

# Health systems eliminating a form of anesthesia that hangs in the air for more than a decade after use

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Philadelphia-area health systems are phasing out a common anesthesia gas that hangs in the atmosphere for 14 years. Desflurane is the most

potent greenhouse gas found in hospitals, which are increasingly engaged in efforts to reduce their carbon footprint.

Desflurane was once favored by doctors because it leaves the body quickly, enabling patients to wake up within minutes of the anesthesia gas being turned off. But another inhaled anesthesia, sevoflurane, is now considered a better option for most patients because it is less likely to cause nausea and is less irritating to the airway. Sevoflurane is also much less harmful to the environment, dispersing in the atmosphere in a little over a year.

Children's Hospital of Philadelphia and Virtua Health have already eliminated desflurane. Virtua is increasingly shifting away from all inhaled anesthetics and encouraging doctors to opt for anesthesia drugs that can be delivered through an IV, without emitting [greenhouse gases](#).

Main Line Health has also reduced its use of desflurane, though the system's hospitals plan to keep it on hand for select cases.

Penn Medicine has phased out desflurane at four of its six hospitals—Hospital of University of Pennsylvania, Pennsylvania Hospital, Penn Presbyterian Medical Center and Princeton Medical Center. The two Penn hospitals still using desflurane, Chester County Hospital and Lancaster General Hospital, will stop using it by the end of the year.

The push to eliminate the harmful greenhouse gas is part of broader climate initiatives at Philadelphia-area hospitals, with research showing that the health sector contributes about 9% of national greenhouse gas emissions, according to the U.S. Department of Health and Human Services.

Penn and Main Line Health last month joined more than 130 health

organizations nationally that have signed on to the Health Sector Climate Pledge created by the White House and the Department of Health and Human Services in 2022.

Jefferson Health is part of a sustainability initiative by The Joint Commission, a leading hospital accreditation organization.

There's also a [business case](#) for becoming more environmentally friendly: Penn expects to save millions of dollars through its emissions reduction initiatives.

"Of course, it's the right thing to do," said Greg Evans, the corporate director of sustainability for University of Pennsylvania Health System. "Being environmentally conscious doesn't have to cost money. It can actually be a significant savings."

## **How one health system is reducing emissions**

The national [health sector](#) climate pledge calls for health organizations to cut greenhouse gas emissions in half by 2030 and eliminate emissions by 2050.

Penn expects that shifting away from electricity to [solar power](#) will account for more than half of its emissions reduction. Penn recently finalized a 25-year solar contract that will provide 70% of the energy for its Philadelphia hospitals and buildings, and save "a couple million dollars" over the course of the contract, Evans said.

Penn has also found energy savings in its operating rooms, which account for a significant portion of any hospital's waste because they require advanced air filtering, powerful lights, and produce lots of medical waste from individually wrapped tools, many of which can't be reused.

Staff now turn off air-filtration systems when operating rooms aren't in use overnight and on weekends. The hospitals are reducing the amount of medical waste that must be specially disposed of by using smaller receptacles, to ensure they're used only for soiled materials—not regular trash.

Some single-use medical supplies, such as pulse oximeters and scalpels, are now collected and sent to a plant that sanitizes and refurbishes them, then sells them back to the health system at a discounted price.

Other moves, such as giving employees incentive to commute by public transit, reducing medical waste, and phasing out high-pollutant medications, like desflurane, will also be critical to meeting Penn's ambitious zero-emissions goal.

## **Phasing out a potent anesthesia drug**

Penn can save tens of thousands of dollars by eliminating the anesthesia gas desflurane. For example, its Princeton hospital saves about \$40,000 a year by no longer purchasing the medication.

Princeton began exploring the idea of phasing out desflurane in 2021, after national anesthesia organizations began publishing findings about the drug's environmental toll, said Bridget Ruscito, chair of the department of anesthesiology at Princeton Medical Center.

Desflurane is inhaled through a breathing tube. It can be used alone, but more often is used with an IV anesthetic. Doctors once favored it because patients can recover more quickly, which is especially important if they are not staying overnight at the [hospital](#) after their procedure. But it can irritate airways and cause nausea.

Sevoflurane, another anesthesia gas, is now preferred in most cases. It

disperses in the atmosphere after a little over a year, compared to the decade or longer desflurane remains in the air.

Ruscito first asked providers at Princeton to consider sevoflurane or other alternatives before using desflurane, and opt for a slow-flow ventilator if they chose to use desflurane.

When no one seemed to push back, she asked the department, "Would anyone care if we got rid of it entirely?"

Princeton stopped using desflurane in 2022, "and we haven't looked back," Ruscito said.

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