

Cleaning and Disinfecting in the COVID-19 Era *What Educators Need to Know*

December 2020

As schools and campuses continue to return to in-person instruction during the COVID-19 pandemic, NEA members are raising questions about the health hazards of cleaning and disinfecting products and protocols. NEA affiliates continue to report concerns that the chemicals in cleaning and disinfecting products are actually making members and students sick instead of protecting them. They highlight concerns about the improper use of products—including inadequate dilution, lethal mixtures from combining products, and inadequate protection from toxic chemicals—all of which are particularly acute for staff and students who work or learn in buildings with poor ventilation.

Many employers believe that the more often school buildings are disinfected and the stronger the chemicals used, the safer and healthier they will be for students and staff. This over-use and misuse of toxic products, often referred to as “hygiene theater,” may result in less of a focus on implementing other preventative measures, such as enhanced/improved ventilation. It may also be making building occupants sick, especially those with asthma or other respiratory conditions.

This fact sheet provides information on the effectiveness and appropriateness of various cleaning and disinfecting strategies, how to recognize products that are hazardous to health, and how to assess when particular products or usages are inappropriate for schools.

Table of contents

Cleaning and Disinfecting Are Part of a Comprehensive Strategy to Combat COVID-19	2
Virus Transmission from Touching Surfaces	2
What Are the Hazards of Cleaning and Disinfecting Products and Processes?	2
Why Fragrance-Free Cleaners and Disinfectants Are Better	4
School-Related Challenges and Concerns About Cleaning and Disinfecting	5
There Are Safer Solutions	5
Understanding the Safety Data Sheet	6
Personal Protective Equipment Is Critical	6
Key Points to Consider	7
Bargaining and Other Labor-Management Engagement on Cleaning and Disinfection	8
Additional Resources	8

Cleaning and Disinfecting Are Part of a Comprehensive Strategy to Combat COVID-19

Cleaning and disinfecting frequently touched surfaces alone will not prevent the spread of COVID-19, so a comprehensive cleaning and disinfection plan is imperative as part of a broader strategy that also includes enhanced/improved ventilation, social distancing, face coverings, handwashing, and the reduction of the number of people in indoor spaces. Broadly, school-related COVID-19 guidance from the U.S. Centers for Disease Control and Prevention (CDC) refers to cleaning and disinfecting, not sanitizing. According to the U.S. Environmental Protection Agency (EPA), while both sanitizers and disinfectants kill germs, “surface disinfectant products are subject to more rigorous EPA testing requirements and must clear a higher bar for effectiveness than surface sanitizing products. There are no sanitizer-only products with approved virus claims.”¹

School authorities must also implement processes for rapidly informing public health officials, educators, educators’ unions, and families about school-based COVID-19 exposures as well as for publicly reporting such cases in a manner that is consistent with appropriate privacy protections. School authorities must also engage in and encourage contact-tracing in cooperation with public health officials; implement requirements for adhering to isolation and quarantine requirements; provide necessary personal protective equipment (PPE); and design and engage in labor-management processes, including collective bargaining and health and safety committees, where available.

School authorities should engage with educators to design and implement these and other strategies to help mitigate the disease. Educators and their unions must be involved in the development and implementation of these strategies.

Virus Transmission from Touching Surfaces

According to the CDC, “the virus that causes COVID-19 most commonly spreads between people who are in close contact with one another (within about 6 feet, or 2 arm lengths). It spreads through respiratory droplets or small particles, such as those in aerosols, produced when an infected person coughs, sneezes, sings, talks, or breathes.” Of particular relevance to cleaning and disinfection, the CDC also notes, “Droplets can also land on surfaces and objects and be transferred by touch. A person may get COVID-19 by touching the surface or object that has the virus on it and then touching their own mouth, nose, or eyes. Spread from touching surfaces is not thought to be the main way the virus spreads.”

What Are the Hazards of Cleaning and Disinfecting Products and Processes?

Cleaning and disinfecting products are hazards to those using them and others in the spaces in which they are used. Cleaners and disinfectants do different things when it comes to reducing or

eliminating germs on surfaces [see Box 1] and can contain hazardous chemicals. Some can have immediate health effects, like triggering or exacerbating asthma or causing respiratory irritation or skin or eye damage. Some can also have longer-term effects, including allergies, cancer, and harm to reproductive, endocrine, nervous, and other body systems.

BOX 1

Cleaning, Sanitizing, Disinfecting: What's the Difference?

