

Eliminating Desflurane

Germana Silva, MD, Andrew Waberski, MD, Jason Bryant, MD

Why are we eliminating desflurane?

Desflurane is the most environmentally harmful and expensive inhaled anesthetic.¹

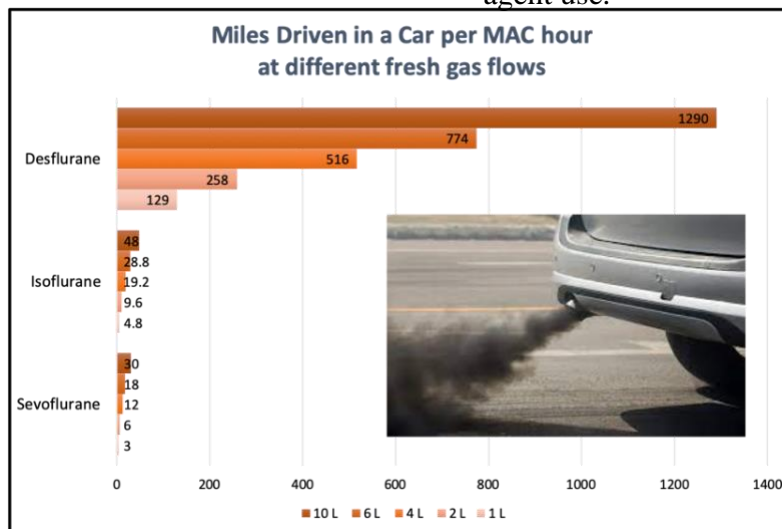
- Desflurane’s Global Warming Potential is **2540** times that of CO₂, **20** times that of sevoflurane, and **15** times that of isoflurane.^{1, 3}
- Desflurane’s atmospheric half-life is longest (10 years). Sevoflurane has an atmospheric half-life of 1.2 years, and isoflurane has an atmospheric half-life of 3.6 years.³
- Desflurane is **twice** as expensive as sevoflurane, and four times as expensive as Isoflurane.⁴
- Nationwide, desflurane has been eliminated at multiple institutions, savings on the order of 100,000 to millions of dollars.^{5,6}
- There is no significant clinical advantage to desflurane based on solubility and lack of compound A production.^{2,3,4}

What other steps can you take to reduce inhaled anesthetic atmospheric waste?⁴

- Utilize low fresh gas flows (see Low Flow Anesthesia One-Pager).
- Avoid high impact inhaled agents: desflurane, nitrous oxide.
- Consider intravenous techniques.
- Invest in waste anesthesia gas trapping or destroying technology.

How can you and your institution help?

1. **Eliminate** desflurane from your institution.
2. **Educate, Advocate, and Standardize** practice for low fresh gas flows and the reduction in the use of inhaled agents.
3. Add alarms and warnings to give **feedback** to providers for high gas flows, high environmental impact, and expensive inhaled agent use.



References:

1. Sherman J, Ryan S. Ecological responsibility in anesthesia practice. *Int Anesthesiol Clin*. 2010 Summer;48(3):139-51.
2. Eger, E Shafer S. Tutorial: Context-Sensitive Decrement Times for Inhaled Anesthetics. *Anesth Analg*. 2005;101 (3): 688-96.
3. MJ, Haung K, Lagasse R, Senay E, Dubrow R, Sherman JD. “Health Care pollution and Public Health Damage in the United States: an Update. *Health Aff (Millwood)*. 2020; 39 (12): 2071-2.
4. Bryant J, Tobias J. Cost Containment of Inhaled Anesthetic Agents in Pediatric Anesthesia: How Much Does Reducing the Fresh Gas Flow Matter? *J Anesth Clin Res* 2019; 10:4
5. Sherman, J. “Inhaled Anesthesia Climate Initiative and Research.” Yale Center on Climate Change and Health, <https://ysph.yale.edu/climate/phes/anesthesia/>.
6. Going Green in the OR. Kaiser Permanente, 15 Feb. 2019, <https://about.kaiserpermanente.org/our-story/news/in-the-news/going-green-in-the-or>.