

eNox™ System

Destroys harmful organic molecules and chemically transforms them into environmentally compatible molecules of water and carbon dioxide

- 💧 Simplicity of operation and low maintenance allows for very competitive operating costs
- 💧 Ships ready for immediate use
- 💧 Generates no off-gases or secondary waste
- 💧 Maximum mixing with the oxidizer and exposure to UV radiation
- 💧 Minimizes “scaling” and deposits that precipitate on the lamp sheaths and other equipment
- 💧 Permits routine UV lamp changes without having to shut down the entire unit



SAVETHEWATER.ORG

INFO@SAVETHEWATER.ORG

786-417-7000 | PLANTATION, FL

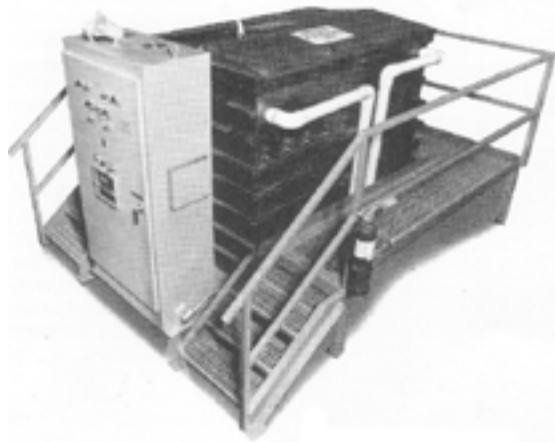


Overview

The system introduces hydrogen peroxide, ozone, and/or a catalyst into the wastewater stream in the presence of a UV light source. These generate a chemical reaction that produces a powerful hydroxyl radical that destroys all volatile and other organic compounds targeted by environmental regulations.

eNox™ can treat single- and multiple-bonded organic compounds, aliphatics, aromatics, heterocyclics, and related species economically. The system can treat

TCA and DCA, as well as other problem compounds such as TCE, PCE, toluene, and methylene chloride.

