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# Schools Are Spending Millions on Ionization Technology to Fight the Coronavirus. There's No Good Evidence It Works.

By Ross Pomeroy

January 21, 2021

In October, Tulare City School District in California **announced** it would spend more than \$400,000 to install needlepoint bipolar ionization technology into the ventilation systems of its 15 schools. Gloucester County Schools in Virginia **completed** a similar undertaking in all of its buildings in December. The bill? \$923,488. Anoka-Hennepin School District in Minnesota recently **spent** \$1.4 million installing the technology in all of its schools.

Near **identical stories** are **playing out** in public school **districts across** the United States – with total expenditures in the tens of millions of dollars, perhaps more – as officials search for solutions to protect classrooms from the novel coronavirus. Unfortunately, in this case, school administrators may have fallen for snake oil, and taxpayers are footing the bill.



The MTA is testing the new technology which its Maryland-based developers claim uses an electrical field and ionized particles to eradicate 100% of airborne viruses, bacteria and particulates, including COVID-19.

(AP Photo/Kathy Willens)

According to **the makers** and **marketers** of needlepoint bipolar ionization technology, when installed into existing ventilation systems, their relatively small devices create and release ions into the airstream. "When these ions disperse throughout a space, they seek out and form bonds with particles in the air through a process called agglomeration," Global Plasma Solutions (GPS) **claims**. "This creates a snowball effect in which particles begin to cluster together. The larger a cluster of particles becomes, the easier it is for your system to safely filter it out of the air."

The company **touts** that their products inactivated 84.2% of coronavirus particles after 10 minutes; 92.6% after 15 minutes; 99.4% after 30 minutes.

Prevention (CDC), including but not limited to social distancing, hand hygiene, cough etiquette, and the use of face masks."

There's no such disclaimer on the website of PlasmaAir, another maker of the technology. Instead, the company **features a 28-page summary** of laboratory research to support their claims of efficacy. But the cited studies are unconvincing. Most tested the ionization devices on small rooms or tiny chambers without sufficient controls. Moreover, none of the research is peer-reviewed.

In an **interview with NBC News**, William Bahnfleth, a professor of architectural engineering at Penn State University, was skeptical of ionization filtration. "Much of the proof of their performance is in the form of laboratory studies commissioned by manufacturers that are often performed under conditions that are not representative of actual application conditions."

L. James Lo, an assistant professor of civil, architectural and environmental engineering at Drexel University, **told NBC** that this sort of technology may not have much of an effect in real-world situations.

"Most coronavirus transmission occurs from direct close, unmasked interactions that are unlikely to be impacted by ionization," Dr. Michael Kaiser, former CEO of the Louisiana Public Hospital System, **said**. "Placing ionizers into the environment would not preclude the need to frequently wash hands, socially distance, and wear a mask."

The American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) **does not currently have a formal position** on bipolar ionization, but they do offer caution:

ASHRAE adds, "Convincing scientifically-rigorous, peer-reviewed studies do not currently exist... Systems may emit ozone, some at high levels."

**Ozone**, or trioxygen, is a powerful oxidant that can acutely or chronically harm respiratory health depending upon the concentration.

GPS insists that their products are safe and certified as "ozone-free".

Personal air purifier ionization devices have been sold to the public for some time, but **according to the Mayo Clinic**, they are generally not beneficial, and can exacerbate symptoms of asthma due to the creation of ozone in the air. Broader health effects have not been explored.

"My understanding is the possible adverse effects of ionizers, whether directly from inhaling them or from impacts on uptake of particulate matter in the respiratory system are not well studied," Bahnfleth **said**.

While school districts are probably not putting their pupils at much risk by installing bipolar ionization devices, they're likely not making them any safer from COVID-19 either, and wasting millions of dollars in the process.

*\*Correction 1/27: This article previously stated that GPS had removed the claim that their technology is effective against coronavirus. They have not.*