Quaternary Ammonium Disinfectants: Even During the Pandemic, "Quats" Should Not Be Used Around Children

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What are quaternary ammonium products?

As schools and other institutions, as well as worried parents, make efforts to protect against Covid-19 transmission, they are increasingly turning to disinfectants - including quaternary ammonium compounds ("quats"). Quats are a class of chemicals with disinfecting properties (kill bacteria, viruses and fungi). Many of the disinfectants listed by the U.S. Environmental Protection Agency for use on the COVID-19 virus contain at least one quat.

What are the health concerns around quats?

Scientists have found that quats can disrupt important cellular pathways. Exposure to two quat compounds, alkyldimethylbenzylammonium chloride (ADBAC) and didecyldimethylammonium chloride (DDAC), has been linked to developmental and fertility problems in mice. According to an article from Mount Sinai Selikoff Centers for Occupational Health and NYU School of Medicine Bellevue/NYU Occupational & Environmental Medicine Clinic, exposure to quats has the potential to cause "serious and preventable health effects" including contact dermatitis, triggering asthma symptoms or new onset asthma, and eye and mucous membrane injuries from splashes or contact with mists containing quats.

Children are uniquely susceptible to the health effects of environmental hazards, including quats. Their rapid development, immature organs, and the fact that they eat, drink, and breathe more per pound of body weight than adults make children particularly vulnerable to environmental exposures.

Are quats necessary to prevent Covid transmission in schools and homes?

No. In fact, using quats can create a different set of health problems. The most recent guidance on reopening schools from the American Academy of Pediatrics says, ***"Disinfectants such as bleach and those containing quaternary ammonium compounds or "Quats" should not be used when children and adolescents are present, because these are known respiratory irritants."*** It also notes that children "should not be present when disinfectants are in use and should not participate in disinfecting activities" because these products are not safe for children.

How can I select a safer disinfectant?

The American Academy of Pediatrics schools guidance recommends use of disinfectants on U.S. EPA's List N, which are approved for use against Covid. But it notes that when possible, *"only products labeled as safe for humans and the environment…containing active ingredients such as hydrogen*

peroxide, ethanol, citric acid, should be selected from this list, because they are less toxic, are not strong respiratory irritants or asthma triggers, and have no known carcinogenic, reproductive, or developmental effects."

The Responsible Purchasing Network identifies some of the safer disinfectant products included on the U.S. EPA's List N. Some included on List N also appear on San Francisco's Safer Products and Practices for Disinfecting and Sanitizing Surfaces and U.S. EPA's Design for the Environment Program.

It is also important to consider the "signal word" on the product label and avoid those with a *Danger* label. The signal word indicates the product's short-term toxicity. A "danger" label indicates the greatest acute hazards to eyes and skin and for oral, dermal and inhalation toxicity.

Toxicity Category	I	II	III	IV
Signal Word	DANGER	WARNING	CAUTION	None required

What are the proper methods for using disinfectants?

Quats, like all disinfectants, are classified as pesticides and regulated as pesticides by the U.S. EPA. When it comes to pesticides, "the label is the law." Label instructions must be followed scrupulously. For example, if the label instructs the user to keep the product away from children or wear certain types of personal protective equipment when using the product, those instructions must be carefully followed. **Not complying with the label is a violation of federal and state law.**

The U.S. Centers for Disease Control and Prevention's cleaning and disinfecting guidance should be followed. Cleaning with plain soap and water should be done before using a quat or other disinfectant as this increases its effectiveness. The label may indicate the "dwell time," which is the amount of time the disinfectant must remain on the surface prior to being wiped down.

Since quats are pesticides, their use must also comply with any state, local or school pesticide laws or policies. These typically require or encourage the use of Integrated Pest Management, a well-established best practice that reduces the use of harmful pesticides.

What is the big picture on quats?

Given children's exquisite sensitivity to toxic chemicals, school decisionmakers and parents should make every effort to avoid quats and purchase only the safest cleaners and disinfectants. Every school district should have a written green cleaning policy. In some cases, these are required by state or local law or policy. For example, Illinois has a statewide law mandating school green cleaning policies - and use of quats or any other disinfectant must be in compliance.

Sources

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