

SULFURIC ACID USER'S GUIDELINES

1. **SAFETY is priority # 1.** Sulfuric acid is a hazardous material and can cause severe skin burns.
2. Always wear Personal Protective Equipment (PPE) if there is a potential for exposure. Review the MSDS for information on sulfuric acid
3. Always visually check the Tank, Pump Box and Acid Hose for potential leaks prior to walking into the area.
4. The hose on the irrigation system manifold contains pure water without acid and should be used to wash off and dilute any suspected acid encounter. Be aware of where available fresh water is if there is skin contact.
5. Keep the Pump Box locked at all times unless adjusting the acid flow rate.
6. Three safety mechanisms prevent the introduction of sulfuric acid into the irrigation pipe line without water:
 - a. Time delay. Once the well motor starts up, the Acid Time Delay starts. Assuming that the initial well water takes 10 minutes to clean up before it is sent to the filters and main lines, the Acid Time Delay should be set for 15 minutes (?) to give a 5 minute "pad" that will insure the pipe line is full of water before acid in be injected.
 - b. Pressure Switch. The Sulfuric Acid pump will not turn on without a positive pressure in the pipe line. The switch is typically set 10 to 15 psi below the operating pressure (35-40 psi).
 - c. On / Off Switch. There is an ON / OFF manual switch on the pump that can be accessed without opening the pump enclosure. Use this as the master switch to start and stop the sulfuric acid injection.
7. Use the pH meter to sample downstream water. Adjust the acid flow rate at the pump to correct the pH of the irrigation water.
8. It is possible that small leaks of acid or oil may occur at the gaskets or seals over time. **Call Verdegaal Brothers at 559-582-9205 for assistance.**
9. The hose going from the acid pump to the irrigation pipe is under pressure. **DO NOT DISCONNECT THE HOSE UNDER ANY CIRCUMSTANCES!!** The hose is a "hose within a hose." If the inner pressurized hose were to leak; the acid would come out the ends and dribble onto the ground. Normally, you could shut the acid pump off with the manual ON / OFF switch. If that is not safe, turn off the circuit breaker to the pump power receptacle. If that is not safe, turn off the well motor. That will shut down the power to the acid pump. However, this will also turn off the available fresh water supply for decontamination.
10. **NEVER put water in the sulfuric acid tank.** That could be extremely hazardous. Think "acid to water" -- not "water to acid" which would create a strong chemical reaction.
11. **NEVER mix other products in the tank with the sulfuric acid.** The results could produce a heat reaction (melts the tank) or the irrigation system could plug up.
12. If there is a tank leak, contact Verdegaal Brothers to vacuum out the tank and do the repairs.