

AOP of NDMA using Low Pressure UV and Reflective Technology

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STATUS: **NEW** X Continuation

Rationale

- N-Nitrosodimethylamine (NDMA) is a semi-volatile organic compound contaminating drinking water supplies. It is a highly potent hepatotoxin, which is not easily biodegradable and difficult to detect. The molecule is highly hydrophilic and the conventional drinking water treatment processes are ineffective at its removal. Its wide spread occurrence requires effective remediation method.

Objective

- The objective is to evaluate the reflective technology based UV reactor for remediation of NDMA by UV oxidation and advanced oxidation using peracetic acid.

Approach

- UV reactors with 220 and 254 nm lamps housed in highly reflective chamber are used to study the synergistic effect of UV and peracetic acid for increased remediation of NDMA.

Variables

- Flow rate: 1GPM, 1.2GPM, 20GPM
- PAA Concentration: 0.5mg/L, 4mg/L
- NDMA Concentration: 150ng/L, 650ng/L

Key Findings

- NDMA can be remediated using 220 and UV254 nm UV.
- Advanced oxidation processes using UV and peracetic acid is also effective in remediation of NDMA.
- The critical factors in remediation process are:
 - Energy consumption
 - UV intensity
 - Flow rate
 - Hydraulic retention time

Budget Requested

- \$10,000

Project Performance

- June 2018 – Sept 2019