Source of PFOS impairment associated with novel environmental release

Summer Streets
Background

• Minnesota Pollution Control Agency history and experience with PFAS

• My role
Lake Calhoun

• Largest lake in Minneapolis – 401 acres

• Very popular recreational area

• 2004 - PFOS first measured in Calhoun fish

• 2007 - Impairment for fish consumption due to elevated PFOS announced

• 2007 – Source investigation begins
April 2007 Phase 1 Sample Locations

- 68 ng/L
- 68 ng/L
- 68 ng/L
- 53 ng/L
- 31 ng/L
October 2008 Stormwater Sampling Results
PFOS (ng/L)

- 23,800 ng/L
- 3,710 ng/L
- 63 ng/L

Legend
Stormwater Sample Points
PFOS Concentration (ng/L)
- ND
- DL - 100
- 101 - 200
- 201 - 500
- 501 - 853
- 3700

Lake Calhoun
Inspection of suspected source (2010)

Suspected illicit stormwater connection

Inspection of nearest manhole showed very low flow

Effluent inspected inside facility was clearly going where it should
Plating on plastic

• Replaced PFOS-containing mist suppressant in 2007 (Fumetrol 140)

• However, Fumetrol 140 was used in chromic acid etch bath – unique to this process
## Snow sample results

<table>
<thead>
<tr>
<th>Date</th>
<th>Snow PFOS (ng/L)</th>
<th>Stormwater PFOS (ng/L)</th>
</tr>
</thead>
<tbody>
<tr>
<td>February 2010</td>
<td>28,200,000</td>
<td>154,000</td>
</tr>
<tr>
<td>March 2010</td>
<td>8,900,000</td>
<td>730,000</td>
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</tbody>
</table>
Case summary

- Surface water, sediment, fish, and groundwater impacts
- Ongoing mitigation efforts
- Schedule of compliance (2016)
- Continued monitoring
Unanswered questions

• Air as a source and route of exposure

• What EXACTLY is in the replacement products?

• Can those replacements degrade to PFOS?
Future vision

• More programmatic approach

• Statewide standard?

• Increased attention to ecorisk
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