Radical reactions of CH_2NH in the atmosphere.

A.J. Bunkan[a)] and C.J. Nielsen[a)]

a) *Centre for Theoretical and Computational Chemistry, Department of Chemistry, University of Oslo, Norway*

A CO_2 post combustion capture facility employing amine technology is under construction at Mongstad. Given the scale of implementation of post-combustion CCS, it is likely that there will be relatively small but still significant discharges of amines to the atmosphere during operation. There is also the potential for larger scale accidental discharges. CH_3NH_2, $(CH_3)_2NH$, $(CH_3)_3N$, are among the process degradation products of the more complex amines used in CO_2 capture, and will therefore always be emitted with the cleaned flue gas to the atmosphere no matter which parent amine is used in the absorber.

CH_2NH is identified as a major photo-oxidation product from CH_3NH_2. Possible atmospheric sinks are reactions with OH, Cl and hydrolysis.

Results from CASPT2, CCSD and CCSD(T) calculations on the OH + CH_2NH reaction system are presented.