Cleaning removes germs, dirt, and impurities from surfaces or objects. Soap/detergent, water, and friction physically removes dirt, bacteria, viruses, or fungi—that is, germs—from surfaces. Effective disinfecting and sanitizing require that a surface must be cleaned first.

Sanitizing reduces the number of germs on surfaces to levels considered safe for public health, if used as the label directs. Sanitizers, which must be registered with the EPA, are less effective at killing germs than disinfectants and must undergo a less rigorous EPA testing process for effectiveness. EPA-approved surface sanitizers do not carry virus-killing claims.

Disinfecting destroys almost all infectious germs on a surface, including viruses. It has no effect on dirt, soil, or dust. Disinfectants, which are classified by the EPA as pesticides and must be registered with the EPA, have to be used at the specific dilution/concentration and left glistening wet for the full dwell or contact time as directed on the label.

Disinfectants are anti-microbial pesticides designed to destroy germs and parasites, making them hazardous to people and, often, to the environment. Products with these powerful chemicals (“active ingredients”) must be registered with the EPA. There are about 500 disinfectants approved for use against the coronavirus on [EPA’s List N: Disinfectants for Coronavirus \(COVID-19\)](#).² As a point of caution, just because a disinfectant is included on the List N does not mean that its active and inert chemicals are not harmful, even when used according to the manufacturer’s instructions. For this reason, EPA compiles a list of active ingredients that fall within its Safer Choice program and qualify for EPA’s Design for the Environment logo. See *Additional Resources* for information on Design for the Environment and other similar programs.

The processes through which disinfectants are applied can also pose significant health risks to the individuals using them and to building occupants in the spaces in which they are applied. Electrostatic sprayers, hydrogen peroxide vaporizers, and ozone, hydroxyl, or bipolar ionization devices are marketed as time-saving and effective against the virus that causes COVID-19, but they can increase inhalation concerns and lack the independent tests required to prove their effectiveness and safety. How long products remain hazardous after being applied and how surfaces used for eating must be treated after disinfection will also vary.

EPA approves few such devices. [New Jersey has just banned the use of foggers and misters to apply disinfectants and sanitizers, unless they are specifically approved for that purpose.](#)³ Anyone using these devices must be trained on how to use the equipment, application methods, and their hazards. They also need to be fitted with the appropriate PPE and receive training on its proper use.

Broadly speaking, soap and water are effective against the novel coronavirus because when worked into a lather for 20 seconds, they destroy germs and remove germs and chemicals from hands. “Normal routine cleaning with soap and water removes germs and dirt from surfaces. It lowers the risk of spreading COVID-19 infection.”⁴ When soap and water can be used effectively, disinfectants are not needed. “Some surfaces only need to be cleaned with soap and water,” the CDC says. “For example, surfaces and objects that are not frequently touched should be cleaned and do not require additional disinfection.”⁵

It is not always possible to use soap and water effectively, and the disinfection of high-touch surfaces is often recommended; however, it is crucial to keep in mind that disinfectants raise serious concerns of their own.

Why Fragrance-Free Cleaners and Disinfectants Are Better

As the EPA notes, “clean is not a smell.” According to the EPA, “It is a common mistake to think that if a cleaning product doesn’t leave a scent after use, the product didn’t work and the area is not clean. For example, when you smell a citrus fragrance after cleaning it does not mean the product is safer, more ‘natural,’ or does its job. Cleaning, sanitizing, and disinfecting products all contain chemicals. Products that have a fragrance contain additional chemicals that may pose health risks and are unnecessary. Even ‘unscented’ or ‘fragrance-free’ products may contain chemicals, which are added to mask the smell of the chemicals. Nevertheless, it is better to buy a product marked fragrance-free than one that contains fragrance, when possible.”⁶

The EPA indicates that fragrances can be absorbed through the skin, inhaled, or swallowed. Many fragrances contain toxic chemicals. They can “irritate the lungs and trigger asthma, headaches, and allergic contact dermatitis (skin reactions),” while higher levels of some fragrance chemicals “have been linked to reproductive problems in women” or to “certain types of cancer.”⁷

School-Related Challenges and Concerns About Cleaning and Disinfecting

School environments create special challenges and concerns for cleaning and disinfecting (when it is necessary).

