

# Effluent Decontamination Systems

Sterilization, Decontamination & Treatment of Liquid Biowaste Streams



# Choosing the Correct Effluent Treatment System

Understanding the efficacy of any treatment system is the first step in selecting the proper Effluent Treatment process. Different types of systems can achieve different levels of treatment and the user must evaluate the requirements and select the proper treatment level.

The typically used term “decontamination” is generally used as a description of rendering something “safe.” This has different meanings depending upon how it is being applied and is not descriptive of the process necessary to achieve a specific result or describe a piece of equipment to meet that result. Several entities, including the Centers for Disease Control and Prevention and State and Territorial Association on Alternate Treatment Technologies, have outlined levels of disinfection and treatment with prescribed requirements for achieving a particular level. These guidelines with the addition of a proper Risk Assessment will direct the user to a required level of treatment for a specific application or facility.

- **Level I** - (Low Level Disinfection) Inactivation of most vegetative bacteria, fungi, and lipophilic virus.
- **Level II** - (Intermediate Level Disinfection) Inactivation of all vegetative bacteria, fungi, all viruses, and mycobacteria.
- **Level III** - (High Level Disinfection) Inactivation of all vegetative bacteria, fungi, all viruses, mycobacteria, and B. stearothermophilus spores at 4Log<sub>10</sub> or greater; or B. subtilis spores at 4Log<sub>10</sub> or greater with chemical treatment.
- **Level IV** - (Sterilization) Inactivation of all vegetative bacteria, fungi, all viruses, mycobacteria, and B. stearothermophilus spores at 6Log<sub>10</sub> or greater.

PRI ThermoBatch™ and AutoFlow™ can achieve Level IV (sterilization) when operated properly.

Many US states as well as other countries (Canada, UK, Japan and others) have adopted a minimum of Level III treatment for any potentially pathogenic “medical waste.” While lower levels of treatment may provide a desired level in a given application, utilizing these protocols may not be in agreement with governing regulatory agencies.

## Compare EDS Technologies



ThermoBatch™



AutoFlow™



ThermoDecoN™



ChemFix™

Sterilization Level				
Level I Low (inactivation of most vegetative bacteria, fungi and lipophilic virus)	✓	✓	✓	✓
Level II Intermediate (inactivation of all vegetative bacteria, fungi, all viruses, and mycobacteria)	✓	✓	✓	✓
Level III High (inactivation of all vegetative bacteria, fungi, all viruses, mycobacteria, and B. Stearothermophilus spores at 4Log <sub>10</sub> or greater)	✓	✓	✓	✓
Level IV Sterilization (inactivation of all vegetative bacteria, fungi, all viruses, mycobacteria, and B. Stearothermophilus spores at 6Log <sub>10</sub> or greater)	✓	✓		
Solids Handling				
Animal Solids, Bedding, Food Materials	✓			
Cell Cultures, Heat Sensitive Liquids (certain types of cell cultures and heat sensitive liquids can become dense and coagulate under high temperature)	✓	✓		
Flow Volume				
Low	✓	✓	✓	✓
Medium	✓	✓		✓
High	✓	✓		
Flow Volume				
Treatment Temperature Range	≥ 150 °C	≥150 °C	96 °C	55 °C

✓ = capable of attribute stated

✓ = capable of attribute stated, but only under specified circumstances



# ThermoBatch™ Series

## Sequential batch sterilization of complex biowaste streams.

Capable of handling liquids and solids, PRI-Bio's ThermoBatch™ is one of the most versatile sterilization technologies on the market. It also does not require chemicals for sterilization, making it an environmentally-conscious option.

ThermoBatch™ (EDS) sterilizes biologically active wastewater in BSL-2, BSL-3, BSL-3 AG, BSL-3 Enhanced, and BSL-4 research labs prior to discharge. The system provides "proof of process" documentation, ensuring that steps are being taken to protect public safety and the environment.

- configurable to meet any flow capacity
- highest level of treatment
- treatment of liquids and liquid/solid mix
- batch process offers highest level of process assurance
- up to and including BSL-3 Ag, BSL-4
- widely accepted validation protocols



# AutoFlow™ Series

## Continuous sterilization of simple biowaste streams.

Designed specifically for laboratory users, including research, virology, vaccine, GMO, CMO, forensic, hospitals, clinics, isolation units, and mobile laboratories. Design allows for centralized collection and treatment of liquid from different sources (sinks, showers, washers, sterilization units, process waters) from single-suite labs to large, multi-user facilities.