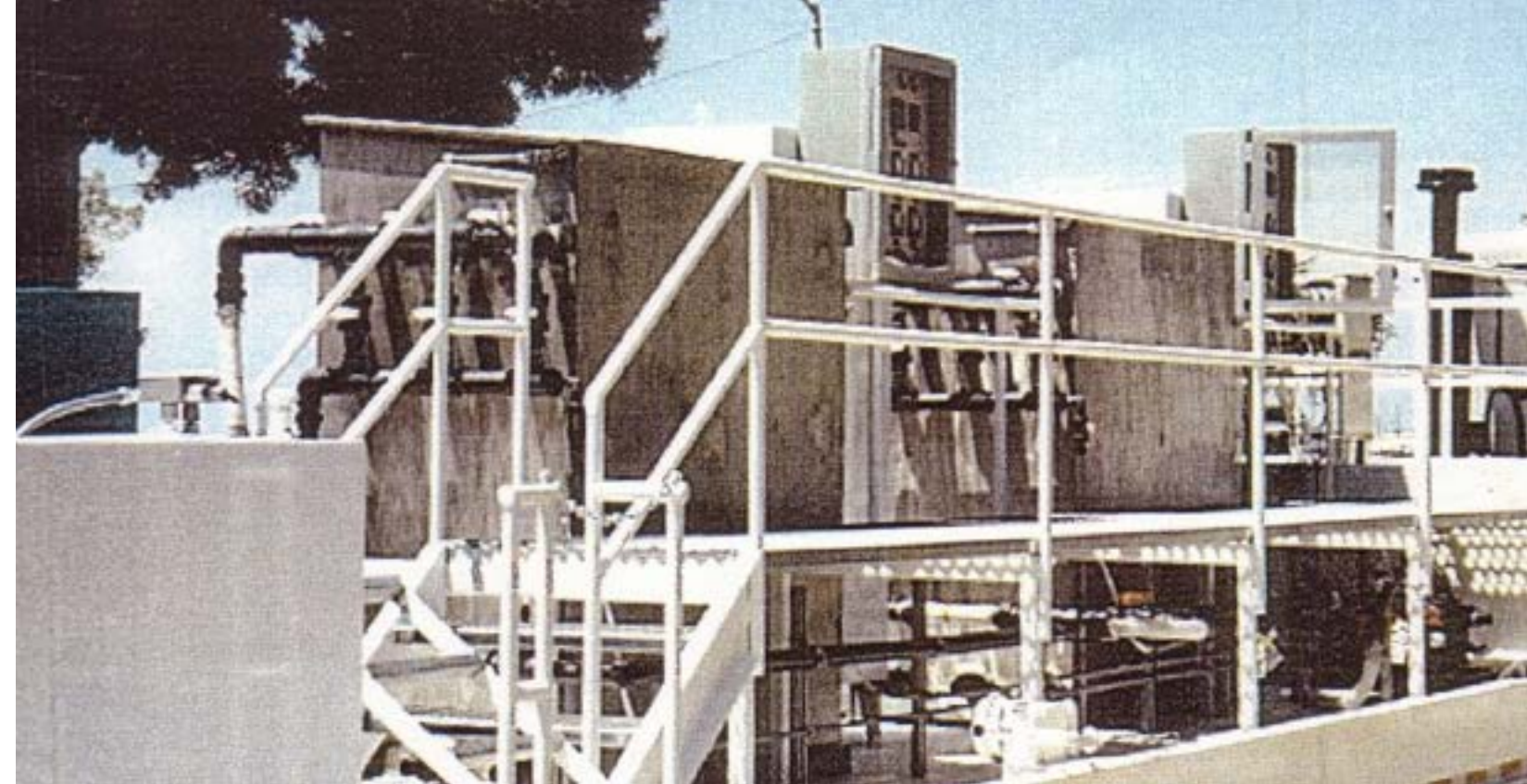


FLEXIBILITY

For certain applications, the eNox™ system can utilize ozone as the oxidizing agent instead of hydrogen peroxide, either in part or totally. An ozone decomposer is utilized to instantaneously convert any residual ozone in the off-gas to pure oxygen.

The eNox™ technology is configurable for solar powered oxidation. A transparent tubular reactor fitted with a solid-state catalyst is centered at the focal point(s) of a solar collector. This type of system can be chemically augmented with ozone and/or hydrogen peroxide as dictated by the type of contaminant to be oxidized.

The eNox™ methods offer the important advantage of destroying organics without transferring them to another media such as carbon or the atmosphere. On-site processing eliminates the cost and liability associated with the handling and disposal of secondary waste.



System Design

REACTOR DESIGN

The contaminated water flows in a serpentine path through banks of vertically-positioned UV lamps, which are separated from each other by stainless steel partitions. This ensures maximum mixing with the oxidizer and exposure to UV radiation, while minimizing back-mixing.

The low-pressure UV lamps are contained in UV-transparent quartz sheaths to optimize their radiation characteristics, as well as isolate the lamps from the surrounding liquid media.

REDUCED FOULING OF LAMPS

The eNox™ system incorporates a unique design which minimizes “scaling” and deposits that precipitate on the lamp sheaths & other equipment. Fouled quartz sheaths reduce the available UV light and increase maintenance time for cleaning. Because UV technology is electric power intensive, lamp efficiency is a major cost factor. The unique eNox™ design assures minimum energy costs.

PROCESS EFFICIENCY

Process efficiency depends on the type and concentration of contaminants, the total organics present, the pH of the wastewater, temperature, the turbidity (UV transmittance) of the wastewater, and the type and concentration of inorganics. eNox™ reduces the contaminant level from parts per million (ppm) range to parts per billion (ppb) and even to undetectable, if required.



System Use

INSTALLATION

The eNox™ system is shipped ready for immediate use. Because the unit is compact and generates no off-gases or secondary waste, it offers a great deal of flexibility in placement. The unit is provided with forklift pockets for ease of installation and relocation.

