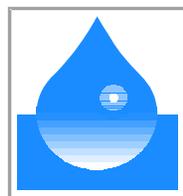


Applied



Applied Process Technology, Inc.

Clean Water - No Waste!

DTSC Green Chemistry Symposium

10/24/06

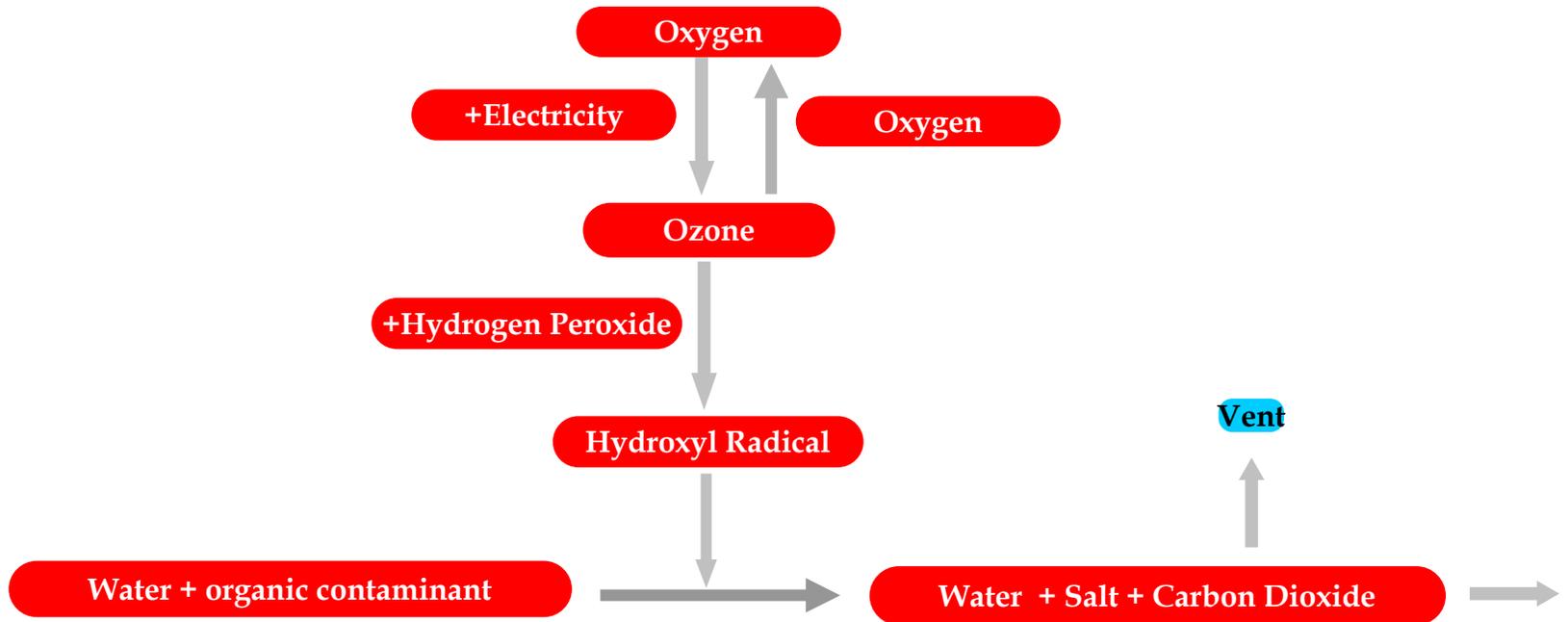
“Waste-free Chemistry”

Advanced Oxidation & Reduction Technologies
using Renewable Feedstocks:

- OXYGEN (H_2O_2 , O_3)
- POWER
- HYDROGEN
- NATURALLY OCCURRING MICROBES

...Converting complex contaminants to: CO_2 , N_2 , H_2O , Salt.

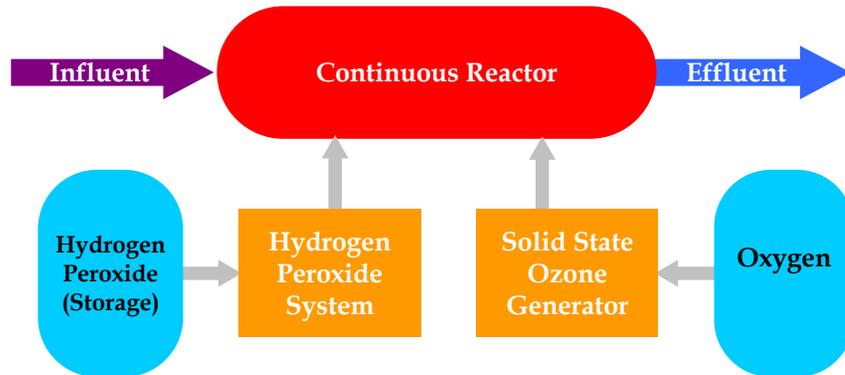
Advanced Oxidation



No Waste

Positive environmental impact

HiPOx – Advanced Oxidation Technology



- Water free of contamination
- Bromate Control
- Small footprint, aesthetic packaging
- Quiet, remotely monitored
- Real time, sensor-controlled operations - fail-safe



