

*Iron-Mediated Photochemical Decomposition of Methylmercury in an Arctic
Alaskan Lake*

(es-2010-006934R1)

By Chad R. Hammerschmidt and William F. Fitzgerald

Three pages, including one table and one figure

.

Table S1. Physicochemical characteristics and rate constants of monomethylmercury (CH_3Hg^+) photodecomposition (± 1 standard deviation) in four arctic Alaskan surface waters.^a

Water source	pH	DOC (μM)	CH_3Hg^+ photodecomposition (d^{-1})
Toolik Lake	7.6	380	0.158 ± 0.037
Green Cabin Lake	7.6	340	0.167 ± 0.012
Island Lake	7.5	340	0.170 ± 0.026
Tundra pore water	5.3	830	0.135 ± 0.031

^aRate constants determined from a 2-d incubation (initial $\text{CH}_3\text{Hg}^+ = 11 \text{ pM}$) at the surface of Toolik Lake (photosynthetically active radiation = $57 \text{ E m}^{-2} \text{ d}^{-1}$; temperature = $13.2 \pm 0.4 \text{ }^\circ\text{C}$). DOC = dissolved organic carbon.

Figure S1. Photochemical decomposition of CH_3Hg^+ (initial, 11 pM or 1.1×10^{-11} M) in 0.2- μm filtered surface water of Toolik Lake incubated for 2 d at the surface (PAR = $43 \pm 14 \text{ E m}^{-2} \text{ d}^{-1}$; T = $17.1 \pm 0.3 \text{ }^\circ\text{C}$) across a concentration gradient (initial) of added organic molecules, formic acid and dimethylsulfoxide (DMSO), that scavenge $\bullet\text{OH}$. Dashed line represents mean rate constant for CH_3Hg^+ decomposition in Toolik Lake water exposed to sunlight without added organic molecules ($k = 0.16 \pm 0.01 \text{ d}^{-1}$) .

