. For example:

- Disinfectants are not surfactants; never disinfect without first removing

soil from the surface.

- Failure to first remove soil from a surface will lead to greater exposure to germs long-term than not disinfecting at all.

- Disinfecting without first cleaning is similar to placing calcium chloride on top of three inches of snow without shoveling first.

- Sanitizing or disinfecting without a product approved by the Environmental Protection Agency (EPA) — to act as a two-in-one cleaning and sanitizing solution — can be harmful to building occupants.

Using products incorrectly can also have an adverse effect on custodial budgets. And the success or failure of a new program can only be determined if both products and procedures are evaluated.

So, once our program began to take shape, we began to evaluate the cost impact the revised cleaning program had on our district. While our program was designed to be the most effective possible, cost was still a consideration.

Our plan was to evaluate all products and procedures, in a comprehensive way, to see if it was possible to obtain the most effective green program as part of a cost-neutral approach. Product-to-product the unit cost of green products, at that time, tended to be higher, and we did not want that to have a negative impact on our taxpayers.

Fortunately, to our surprise, as procedures changed, overall costs decreased, and we were able to conservatively identify major savings for our taxpayers. Then as green cleaning gained a larger share of the market, unit costs decreased and product-to-product green choices became cost effective, and we started to see savings from the program.

Secondary Environmental Impacts

Savings identified were entered back into our program with a wide focus on indoor environmental quality. Inside,



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proper matting and scheduled preventative maintenance became essential. And floor maintenance occurred in evenings when buildings were unoccupied, limiting exposure of VOCs and other airborne contaminants around building occupants.

Outside, natural turf fields were only maintained by use of organic solutions. This is not only required by the state of New York, it also eliminates the off chance of chemicals being tracked into buildings and affecting air quality. Chemicals used in traditional lawn treatment programs have been identified as a concern by several state

because there are different disinfectants for different needs. For example, a disinfectant using silver ions has worked better for us than a chemical benzalkonium chloride containing product for routine disinfecting, and also happens to be a green product. Also, bloodborne issues require a product with the appropriate kill claim, so we use the best available product based on the Safety Data Sheets and evaluated dwell time. Always, to effectively disinfect a surface, it must be cleaned first and then disinfected; to do otherwise is ineffective. Cleaners clean and disinfectants disinfect, so we use each product as needed, in the quantities needed.

Products used in our schools are limited to choices from an approved list for which we have Safety Data Sheets on file in accordance with the law. Random products brought in from alternative sources are not permitted, according to our procedure.

Floor chemicals are limited on terrazzo surfaces, as a diamond pad is a more effective solution from the perspective of appearance, cost and indoor environmental impact. The wax used on tile floors in East Meadow does not

contain styrene and is maintained by a different procedure than traditional wax, which reduces labor, impacting the bottom-line cost. Non-styrene containing wax also removes another petrochemical from the built environment and has a positive impact on IAQ.

Treatments for healthy lawns and weed prevention are addressed through organic and mechanical solutions. Organic treatments treat the soil; traditional treatments destroy soil chemistry. We apply organic treatments, which — once damage caused by traditional petrochemical applications is reversed — provide a superior result at a reduced cost. We have also found that natural grass, when treated organically, is a better choice for student health than natural with traditional lawn treatments or artificial turf.

In the end, cleaning for health produces the best results because it follows the science — using the correct approach determined by the identified need. The concept of green cleaning is laudable, but should be accomplished as the inevitable result of doing an effective job, not as a means to an end. We use the most effective approach, and thankfully that approach happens to also be green. **FCD**

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East Meadow Public Schools



regulations and various peer-reviewed medical journals.

But outdoor playing fields, whether natural grass or artificial turf, are a large concern.

The current debate regarding artificial turf is whether or not low-level exposure to known carcinogens is hazardous. Known carcinogens are present, according to the Safety Data Sheets of the components used.

The science is focused on what level of exposure is safe, but does not address the wisdom of taking an area that did not contain carcinogens and replacing it with a non-natural surface that does. As a result, artificial turf will not be a part of our program in East Meadow.

Where Are We Now?

We use products for cleaning that are designed to avoid VOCs, which has led us to using peroxide-based products and ionized water. Peroxide-based cleaners off-gas oxygen, not VOCs; and ionized water reverts back to water, which does not produce VOCs.

All of our custodial staff has access to a range of products, with a product identified for each task. For example, microfiber products, used after applying a surfactant, remove soil instead of distributing it across a surface, which would affect IAQ.

Training is also routinely provided to instruct on the best procedure to use approved products based on the findings of our testing program.

That training includes the proper use of disinfectants