Applied



Unobtrusive, Quiet, Safe, and Effective Green Technology

- ❑ **Highly Adaptable**
- ❑ **Ideal in Environmentally Sensitive Areas**
- ❑ **Reduced Traffic, Remote Monitoring**
- ❑ **No Environmental Impacts**
- ❑ **Ideal Solution where Environmental Justice is a Concern**



Applied



Applications for Advance Oxidation Technology

Petroleum and Industrial Site Remediation

- ✓ Groundwater de-contamination

Industrial Process Water

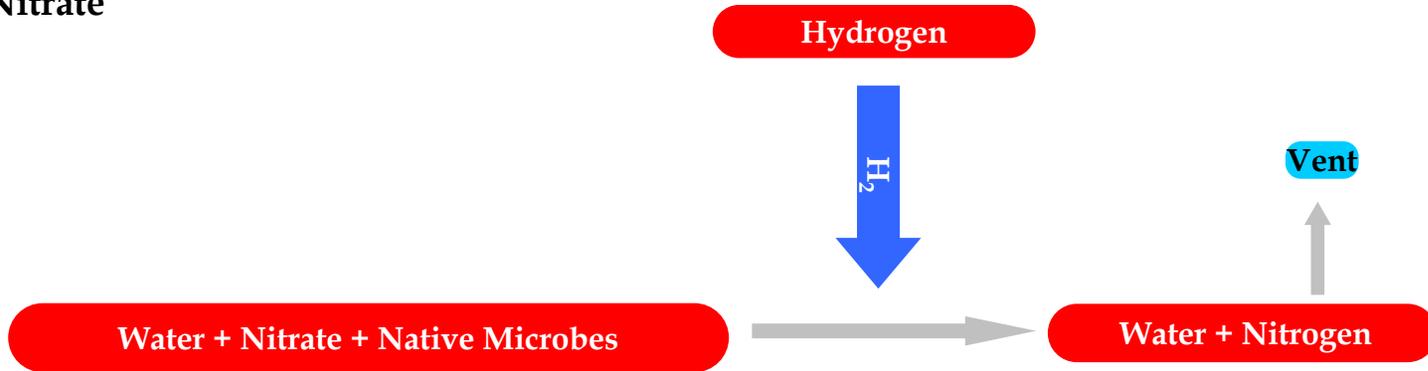
- ✓ Wastewater discharges
- ✓ Process water recycling

Municipal Market

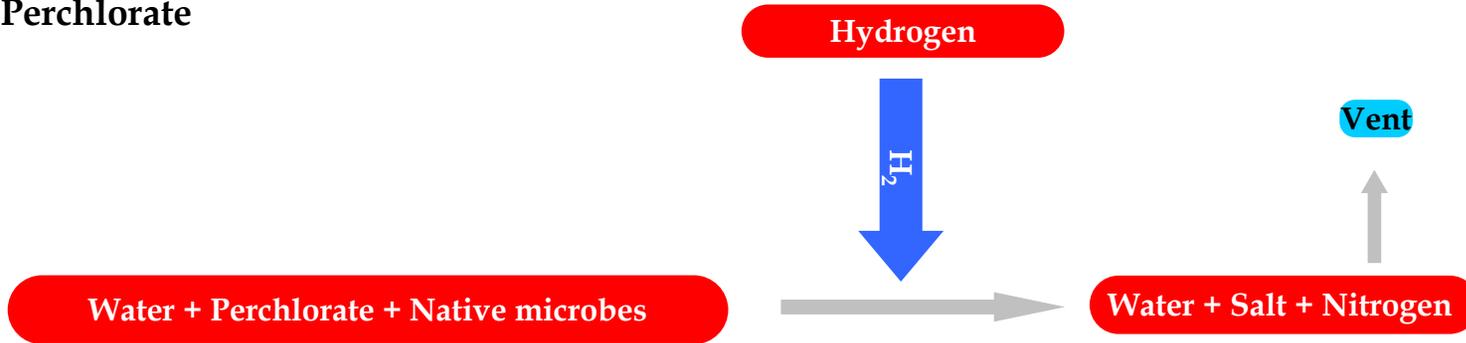
- ✓ Drinking Water
- ✓ Wastewater
- ✓ Water Reuse

