Drinking Water Contaminants

Rick Wahlen – City of Eden Prairie
How Contaminants Get Into Our Water Supply
Testing for Drinking Water Contaminants

- Public water supplies are regularly tested for more than 100 contaminants that can cause concern for people’s health such as bacteria, nitrate, pesticides, solvents, and metals.
- The Minnesota Department of Health (MDH) or the public water supplier collects the required water samples.
Categories of Primary Drinking Water Contaminants Covered by US EPA and MDH Regulations

- Microorganisms
- Disinfectants
- Disinfection Byproducts
- Inorganic Chemicals
- Organic Chemicals
- Radionuclides
# US EPA Secondary Drinking Water Contaminants

<table>
<thead>
<tr>
<th>Contaminant</th>
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<tbody>
<tr>
<td>Aluminum</td>
<td>Manganese</td>
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<tr>
<td>Chloride</td>
<td>Odor</td>
</tr>
<tr>
<td>Color</td>
<td>pH</td>
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<tr>
<td>Copper</td>
<td>Silver</td>
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<tr>
<td>Corrosivity</td>
<td>Sulfate</td>
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<tr>
<td>Fluoride</td>
<td>Total Dissolved Solids</td>
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<tr>
<td>Foaming Agents</td>
<td>Zinc</td>
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<td>Iron</td>
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Contaminants of Most Interest in Minnesota (presenter’s opinion)

- Lead and Copper
- Ammonia and Nitrates
- Chloride
- Manganese
- Volatile Organic Compounds (VOCs) and pesticides
- Radionuclides
- Emerging Contaminants - Perfluorochemicals (PFCs), pharmaceuticals, 1,4-Dioxane, etc.
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Ammonia and Nitrates

• Ammonia and nitrates mostly come from leaking septic tanks, animal livestock, and fertilizers.
Treatment Methods for Ammonia and Nitrates

• Ion Exchange Filtration
Treatment Methods for Ammonia and Nitrates

• Reverse Osmosis Membranes
Treatment Methods for Ammonia and Nitrates

- Biological Filtration
Contaminants of Emerging Concern

Include pharmaceuticals, pesticides, industrial effluents, and personal care products that are washed down drains and discharged to municipal wastewater treatment plants.
Lower Detection Limits

One Part Per Billion (ppb) = One teaspoon of water in an Olympic sized swimming pool

One Part Per Trillion (ppt) = One teaspoon of water in 1,000 Olympic sized swimming pools!
St. Anthony Village Advanced Oxidation Process (AOP) WTP for 1,4-Dioxane Removal
WTP Open House – August 9, 2017 at 2:00 PM
Chloride

• High concentrations of chloride are harmful to aquatic plants and animals.

• Chloride enters lakes and streams from road salt and home water softeners that discharge to wastewater treatment plants. The vast majority of wastewater treatment plants are not designed to remove chloride.

• Minnesota’s standard to protect aquatic life from impacts due to longer chronic exposure is a 4-day average of 230 mg/L, and the standard to protect from shorter term acute exposure is a 1-day average of 860 mg/L.
Eden Prairie Water Treatment Facility
Questions?

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