POSITION PAPER

Dichloromethane emissions and HFC 32

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A recent scientific paper[1] has considered the potential impact of dichloromethane emissions on the recovery of the ozone layer. This paper has resulted in uninformed assertions that the use of dichloromethane for the production of HFC 32 (difluoromethane) could delay the recovery of the ozone layer.

Dichloromethane is not classed as an ozone depleting substance under the Montreal Protocol. It is a Very Short-Lived Halogenated Substance with an annual mean lifetime in the atmosphere less than 6 months. However, a small fraction of VSLS may be transported into the stratosphere, where it could contribute to stratospheric halogen loading.

While the scenarios used for dichloromethane emissions forecasts until 2050 warrant a more detailed discussion, it is important to put in context the resulting claims about HFC 32 production.

Emissions from use of feedstock for HFC production

The recently published 2017 TEAP progress report[2] sets out emissions estimates from feedstock use. "For the purpose of compiling national greenhouse gas inventories, the Intergovernmental Panel on Climate Change (IPCC) recommends an emissions factor for HFCs from their manufacture of 0.5%. There is no similar international technical consensus for estimating ODS emissions associated with ODS feedstock uses, however, the chemicals, operational processes, and emissions abatement technologies involved are very similar and can be considered technically analogous to those for HFC production. In order to generate some indicative estimations of ODS emissions, the IPCC emission factor of 0.5% for HFC production has been applied as a surrogate for ODS used as feedstock. Current HFC-32 production is estimated as 92,000 tonnes and this would require about 150,000 tonnes of dichlormethane as feedstock. Applying an emission factor of 0.5% results ***in dichloromethane emissions of 750 tonnes of dichloromethane annually***.

[1] The increasing threat to stratospheric ozone from dichloromethane, Ryan Hossaini1, Martyn P. Chipperfield Stephen A. Montzka, Amber A. Leeson1, Sandip S. Dhomse & John A. Pyle, NATURE COMMUNICATIONS | 8:15962 | DOI: 10.1038/ncomms15962 |www.nature.com/naturecommunications

[2] May 2017 TEAP Progress Report page 43

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Current and forecast emissions of dichloromethane

The Hossiani paper calculates current emissions of dichloromethane to be 1.2 million tonnes/year. The paper contains three scenarios with emissions estimated at between 1.2 million tonnes and 10 million tonnes by 2050.

Emissions of dichloromethane from HFC-32 production in context

Global HFC consumption will be controlled under the Montreal Protocol by the adoption of the Kigali Amendment. However even if the annual production of HFC 32 were to be 1 million tonnes in 2050, the emissions from use of dichloromethane as feedstock ***is estimated at 8000 tonnes annually based on a 0.5% emission factor. This represents between 0.1% and 1% of the dichloromethane emissions calculated in the Hossaini paper for the three scenarios.***

In conclusion, dichloromethane has a range of uses including as a solvent. Its use as a feedstock for HFC 32 production is insignificant in the context of the scenarios presented in the Hossaini paper, and this use will have essentially no impact on the recovery of the ozone layer.

The European FluoroCarbons Technical Committee is a Cefic Sector Group that monitors the constantly changing legislation related to HFCs (hydrofluorocarbons), PFCs (perfluorinated carbons) and SF_6 (sulphur hexafluoride), CFCs (chlorofluorocarbons), HCFCs (hydrochlorofluorocarbons), in the EU and at global level.
Fluorocarbons are used as feedstock, as refrigerants, as solvents and as blowing agents for insulation plastic foams.

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