SYSTEM OPERATION

eNox™ is modularly expandable, allowing a range of flows from a few GPM to almost any level. Additional modules can be added to accommodate increased requirements.

The simplicity of operation and low maintenance allows for operating costs that are very competitive with other types of facilities. A 6x8x4' system can treat 50,000 gallons daily at approximately 25 cents per 1,000 gallons.



SIMPLIFIED MAINTENANCE

One of the major maintenance requirements of this type of reactor is the replacement of the ultraviolet lamps. UV lamps have a limited life, and like the ordinary light bulb, will simply burn out.

Safe practice dictates that equipment power be turned off when lamps are changed, both to avoid electrical shock and exposure to potentially harmful UV radiation. However, turning off the equipment also means that the water flow must also be interrupted to prevent untreated water from going through the unit. A routine shutdown can have major consequences if the reactor is part of a larger, continuously flowing system.

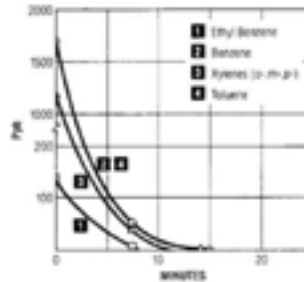
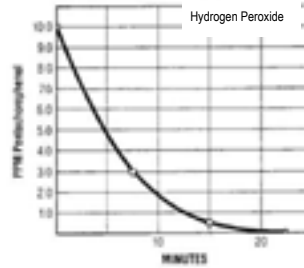
The eNox™ system is specially designed to permit routine UV lamp changes without having to shut down the entire unit. The eNox™ system has a redundancy of UV lamps so that it can continue processing even with a reduced number of functioning lamps. The lamps, in turn, are placed in separate chambers so that they can be individually changed while other lamps continue to function without endangering the operator.

The chambers are provided with separate power switches and access covers. A centrally-located control panel provides a status display of all lamps. When a preset number of lamps are out, an alarm occurs telling the equipment operator that UV bulbs need replacing. UV-blocking sight glasses are provided at each chamber to permit viewing of the lamps with the unprotected eye.

eNox™ typical results

CONTINUOUS REACTOR BTX TEST (PPB)					
Basis					
30 minutes reside					
4 lamps/stage					
4 stages					
120% of stoic (H ₂ O ₂)					
Results					
	BZ	TOL	EB	Xyl	
Feed	1,700	1,700	240	1,200	
Stage 1	85	61	9	48	
Stage 2	3	1	ND*	1	
Stage 3	ND*	ND*	ND*	ND*	
Stage 4	ND*	ND*	ND*	ND*	

CONTINUOUS REACTOR PENTACHLOROPHENOL TEST	
Basis	
24 minutes reside	
4 lamps/stage	
4 stages	
185% of stoic (H ₂ O ₂)	
Results (mg/L)*	
Feed	10 ppm
Stage 1	3 ppm
Stage 2	0.5 ppm
Stage 3	0.005 ppm
Stage 4	< 0.005 ppm



*ND: non-detectable levels

About Save the Water™

Vision | Our vision is to achieve contamination-free, healthy water for all. We want to ensure all communities have access to clean, healthy water and to protect the supply so it stays clean for generations to come.

Mission | The mission of Save The Water™ is to conduct water research to identify and remove harmful contaminants in water, to improve the quality of drinking water, and to raise public awareness about water contamination and its health impact.

Work | Our research team will work on ensuring each chemical present in North American waters is identified and its effects documented. Then we will translate this information into simple terms and share our knowledge so that every family in the United States and Canada is aware of water pollution's health impacts. Our scientists and engineers have designed water treatment technologies to remove dangerous pollutants in water to make water cleaner for our families.



SAVETHEWATER.ORG

INFO@SAVETHEWATER.ORG

786-417-7000 | PLANTATION, FL

