

Washing Batteries with Multi-Shifter's Wash/Recycling System

This document will discuss and explain why forklift batteries must be washed, and what must be done with the resulting waste water. We will explain the benefits of battery washing and how it saves you money. Then we will explain our unique recycling system that disposes of the contaminated waste water.

Why Wash Your Forklift Batteries?

Washing your forklift batteries extends the life of your batteries. As a battery charges and discharges, it gasses. This gassing leaves a residue on the top of the battery. When it dries it forms a white crust commonly called sulfate. This sulfate forms voltage paths to the battery case.



When these voltage paths reach the battery case, they produce electrical grounds, which shorten the life of the battery. These sulfate voltage paths can also cause the battery to ground against the frame of the lift truck. Today's lift trucks have more and more sophisticated electronics, which can be harmed by grounds from the battery to the lift truck frame.



Washing the battery also keeps the battery compartment in the lift truck clean and free of corrosive acid. Many lift trucks have components under the battery compartment that can be compromised by the effects of battery acid.

In addition, the gassing brings the sulfuric acid in the battery in contact with everything on the top of the battery. Cables, inter-cell connectors, cell caps and the battery case can be eaten by the acid residue causing unnecessary maintenance bills.



A forklift battery should last 5 years. If you don't wash your battery you could shorten its life by as much as 20 to 25 percent.

Battery Washers

Battery Wash Water Recycling

After you wash your battery, there are 2 by-products – a clean battery and hazardous water. This water has lead, antimony, arsenic, copper, sulfuric acid and other contaminants. This water cannot be legally dumped down the drain. If it goes down the drain the EPA could fine you \$10,000 a day, minimum.

In washing your battery you become the generator of that waste. The EPA has a statute of “Cradle to Grave” responsibility for all waste generators. That means you are responsible for the proper disposal of your waste forever.

If you are paying a vendor to wash your batteries, no matter how they dispose of it you are responsible. If they don't dispose of it legally, you pay. If they dump it out back and it runs into a stream and kills Farmer Jones' cows

you are liable. If it happens 5 years from now, you are liable. You are liable forever.

Eliminating the Grave

There is only one way to eliminate the liability of “Cradle to Grave” – properly recycle your waste by sending it back to the metals industry where it will be 100% recycled into their product. This is exactly what you gain with Multi-Shifter’s Battery Waste Water Recycling Program.

Multi-Shifter’s Recycling System traps all the heavy metals in battery waste water, and contains them. Once the heavy metal tanks are saturated, the tanks are sent to Culligan to be regenerated. In regeneration, Culligan flushes the heavy metals out of the tanks and sends “clean tanks” back to you. Then, Culligan sells the heavy metals back into the metals industry as recycled material. The buyer of the heavy metals then issues a certificate of reclamation to you. This certificate shows that you have 100% recycled your waste (heavy metals) back into the metals industry. This certificate eliminates your “Cradle to Grave” liability. So, when the EPA comes calling, you have documented proof of proper legal procedures for recycling your battery waste water.



Multi-Shifter's Battery Waste Water Recycling System

Let's take a look at the step-by-step process of our Multi-Shifter Recycling System:

1. The battery is washed by one of Multi-Shifter's line washers.
2. The pump in the washer pumps it to a holding tank, which has a float switch.
3. When the holding tank fills, the float switch automatically starts the main pump sending the waste water through the filtration section of the system.
4. Initially the water goes through 3 screen filters which remove the large particulates from the water.
5. Next, the water goes through a 5-micron filter, removing small debris.
6. Water is then routed through a carbon filter, removing organic material, oil and grease.
7. The next step sends water through the media tanks, removing all heavy metals.
8. Then water flows through a conductivity meter, which monitors the water for metal ions.
9. Finally, pure water is sent to the 220-gallon water tank.

Competitive Analysis

Our competitors offer various types of Recirculating systems. Let's take a minute to discuss the difference between Recycling and Recirculating. Recirculation simply recirculates the same water over and over. Adding neutralizer, the buildup of contaminants eventually saturates the water. It becomes inert. It can no longer absorb neutralizer, and the concentration of contaminants accelerates. The water then has to be hauled away by a vendor. However, the removal is expensive, and the "Cradle-to-Grave" liability is still yours.

Typically these systems filter water down to 5 microns. Let's talk about microns for a minute. 50 microns is visible to the human eye. Anything less is not visible. So, a 5-micron filter removes all the visible debris from the water.

The water looks clean, but the heavy metals are still there, and the water is still toxic.

The heavy metals ions are attached to the water molecules. The difference in size between these molecules and a 5-micron opening is like the difference between a baseball and the planet earth. These heavy metals pass freely through a 5-micron filter. So, competitive units do not remove the heavy metals. And, heavy metals are your greatest liability. Handling lead improperly carries a host of fines and penalties.

Multi-Shifter's Wash/Recycle System removes the heavy metals from the water, and our Recycling Program takes away the "Cradle-to-Grave" liability with a Certificate of Reclamation.

Our Wash/Recycle System was tested by Rogers & Callcott Laboratory Services. They confirmed that our system removes the heavy metals, exceeding EPA specifications. The system was also tested by Douglas Battery Company. They had the same results.

For more information, contact Multi-Shifter at 1-800-457-4472.