Consider:

- Children might be more susceptible to chemicals and other indoor air contaminants. According to EPA, “children breathe more air, eat more food and drink more liquid in proportion to their body weight than adults.” Some states ban children using disinfectants because of the hazards, although the CDC says, “disinfectants should typically not be applied on items used by children, especially any items that children might put in their mouths.”
- Disinfectants are designed for hard, non-porous surfaces. They also must remain glistening wet on surfaces (the “dwell time”) for up to 10 or 12 minutes to be effective. This can be difficult if they are used between classes and/or on desks and tables with soft or porous items on them,
- Those applying disinfectants require PPE for their eyes, skin, and lungs. If they are applied in classrooms during the school day, this takes time to don and doff (put on and remove), as well as to be sure they are available. If applied in classrooms during the school day, PPE must be readily available and there must be sufficient time for staff to properly don and doff (put on and take off) the PPE.
- First aid measures could be disruptive, eye wash stations may not exist or be within a short distance, and the removing contaminated clothing could lead to serious complications in a school environment.

There Are Safer Solutions

Cleaning or disinfecting does not have to make people sick or involve the over-use and misuse of toxic products. The most effective way to deal with hazards is prevention. Strategies like good ventilation and using less toxic products or methods (informed substitution) are effective ways to reduce harm. PPE is a crucial component of the safe application of chemicals, but it is better to use products that do not require PPE to get the job done.

BOX 2

Microfiber Materials

Microfiber cloths and mops are good choices for cleaning. They don’t kill bacteria, viruses, and other germs the way chemicals do, but they physically remove germs from surfaces. They can get rid of up to 99 percent of germs, including some viruses. The microfibers are measured in denier, the diameter of each fiber. The smaller the “denier” measurement, the better; the best ones are 0.13 denier.

Choose “environmentally preferable” products that are independently certified to contain fewer harmful chemicals than traditional ones. Look for cleaning products certified by Cradle to Cradle (silver or gold levels),⁹ Green Seal¹⁰ or Safer Choice (an EPA logo).¹¹

Certified products should not contain ingredients that are known to contribute to asthma, cancer, respiratory irritation, liver, kidney disease, or other health conditions. Requiring the use of certified products should be part of the health and safety program and related cleaning and disinfecting plans. The use of cleaning equipment designed to reduce the amount of chemicals required should also be part of the plan. Such equipment helps prevent injuries, control cross-contamination, and effectively capture dirt, dust, microbes (germs), etc. Examples include walk-off mats, high-efficiency particulate-absorbing (HEPA) vacuum cleaners, microfiber cloths and mops, and time- and energy-saving floor care machines.

Understanding the Safety Data Sheet

Federal hazard communication health and safety laws and regulations from the U.S. Occupational Safety and Health Administration (OSHA)—and state equivalents—require a chemical manufacturer, distributor, or importer to provide a Safety Data Sheet (SDS, formerly called a Material Safety Data Sheet, or MSDS) in a consistent format. According to OSHA, the SDS includes information such as the properties of each chemical; the physical, health, and environmental health hazards; protective measures; and safety precautions for handling, storing, and transporting the chemical.”¹³ Whether in hard copy or electronic format, SDSs must be readily accessible to workers when in their work areas. Product labels and training on how to use chemicals appropriately must also be provided under OSHA’s Hazard Communication Standard. However, since disinfectants are considered pesticides, the OSHA label requirements do not apply; EPA’s do. They provide detailed information about how the product is to be applied, if it can be used with a sprayer/fogger/mister, and precautions needed. It also indicates the correct dwell time for a product to be effective.

For more information, see the [OSHA brief on Safety Data Sheets](#).¹⁴ For independent individual chemical hazard information, use [ChemHAT](#)¹⁵ or [New Jersey’s Right-to-Know Hazardous Substance Fact Sheets](#).¹⁶

Personal Protective Equipment Is Critical

Check to make sure any staff using cleaning or disinfecting products have the appropriate PPE and receive training on how to use the PPE properly, including how to put it on and take it off (i.e., donning and doffing). The product label or SDS should explain what PPE is required when using that specific chemical. PPE—such as gloves, safety goggles, gowns, and respirators (for more toxic products)—should be worn when mixing, pouring, and using chemical products to prevent

skin contact, eye injuries, and other adverse health effects. Anyone using a respirator must be fit tested and trained on how to use it. For more information, check out the [CDC's document on respirators](#).¹⁷

BOX 3

OSHA Description of the Components of a Safety Data Sheet

“Sections 1 through 8 contain general information about the chemical, identification, hazards, composition, safe handling practices, and emergency control measures (e.g., firefighting). This information should be helpful to those that need to get the information quickly. Sections 9 through 11 and 16 contain other technical and scientific information, such as physical and chemical properties, stability and reactivity information, toxicological information, exposure control information, and other information including the date of preparation or last revision. The SDS must also state that no applicable information was found when the preparer does not find relevant information for any required element.”