Advanced Reduction w/ Membrane Biofilm

Nitrate



Perchlorate



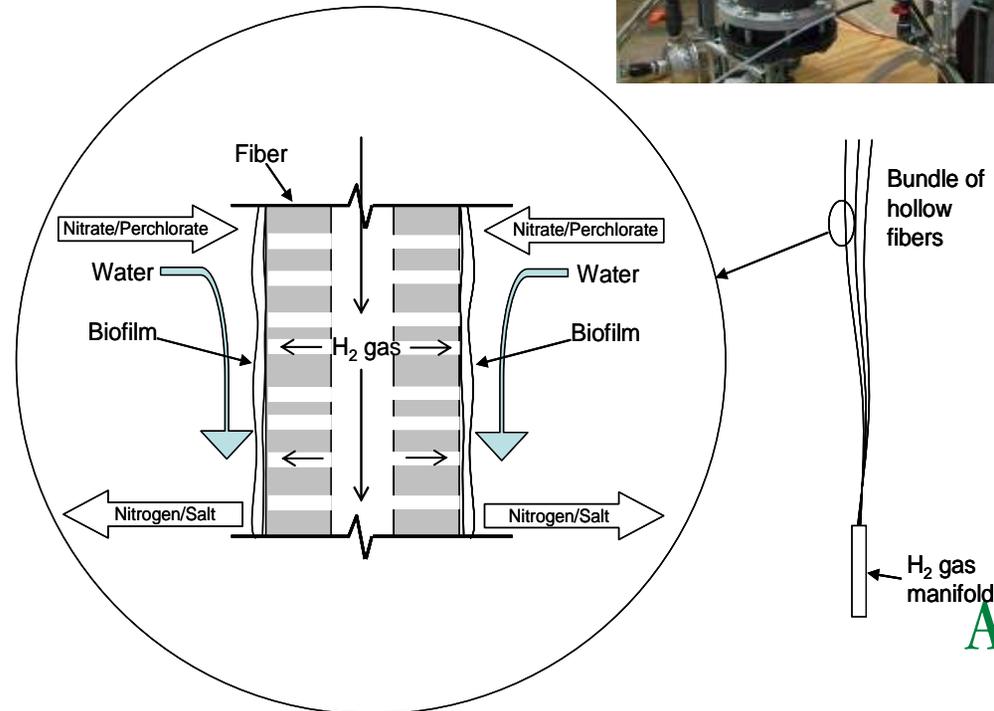
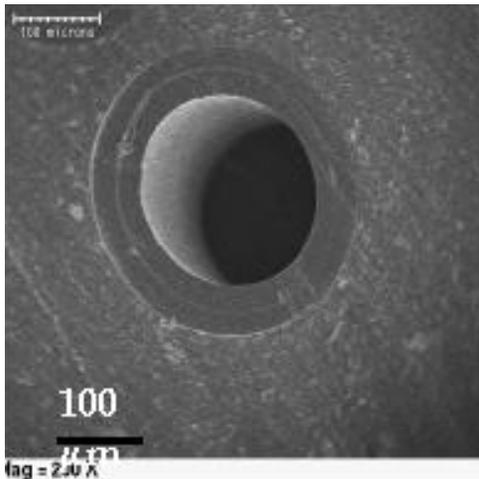
Membrane Biofilm Reactor (MBfR)

Description

- Hydrogen hollow fiber technology that causes a biofilm to grow
- Destroys water contamination in a pump-and-treat or immersion configuration