- high volume processing for a wide range of liquids without solids
- BSL-1, BSL-2, BSL-3 levels
- Clean In Place (CIP) and Sterilize In Place (SIP) options available
- a single enclosed, compact footprint



The AutoFlow™ Sink model offers sterilization in a compact plug-n-play footprint, requiring only standard electricity and water. Perfect for small laboratory or mobile laboratory environments.

# ThermoDecon™ Series

## Sequential batch, low-temp, economical decontamination.

Compact, energy efficient, low-cost effluent decontamination solution. Specifically designed for use in small laboratories, virology, vaccine, GMO, CMO research facilities, forensic labs, hospitals/clinics, isolation or mobile units.

- Simple push-button relay controls with alarm indicator
- Internationally available service components
- Compact, ergonomic design, fits through standard doorway
- Electricity only required - no air, no steam
- Low power consumption



# ChemFix™ Series

## Sequential batch chemical disinfection and neutralization.

Sequential batch process incorporating a collection tank and disinfectant tank(s) that can be configured to accommodate various loading profiles.

- capable of multiple chemistry inputs
- designed to accommodate varying treatment requirements
- controlled process parameters for efficacy assurance



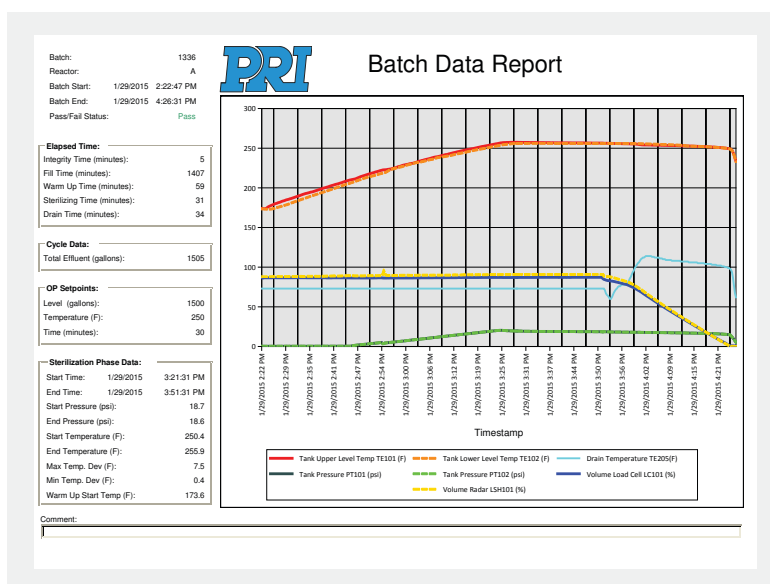
# Process Validation Software Package

## Sample Batch Report

PRI's batch report software continuously monitors the system and generates a "proof of process" during the lifecycle of the equipment. The software collects the performance data for each batch and generates both an electronic version, and a PDF document, which graphically represents the Time, Temperature, and Pressure of the operation, proving the system performed to the set points during the testing phase. If the system does not meet the performance requirements, the system will alarm and the Batch Report will be stamped automatically as "FAILED." Likewise, if the batch processed in accordance with acceptable parameters, it will be stamped with a "PASS." Each batch has a unique ID and is characterized with a date/time stamp for the start and stop points of the process.

An interruption during the "treatment" portion of the cycle will result in a "FAILED" batch. Upon system restart a new batch number will be assigned and all steps of the process completed as necessary to achieve a "PASS" status at cycle end. This validates that complete and proper treatment has been achieved. Other features and benefits include:

- documented evidence for each batch
- excellent troubleshooting tool
- pass/fail result for each batch
- electronic file storage
- print-out of each batch
- proof of process for public assurance
- review batch history



Sample Batch Report PDF



Package includes PRI software, PC, monitor, keyboard, mouse, and color laser printer. Need more information? Call us at (800) 732-3793 or send an email to [pri.bio@progressive-recovery.com](mailto:pri.bio@progressive-recovery.com).



Biowaste Sterilization | Solvent Wash & Recovery | Custom Process Skids | Service

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