Key Points to Consider

School administrators need to work with unions and custodial and maintenance staff to ensure that cleaning and disinfecting is done in the most effective and least hazardous way possible and as part of any broader policy that may be in place—to address not only COVID-19 but also infectious diseases in general and building maintenance. Schools, in collaboration with unions, should develop comprehensive plans that present clear protocols for routine cleaning and disinfecting. See *Bargaining and Other Labor-Management Engagement on Cleaning and Disinfection* for further information.

Among the key factors to consider when developing a cleaning and disinfecting plan are:

- When to use disinfectants and when not to (e.g., when soap and water or other non-disinfectant solutions are appropriate and when and where disinfectants are prohibited);
- Product selection, using the least toxic and most effective products for the task (e.g., using products that are EPA-approved for use against COVID-19; using “environmentally friendly” or “green” products, when possible; and using surface and room/area appropriate products);
- Practices and processes (e.g., how to clean and disinfect high-touch points and high-risk areas; use of safe equipment and methods when applying disinfectants);
- When to use disinfectants and when not to (e.g., when soap and water or other non-disinfectant solutions are appropriate and when and where disinfectants are prohibited);
- Ventilation to dilute product vapors and germs in the air;

- Availability of hazard information, SDSs, and training on products and procedures;
- The availability and usage of appropriate and properly fitted PPE;
- Proper use, dilution, and storage of cleaning and disinfecting products (for example, not mixing products, proper dwell time, and rinsing); and
- Factors specific to the population and purpose of rooms/areas (for example, desks, age of children, and eating surfaces).

Bargaining and Other Labor-Management Engagement on Cleaning and Disinfection

Where education employees have the right to bargain collectively over the range of employment issues related to COVID-19, use it to address cleaning and disinfection. If you have a collective bargaining agreement, review its content for health and safety language that addresses the issue directly or by implication. Even if you cannot bargain collectively, you can advocate with the school board and other members of the community for safe and effective cleaning and disinfecting practices.

In developing contract language or language for other labor-management work, make sure to seek the development of a comprehensive cleaning, sanitation, and disinfection plan that includes when to use disinfectants and when not to, use of the least toxic and most effective products for the task, training, storage, PPE, and other key issues.

Do not overlook opportunities that can be used in addition to bargaining or if bargaining over cleaning and disinfection is not possible. Such opportunities may include existing labor-management health care committees, health and safety committees, or COVID-19 task forces. Use, create, or repurpose committees or other mechanisms to engage with management in instances where education employees lack collective bargaining rights or where the scope of bargaining is too limited to address COVID-19 issues.

Additional Resources

Beyond Pesticides (less toxic products):

[beyondpesticides.org/programs/antibacterials/disinfectants-and-sanitizers/protecting-yourself-from-covid-19-\(coronavirus\)-without-toxic-sanitizers-and-disinfectants](https://beyondpesticides.org/programs/antibacterials/disinfectants-and-sanitizers/protecting-yourself-from-covid-19-(coronavirus)-without-toxic-sanitizers-and-disinfectants)

CDC Reopening Guidance for Cleaning and Disinfecting Public Spaces, Workplaces, Businesses, Schools, and Homes: [cdc.gov/coronavirus/2019-ncov/community/reopen-guidance.html](https://www.cdc.gov/coronavirus/2019-ncov/community/reopen-guidance.html)

ChemHAT: Chemical Hazard and Alternatives Toolbox: chemhat.org/

EPA Safer Choice: [epa.gov/saferchoice](https://www.epa.gov/saferchoice)

EPA, Design for the Environment Logo for Antimicrobial Pesticide Products:

<https://www.epa.gov/pesticide-labels/design-environment-logo-antimicrobial-pesticide-products#approved>

EPA Green Cleaning, Sanitizing, and Disinfecting: A Curriculum for Early Care and Education:

epa.gov/sites/production/files/documents/ece_curriculumfinal.pdf

EPA List N: Disinfectants for Coronavirus (COVID-19): epa.gov/pesticide-registration/list-n-disinfectants-coronavirus-covid-19

Informed Green Solutions (includes valuable resources about schools):

informedgreensolutions.org/covid-19-information

Massachusetts Toxics Use Reduction Institute: Safer Cleaning and Disinfection for Schools:

https://www.turi.org/Our_Work/Cleaning_Laboratory/COVID-19_Safely_Clean_Disinfect/Safer_Cleaning_and_Disinfection_for_Schools

