WYOMING CLEAN WATER PLANT

Team 12
The Team

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Outline

I. Overview
II. Ultraviolet Disinfection
III. Advanced Oxidation Processes
IV. Cost Estimates
V. Future Design
Project Overview

- Ultraviolet disinfection
- Advanced oxidation process
  - Emerging contaminant removal
- Reaeration
UV Disinfection

- Radiation destroys the organism’s DNA
- 254 nm wavelength
- Low Pressure, High Intensity lamp
- Closed vessel configuration

Advanced Oxidation Processes

- “Treatment technology that makes use of chemical oxidants and irradiation to degrade and eliminate recalcitrant compounds”
- Emerging technologies and research
- Hydroxyl radicals ($\text{HO} \cdot$) produced
Ozone and UV

\[ O_3 + H_2O + UV (\lambda < 320 \text{ nm}) \rightarrow O_2 + HO \cdot + HO \cdot \rightarrow O_2 + H_2O_2 \]

**Advantages**
- Already disinfectant
- No reaeration required

**Disadvantages**
- On-site ozone generation
- Off-gas permit and treatment
## Cost Estimates

### Capital Costs

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<th>Cost</th>
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<tbody>
<tr>
<td>UV</td>
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<tr>
<td>Advanced Oxidation</td>
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<tr>
<td>Reaeration</td>
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<td>Contingency</td>
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### O&M Costs

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Future Design

- Pilot testing during interim
- UV/Advance Oxidation Process design
  - Integration with existing plant
- Financial analysis

http://photos.igougo.com/photos/journal/pref/DCP_0718%284%29_prefRes.jpg
Sources