Advantages

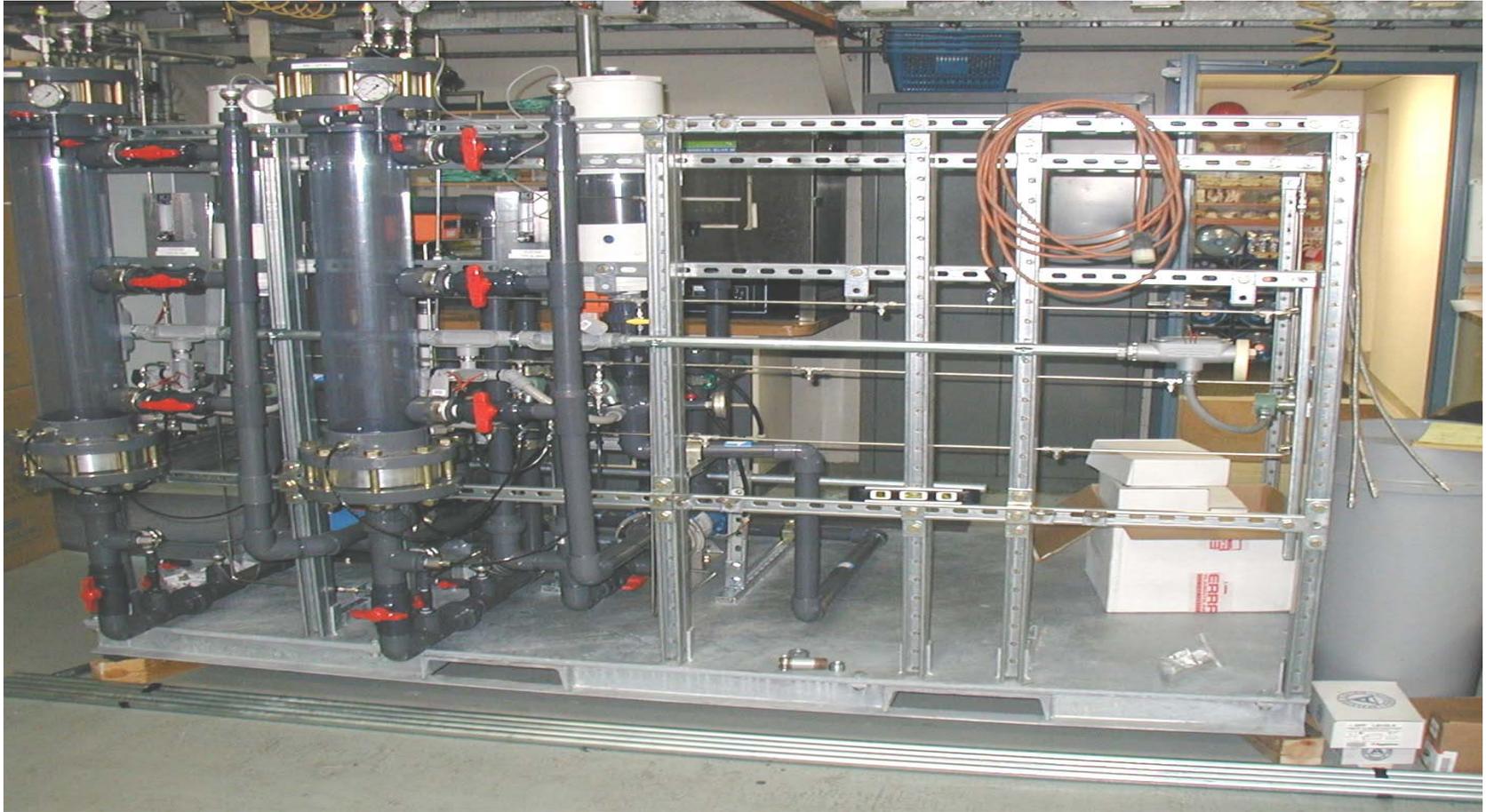
- All oxidized contaminants can be reduced
- Self regulating & efficient use of Hydrogen
- Consistent with H₂-based energy economy
- Doesn't require outside carbon source
- Non-toxic for humans



Applied



Membrane Biofilm Pilot Plant – City of Modesto, CA



Applied



Applications for Membrane Biofilm Technology

■ Drinking Water

- ✓ Nitrate Contamination
- ✓ Perchlorate
- ✓ Chlorinated Solvents

■ Wastewater

- ✓ Nitrate Removal from Wastewater
- ✓ Ammonia + Nitrate, Phosphate, (Advanced Nutrient Removal)

■ Industrial Remediation

■ Agriculture - Nitrate Removal

- ✓ Dairy Industry
- ✓ Concentrated Animal Feed Operations (CAFO)

On-Going Applications Development

Investment to Date : \$20,000,000

Future Investment : \$2,000,000 / yr.

Advanced Oxidation

- ✓ Disinfection
- ✓ Minimize Trihalomethane (THM) Formation
- ✓ High flow / low pressure design

Membrane Biofilm Reactor

- ✓ Pilot plants and Beta sites
- ✓ Detailed investigation of microbial ecology
- ✓ Advanced Nutrient Removal (Hydrogen & Oxygen)
- ✓ Ion Exchange Brine Regeneration

Recommendations to “Fast Track” promising Green Technologies

- Increase Grants to accelerate commercialization
- Add Criteria to State Revolving Fund Allocations to Encourage use of Green Technologies
- Provide matching fund offsets to water providers who choose “new” green technologies
- Encourage Cal/EPA to consider a certification program for Green Technology similar to USEPA’s ETV program
- Consider Tax Credit for Developers and Users of Green Technologies