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Potential for future threats to ozone recovery from "short" and "very short-lived" halocarbons

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Evidence now exists to show that a fraction of surface emissions of 'very short lived' (VSL) halocarbons (e.g. those with lifetimes of weeks to months) are transported to the tropical tropopause layer and hence can contribute to stratospheric halogen loading. This fraction approaches unity for short-lived gases with atmospheric lifetimes of several months to a year. From measurements in northern hemispheric firn air we have noted that, whilst the abundances of many short and VSL chlorocarbon gases have declined in recent decades, trichloromethane (chloroform) is no longer declining and dichloromethane (methylene chloride) is increasing, presumably from anthropogenic sources in both cases. In a separate study we have confirmed previous reports of emissions of short-lived and VSL methyl halides (CH3Cl, CH3Br, and CH3I) from rapeseed. Similar emissions were observed from all ten varieties of winter flowering rape studied, but we conclude that the emissions rates are not as high as in some previous estimates. Global production of rapeseed is rising rapidly. Finally, measurements of emissions of VSL polyhalocarbons from several tropical seaweeds have been made in Malaysia, with pronounced species variations. This is of note due to proposals for large scale cultivation of seaweeds in tropical regions for biofuel and carbon sequestration. Consideration will be given to the possible implications for rising abundances of short and very short-lived halocarbons on stratospheric halogen loading.