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3M Cumberland - Sludge Reduction

Challenge

The 3M Cumberland facility manufactures floor pads, soft-edge foam masking tape, superabrasives, and fine abrasives (lapping films and microfinishing films).

3M Cumberland follows numerous corporate environmental targets, including reducing energy and water consumption, and air emissions, and also has the latitude to go beyond corporate targets. Located almost on top of Beaver Dam Lake, the facility has long been aware of its impact on water. Management wanted to reduce the amount of suspended solids sent to the publicly owned treatment works (POTW). The facility's process mixing vessels were traditionally cleaned out using a 'wet' process, which resulted in a large amount of suspended solids in the discharge water.

Strategy

3M Cumberland switched to a 'dry' cleaning method, which involves coating the vessels with a proprietary 3M non-stick coating and lining the top of the vessels with a sacrificial barrier. After a mix is used, the vessel is allowed to dry and the residual is emptied from the vessel and disposed.

The non-stick coating cost was approximately \$7,000 per vessel; which totaled \$14,000. The sacrificial barriers, a plastic product, cost about \$15 per month.

The facility also experimented with filter press and cyclonic separation to further reduce solids discharge.

Results

The dry cleaning method has resulted in almost a 50% reduction in suspended solids sent to the POTW (from 0.13 lbs sludge per lb product in 2007 to 0.07 lbs sludge per lb product in 2008 and 2009). Water usage has also decreased by approximately 5000 gallons per year, since they are no longer cleaning out the vessels with water. There also is a labor savings of approximately 75 hours per year.

Although the new cleaning method does not save money directly, the POTW benefits from having fewer solids to treat in the discharge water and 3M has minimized the risk from a clogged discharge pipe.

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