



Sustainability Minute

Anesthesia Gases



Stanford Facilities Services &
HEALTH CARE Planning (“FS&P”)

Insert Month and Year

What are the anesthesia drugs?

Gases:

- Desflurane
- Isoflurane
- Sevoflurane
- Nitrous Oxide

Liquids:

- Propofol
- Etomidate
- Barbiturates
- Benzodiazepines



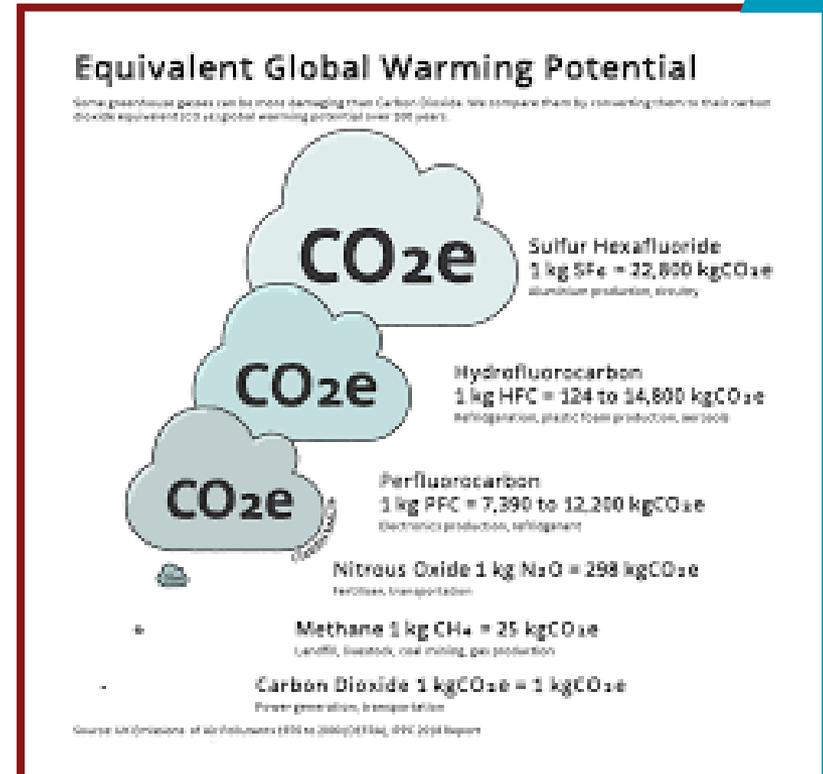
Several combinations of gases and liquids are used during procedures, depending on several factors related to the patient, their condition and the extent of the procedure.

Global Warming Potential for gases

Global warming potential (GWP) is the heat absorbed by any greenhouse gas in the atmosphere, as a multiple of the heat that would be absorbed by the same mass of carbon dioxide (CO₂). GWP is 1 for CO₂

GWP is calculated for a 100 year span and for a 20-year span. The difference between the two indicates the longevity of the gas.

Methane as an example has a GWP of 28-36 over 100 years so it holds 28-36 times as much heat energy as carbon dioxide for 100 years.



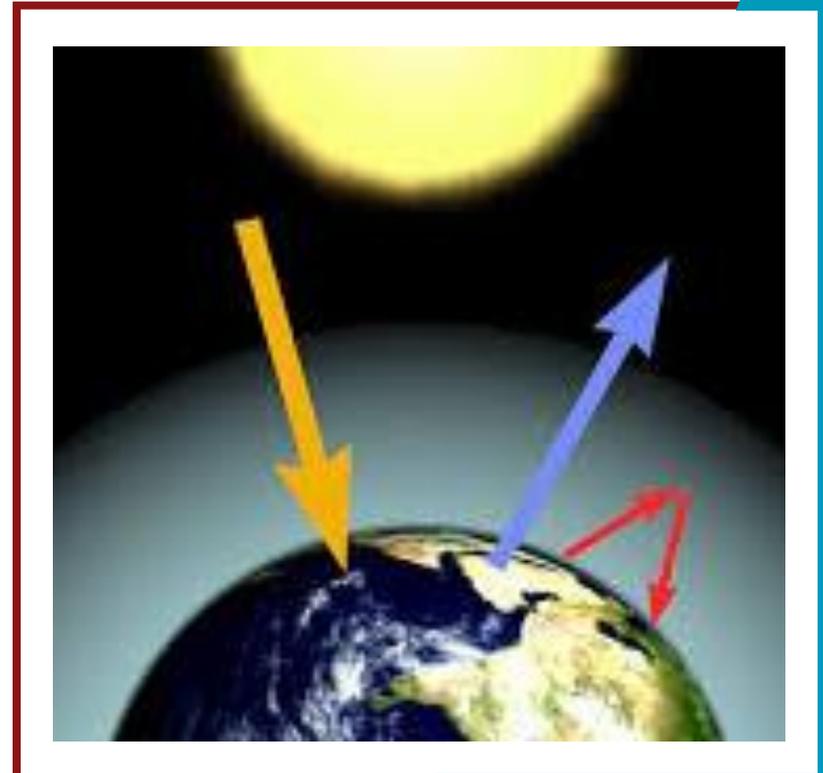
What is the environmental impact of anesthesia?

Nitrous Oxide

- Nitrous Oxide represents 99% of the anesthesia gases used at SHC
- Nitrous Oxide is 300 times more impactful to global warming than carbon dioxide.
- In 2018, the SHC/LPCH main campus purchased 20,499 pounds of Nitrous Oxide which emitted 2,771 metric tons of Carbon Dioxide Equivalent, making it the third highest source of emissions for the hospitals.
- Nitrous Oxide that is emitted today remains in the atmosphere for more than 100 years.

Other Gases

- While we haven't included the other gases in our GHG calculations, their GWP's are as follows:
 - Sevoflurane = 349 GWP20
 - Isoflurane = 1401 GWP20
 - Desflurane = 3714 GWP20



Anesthetic gases are not metabolized by the body. The body benefits from them and then the body exhales them directly into the air.



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