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THE ENVIRONMENTAL IMPACT OF GASES IN VITREORETINAL SURGERY - A SCOTTISH SURVEY AND FUTURE PLANS TO REDUCE GLOBAL WARMING POTENTIAL

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As in all walks of life there has been an increasing focus on the environmental impact of activity. This includes medical practice. The fluorinated gases used in vitreoretinal (VR) surgery as a tamponade agent have a unique character of having an excessive Global Warming Potential (GWP). We surveyed the use of these gases in Scottish VR practice and produce results here, as well as variation in protocol to mitigate the GWP of these greenhouse gases.

Survey of annual use VR surgical gases in Scotland with variation in protocols and their impact on GWP.

In the year 2024 - 6.34 tonnes of CO2 equivalent was produced in Scotland through the use of VR gases.
Of the 3100 mls of gas ordered, 2480 mls was discarded.
Of the 6 VR units in Scotland one exclusively used C2F6 (which is half as potent as Sf6 in GWP). Another unit used multi dose canisters, saving any gas from being discarded.
Combining these two measures across all units in Scotland would potentially lead to a saving of 5.6 tonnes of CO2 annually in addition to a saving of £14,000 (EURO 16000).

We need to be aware of the global warming potential of the gases we use in VR surgery. Changing practice to use C2F6 (or air) as well as using multi dose canisters exclusively will lead to sizeable savings in CO2 emissions and cost.

The use of fluorinated gases and quantification of carbon emission for common vitreoretinal procedures.
Moussa G et al.
Eye (Lond). 2023 May;37(7):1405-1409.
Reducing the use of fluorinated gases in vitreoretinal surgery. Teh, B.L., et al. Eye 38, 229–232 (2024).