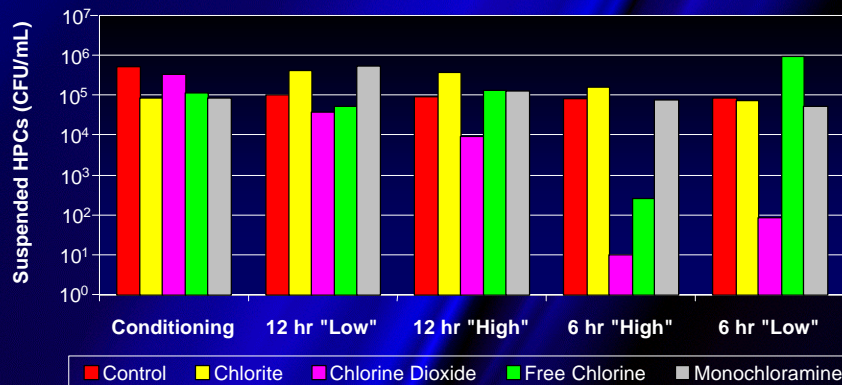
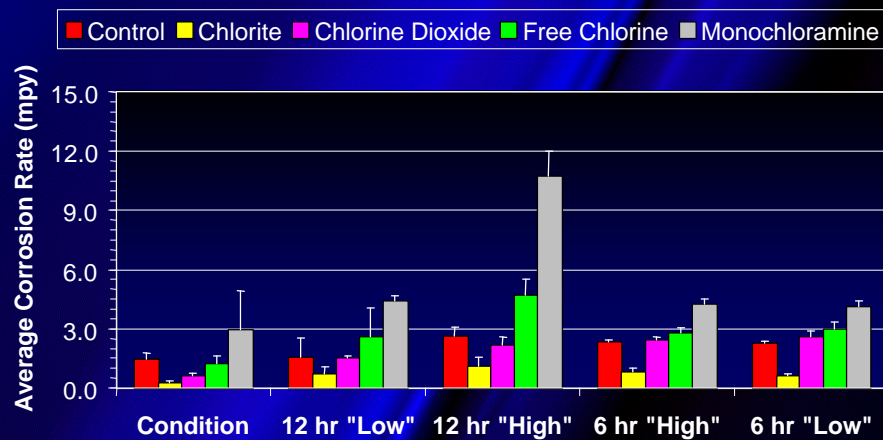


Suspended HPCs from Loops



Average Corrosion Rate



Factors Affecting Corrosion in Distribution Systems

- Many water quality parameters affect internal corrosion of pipes in distribution systems
 - pH
 - Chlorine / Disinfectant Residual
 - Dissolved oxygen
 - Temperature
 - Alkalinity / Hardness

Corrosion Control Strategies

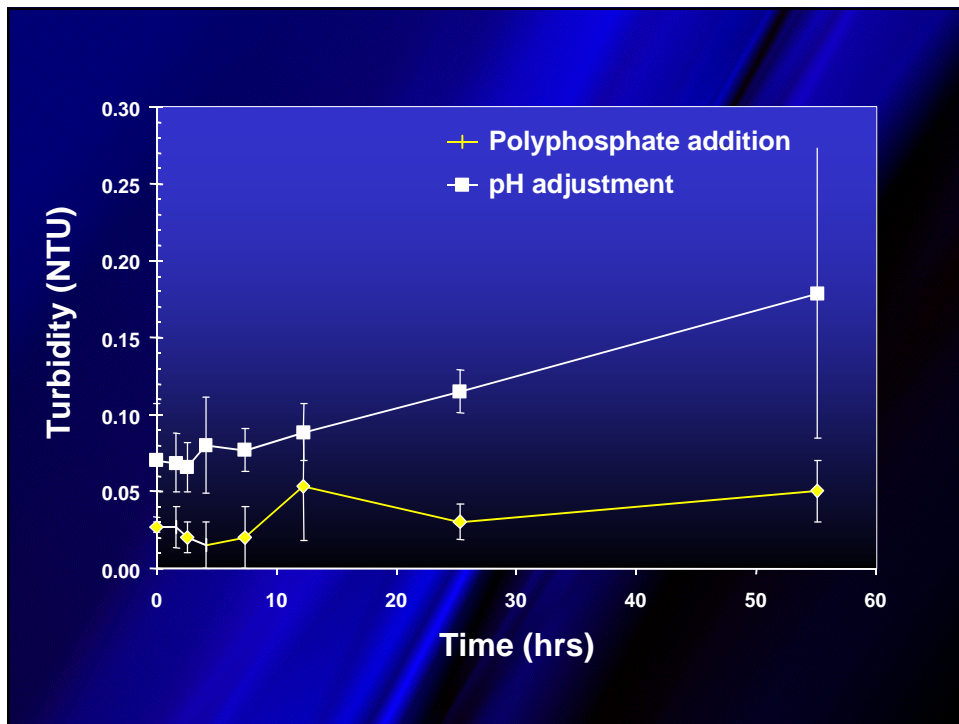
- **Neutralization**
 - Uses reactive chemical to overcome corrosive species
- Corrosive species:
 - HOCl, H₂S
- Reactive chemical
 - pH adjustment with NaOH

Corrosion Control Strategies

- Passivation
 - Chemical is applied to form a protective scale on pipe surface
 - Creates a “barrier” between anode and cathode surfaces
- Common passivating chemicals
 - Calcium carbonate (CaCO_3)
 - Polyphosphate
 - Orthophosphate
 - Silicate

Full-Scale Assessment

- Retention times of: 0 (Dartmouth, NS treatment plant), 1.5, 2.5, 4, 7, 12, 25, and 55 h
- Based on average daily flow in existing hydraulic model
- pH adjustment (pH ~ 8.8) over entire sampling campaign



Summary of Distribution Systems

- Often distribution systems are the forgotten portion of the multiple barrier approach
- Proper controls are essential to maintain low microbiological counts and to avoid unwanted discoloration during distribution

Closing Remarks

- Water treatment is fundamental to maintaining successful economy and for ensuring public health
- A multiple barrier approach is required for delivery of safe drinking water
 - Watershed/well head protection
 - Optimization of water treatment practices
 - Maintenance of distribution systems
 - Monitoring and reporting of water quality

Questions and Discussion Period

Drinking Water Workshop – Water Treatment Alternatives
Gander, NF March 2002

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