

## Liqui-Cel<sup>®</sup> Membrane Contactor Cleaning

Some of the most frequently asked questions about membrane contactors are related to cleaning. This technical brief answers three common questions about contactor cleaning. How often do I need to clean the contactors? How do I clean the contactors? And when do I know when to clean them?

### **How often will I need to clean the Liqui-Cel Membrane Contactors?**

This is the most commonly asked question about membrane contactors. It is important to review the differences between membrane contactors and conventional membrane filtration devices to explain how often cleaning will be required.

In conventional filtration devices, water flows through the membranes pores. The membrane excludes particles and dissolved solids from passing through the pores based on their respective sizes. Particles and dissolved solids tend to build up on the surface of the membrane, and over time, the membrane is cleaned or discarded. Liqui-Cel Membrane

Contactors do not operate in the same fashion as conventional membrane filtration devices. The membrane is hydrophobic and does not allow liquid water to flow through the membrane. Gases, not liquids pass through the pore. The membrane acts as a inert support between a gas phase and an aqueous phase.

However, as with any membrane device, water quality will impact the frequency of cleaning. The Liqui-Cel Membrane Contactor contains a bundle of hollow fibers. It is designed to allow water to flow through the bundle around the fibers. If proper prefiltration is not provided, the bundle will tend to trap particles and require cleaning. If the total dissolved solids level is high, solids may also tend to precipitate out of solution and form deposits on the membrane.

The water quality will determine how often cleaning is required. Industrial applications that do not have sophisticated pretreatment may require periodic cleaning, ultrapure water

systems may not require any cleaning.

### **How do I clean the Liqui-Cel Membrane Contactors?**

In essence, the membrane contactors can be cleaned in a similar fashion as other membrane devices. The membrane is polypropylene and cleaning agents should be selected based on their compatibility with polypropylene.

The contactors can be readily cleaned by recirculating a cleaning solution through the device. The type of cleaning agent will depend on the type of contamination fouling the membrane. If the contamination is due to mineral deposits, a low pH cleaning solution can be recirculated through the membrane contactor. If the contamination is biological, an alkaline solution can be recirculated through the contactor.

The contactor can be sanitized by recirculating sanitizing solutions through the device. Typical sanitizing agents include, a dilute hydrogen peroxide sodiumhydroxide, and sodium metabisulfite.

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Since the membrane contactor relies on the membrane's hydrophobic properties, any cleaning agents that will render the membrane hydrophilic are not recommended. These includes: soaps, detergents and any low surface tension fluid such as alcohol.

## When will I know that it is time to clean the Liqui-Cel Membrane Contactor?

Signs of fouling can be observed in two ways. As the membrane becomes fouled it's ability to remove dissolved oxygen will decrease and the pressure drop across the membrane will increase. It is important to monitor these two parameters so that a routine cleaning regimen can be developed.

This technical brief reviews some of the Cleaning Guidelines. Please review the guidelines before cleaning the Liqui-Cel® Membrane Contactor. A comprehensive guide to cleaning the membrane contactors is available through Membrana.

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