Responsible Purchasing Network Safer Disinfectants List:

https://osha.washington.edu/sites/default/files/documents/Updated%20Safer%20Disinfectants%20List_March%2026,%202020.pdf

San Francisco Environment Department Recommendations: sfapproved.org

Tools for Informed Substitution: How Do You Find Safer Chemicals for the Workplace?:

wigmorising.ca/cleaning-products-can-be-green/

Endnotes

¹For this reason, sanitizers do not qualify for inclusion on the EPA's List N: Disinfectants for Coronavirus (COVID-19). For more on the EPA's List N, see this document's section on the hazards of cleaning and disinfecting products: epa.gov/coronavirus/whats-difference-between-products-disinfect-sanitize-and-clean-surfaces. Note that hand sanitizers and other sanitizing products for use on humans are addressed by the U.S. Federal and Drug Administration (FDA), not the EPA.

² EPA. (December 4, 2020). List N: Disinfectants for Coronavirus (COVID-19). Retrieved from epa.gov/pesticide-registration/list-n-disinfectants-coronavirus-covid-19.

³ New Jersey Department of Environmental Protection. (October 5, 2020). Compliance Advisory: Fogging/Misting Systems Using Disinfectants/Sanitizers as a COVID-19 Treatment – Not Permissible for Human Exposure. Retrieved from nj.gov/dep/enforcement/advisories/2020-15.pdf?utm_medium=email&utm_source=govdelivery.

⁴ CDC. (October 14, 2020). Handwashing: Clean Hands Save Lives, Frequent Questions About Hand Hygiene: Soap. Retrieved from cdc.gov/handwashing/faqs.html#soap.

⁵ CDC and EPA. (September 16, 2020). Guidance for Cleaning and Disinfecting: Public Spaces, Workplaces, Businesses, Schools, and Homes. Retrieved from cdc.gov/coronavirus/2019-ncov/community/pdf/reopening_america_guidance.pdf.

⁶ UCSF Institute for Health & Aging, UC Berkeley Center for Environmental Research and Children's Health, Informed Green Solutions, and California Department of Pesticide Regulation. (2013). Green Cleaning, Sanitizing, and Disinfecting: A Toolkit for Early Care and Education. Retrieved from epa.gov/sites/production/files/documents/ece_curriculumfinal.pdf.

⁷ Ibid.

- ⁸ CDC and EPA. (September 16, 2020). Guidance for Cleaning and Disinfecting: Public Spaces, Workplaces, Businesses, Schools, and Homes. Retrieved from [cdc.gov/coronavirus/2019-ncov/community/pdf/reopening_america_guidance.pdf](https://www.cdc.gov/coronavirus/2019-ncov/community/pdf/reopening_america_guidance.pdf).
- ⁹ Cradle to Cradle Products Innovation Institute. (2020). What Is Cradle to Cradle Certified? Retrieved from [c2ccertified.org/get-certified/product-certification](https://www.c2ccertified.org/get-certified/product-certification).
- ¹⁰ Green Seal. (2020). A Universal Symbol of Health and Environmental Leadership. Retrieved from [greenseal.org/](https://www.greenseal.org/).
- ¹¹ EPA. (November 10, 2020). Safer Choice. Retrieved from [epa.gov/saferchoice](https://www.epa.gov/saferchoice).
- ¹² UL. (2020). ECOLOGO Certification Program. Retrieved from [ul.com/resources/ecologo-certification-program](https://www.ul.com/resources/ecologo-certification-program).
- ¹³ U.S. Department of Labor, OSHA. (February 2012). OSHA Brief, Hazard Communication Standard: Safety Data Sheets. Retrieved from <https://www.osha.gov/Publications/OSHA3514.html>
- ¹⁴ Ibid.
- ¹⁵ ChemHAT.org: Chemical Hazard and Alternatives Toolbox. Protecting Ourselves from COVID-19 at Work. Retrieved from [chemhat.org](https://www.chemhat.org).
- ¹⁶ State of New Jersey Department of Health. (2020). Right to Know Hazardous Substance Fact Sheets. Retrieved from web.doh.state.nj.us/rkhsfs/indexfs.aspx.
- ¹⁷ CDC. (June 9, 2020). Respirator On / Respirator Off. Retrieved from [cdc.gov/coronavirus/2019-ncov/downloads/hcp/fs-respirator-on-off.pdf](https://www.cdc.gov/coronavirus/2019-ncov/downloads/hcp/fs-respirator-on-off.pdf).