Anesthetic gases heat climate as much as 1 million cars

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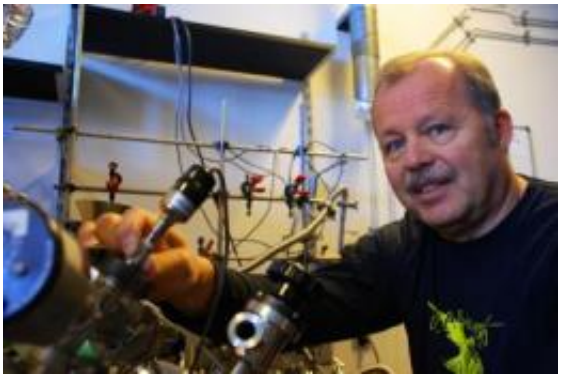

Copenhagen Chemist Ole John Nielsen analyses how various chemical compounds will degrade in the atmosphere. And how they affect climate while they are there. He has revealed that anesthetic gases have a global warming potential more than a thousand times higher than CO2. Credit: Jes Andersen

When doctors want their patients asleep during surgery they gently turn the gas tap. But Anaesthetic gasses have a global warming potential as high as a refrigerant that is on its way to being banned in the EU. Yet there is no obligation to report anaesthetic gasses along with other greenhouse gasses such as CO_2, refrigerants and laughing gas.

One kilo of anaesthetic gas affects the climate as much as 1620 kilos of CO_2. That has been shown by a recent study carried out by chemists from University of Copenhagen and NASA in collaboration with anaesthesiologists from the University of Michigan Medical School. The

amount of gas needed for a single surgical procedure is not high, but each year surgery related anaesthetics affects the climate as much as would one million cars, states a new report in respected medical journal "*British Journal of Anaesthesia*".

Analyses of the anaesthetics were carried out by Ole John Nielsen, a Professor of atmospheric chemistry at the University of Copenhagen. And he's got an important message for doctors.

"We studied three different gasses in regular use for anaesthesia, and they're not equally harmful," explains Professor Nielsen

All three are worse than CO_2 but where the mildest ones have global warming potentials of 210 and 510 respectively, the most harmful will cause 1620 times as much global warming as an equal amount of CO_2, explains the professor.

"This ought to make anaesthesiologists sit up and take notice. If all three compounds have equal therapeutic worth, there is every reason to choose the one with the lowest global warming potential", says professor Ole John Nielsen.

The three anaesthetic gasses isoflurane, desflurane and sevoflurane were studied at the Ford atmospheric laboratories near Detroit, Michigan. Mads Andersen of NASA's Jet Propulsion Laboratories collaborated on the analyses with Ole John Nielsen who is his former PhD supervisor. He relates how he got the idea for the study while his wife was giving birth.

"The anaesthesiologist told me, that the gas used is what we chemist know as a halogenated compound. That's the same family of compound as the Freon that was famously eating the ozone layer back in the eighties" says research scientist Mads Andersen.

But the gasses are also related to HFC-134a which is slated to be banned across Europe from January 2011. With a global warming potential some 1.300 times that of CO_2, HFC-134a is in the exact same range as the worst of the knock-out gasses. Not that the amounts of anaesthetic used warrant a ban as far as Professor Ole John Nielsen is concerned. But that doesn't mean we should be unconcerned.

"The surprising properties of anaesthetic gasses are an important reminder to anyone using any kind of gasses. They really ought to examine the atmospheric fate of them, before releasing them into nature", says Professor Nielsen.

Provided by University of Copenhagen