SAFETY ALERT

Process Water

Most industrial facilities that use concrete in the manufacturing process are familiar with the terms storm water, storm water permits, and storm water pollution prevention plans. Concrete pipe manufacturing facilities are no exception. However, not all of these facilities are knowledgeable or familiar with the term process water. An easy definition for process water is, "Any water that is not storm water or rain water could be considered process water." The facility may choose to discharge this water off of their property after monitoring or pretreatment, or recycle the water during the production process

Types of Process Water

The single most recognized process water at a concrete pipe facility is "wash-out water." This is water that is used to clean out the mixers or other equipment where concrete is built up during the process. Concrete is entrained within this water. These highly alkaline waters are toxic to fish and other aquatic life. The characteristics of this water may include:

- Alkalinity levels as high as pH 12
- Dissolved solids
- Sulfates/hydroxides from cement
- Oil and grease from equipment
- Derivatives from chemical admixtures

Monitoring and limitations may be placed on discharges of water by the U.S. EPA and most likely, local sanitary/sewer authorities. A few constituents that are monitored and limited for process water are: 1) pH, 2) Total Suspended Solids and 3) Chemical composition.

Note: The requirements for discharging into local sanitary sewers are often less stringent than those required by the EPA. Many times, they allow for higher pH and total Suspended Solids (TSS), which is helpful to industry.

Potential Compliance Methods

- Using a large holding tank and a series of baffles and sufficient retention time that allows for settlement.
- Divert all wash water, coring water, and storm water into one system. Others may use a number of smaller systems throughout their production operations.

Some states have industry-specific permits and others have a general storm water and/or process water permit for the Concrete Products Manufacturing Industry. Permits may cover the discharges of storm water and process water for the concrete products industry. These permits may contain language requiring manufacturers to optimize the recycling of all by-products generated during the manufacturing of concrete products, including but not limited to:

- Excess concrete
- Concrete washout wastewater
- Concrete debris and aggregate

Industry Progress / Process Water Methods

Industry is working toward methods that minimize water waste by recycling. A few industries are leading the way by pre-treating process water and attempting to recycle all process water. Many automated commercial systems are available and designed for recycling concrete materials/process water. Installing a system of your own design may provide a cost-effective solution to handling/ recycling of process water. Some plants use a sloped pit for initial settlement, allowing easier access (and maintenance) with a front-end loader. The process water is then pumped/ flows into a larger settlement tank and then into a dosing tank where pH is adjusted to meet the required discharge limits prior to discharging or reuse.

Planning for a Process Water System

In planning for a process water system, determine the overall goals and requirements of the system, and review all aspects of the issue, such as “customer” set limits, i.e., solids allowed in concrete mix design (recycling slurry may not be an option) and target solids content for the actual batching water.

Every concrete user should be familiar with the requirements governing the discharge of process water. Concrete product manufacturers that do not recycle process waters from the site and are located near surface waters will likely be required to obtain a storm water National Pollutant Discharge Elimination Systems (NPDES) permit. Visit the EPA’s web site at www.epa.gov for more information about the NPDES or your state’s requirements for the discharge of process water into local waters.