



DETECTION // TREATMENT // REGULATION

EMERGING CONTAMINANTS  
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# EVALUATION OF CURRENT USE C6 AFFF: CONTENTS AND TREATMENT OPTIONS

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# AFFF problem

- **Environmental concerns with AFFF use** for firefighting and training activities: fluorine-containing AFFF foams contain PFAS which are difficult to remove from the environment or to treat.
- According to the USEPA, currently available industrial formulations of AFFF **should be free from long-chain perfluoroalkyl acids (PFAAs)** which are the most commonly found PFAS in the environment and reported to be the most problematic.
- This work characterizes industrially formulated AFFF samples and assesses the effectiveness of electrical discharge plasma in degrading those.

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graph TD; A[Characterization of four AFFF samples] --> B[Optimization of heat-activated persulfate oxidation]; B --> C[Plasma-treatment of oxidized AFFF samples];
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Characterization of four AFFF samples

Optimization of heat-activated persulfate oxidation

Plasma-treatment of oxidized AFFF samples

C6 AFFF samples contained high concentrations of short-chain PFAAs, traces of long-chain PFAAs and significant amounts of precursors (e.g. 6:2 FTS).

Pre-oxidation fully oxidized (>99%) the precursors into long-chained PFAS and decreased the plasma treatment time.

Plasma effectively degraded PFAS in diluted AFFF samples; >99% of precursors and long-chain PFAAs were removed after 30 minutes of plasma treatment.