We have proposed that chloroalkane pollutants in hydrocarbon streams may be removable photocatalytically, potentially with sunlight. In order for this to work photocatalysis must occur at a reasonable rate even at low concentrations of the chloroalkane. This was tested with FeCl$_4^{2-}$ as a homogeneous photocatalyst.

The graph shows the rate of formation of HCl (from the decomposition of chloroform) in mixtures of CHCl$_3$ and C$_6$H$_{12}$ containing 3 x 10$^{-5}$ M (Bu$_4$N)$_2$FeCl$_4$, under broadband ($\lambda > 380$ nm) irradiation. It would be highly desirable to see the linear relationship continue to much lower concentrations of CHCl$_3$; however, the tetrachloroferrate catalyst was not soluble below 15% CHCl$_3$. This work will be followed up by studies using heterogeneous photocatalysis.