Geophysical Research Abstracts, Vol. 9, 07271, 2007
SRef-ID: 1607-7962/gra/EGU2007-A-07271

Emissions of Montreal Protocol gases from landfills in the US

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Several recent studies indicate that lingering emissions of CFC-12, CFC-11, CFC-113, and CH_3CCl_3 are occurring around urban areas in the US. Continuing emissions of these Montreal Protocol gases could extend the recovery time needed for the stratospheric ozone layer. One possible source for these emissions is leakage from landfills. Landfill emissions are not currently considered explicitly in the published industry based global estimations of emissions for these gases. Previous studies have been done in the UK and suggested that this leakage may be significant (on the order of 1 Gg/year in the UK) in comparison with industry emissions estimates, but no measurement based estimates of Montreal Protocol gas emissions from US landfills have been previously reported. To further investigate this idea, flask samples were taken during the fall of 2006 at seven Eastern Massachusetts landfills. Monthly flask samples were also taken at one Massachusetts landfill from July 2005-December 2006. The 1.5 year study will be analyzed for correlations with temperature, pressure, and rainfall trends, while the emissions data from the multiple landfill study will be regressed against landfill parameters (waste composition, landfill age, and total trash volume) to estimate total halocarbon gas emissions of CFC-12, CFC-11, CFC-113, and $CH_3CCl_3$from landfills in the United States.