



## **Environmental Stewardship Has Its Rewards: 2015 Annual Environmental Award Winners**



Since 2009, GEO Specialty Chemicals has honored its employees who go the distance to make environmental stewardship an ongoing priority. The Annual Environmental Awards ceremony is held during the company's annual Safe Award for Excellence (SAFE) conference. The four R's for sustainability in manufacturing – reduction, reuse, recycle and recovery – are key strategies applied to pollution and waste when they are eliminated at any of GEO's plant locations.

### **2015 Environmental Award Recipients**

In 2015 there were 6 entries for the Environmental Awards competition. Projects focused on pollution prevention in all stages of a plant's life and across the four R's of sustainability. Three awards were given; one First Place Award and two Honorable Mention Awards.

#### **1<sup>st</sup> Place:**

#### **Paints & Coatings**

#### **Facility: Hythe, England**

The Multi-functional Monomer Unit (MMU) production process generates a methanol rich (16%) aqueous effluent at a rate of approximately 65 tons per week. Historically some of this effluent has been treated in the site anaerobic digester with the rest having to be sent off-site as hazardous waste for treatment. Treatment in the anaerobic digester resulted in methane emissions of 150 tons per year.

#### **Project:**

Employees at the Hythe facility worked with a local utilities company, Southern Water, exploring the possibility of using the methanol rich effluent stream to replace purchased methanol as a

biodegradable high COD source for one of their water treatment de-nitrification plants. To enable this activity GEO petitioned the UK Environmental Regulator to change the designation of the MMU effluent from a waste to a by-product. When that was accomplished routine shipments of the methanol rich effluent started going to Southern Water for use in their process.

**Environmental Benefit:**

The project benefits include:

1. Shutdown of GEO's digester eliminating 150 Tons/year of methane emissions along with the cost of operating the digester.
2. Significant reduction in the volume of site hazardous waste disposal.
3. Significant reduction in the amount of virgin methanol that has to be purchased by Southern Water.
4. There is a combination of annual disposal costs and digester operating costs savings. Reduction in both GEO's and Southern Water's carbon footprint.

**Honorable Mention:                      Water Treatment & Glycine                      Facility: Deer Park, TX**

Rain water collected within Deer Park's process areas cannot be released to the storm water discharge outfalls. According to the TCEQ, this retained water must be disposed of using approved methods; either profiling the water for deep well injection or disposing of the water through a third party waste disposal facility. During the design and construction of the new UltraFloc<sup>®</sup> plant the engineering team had a better idea.

**Project:**

The team designed a rain water recovery system comprised of collection tanks, piping, pumps, and a filter. Each new process area has an independent system to collect rain water in dedicated collection tanks. These tanks are piped directly to multiple process reactors and plant operators can control water flow from specially designed control panels allowing the operators to use available rain water at the flip of a switch. Designing the system for convenience has been the key to its effectiveness as the operators can quickly access the rain water while keeping their work areas clean and dry with minimal physical effort.

As an example, in May 2015, the heaviest rainfall month in Houston's recorded history, the Deer Park UltraFloc<sup>®</sup> operations team produced 3.1 million pounds of ACH and PAC combined using rain water as the water source for both production processes. No purchased process water was required for the month and no wastewater was disposed of during the month.

**Environmental Benefit:**

The project benefits include:

1. The primary environmental benefit of the project is the recycling of an estimated 1.1 million gallons of wastewater on an annual basis into finished goods for sale to customers.
2. The project reduces the plant's water consumption by the same amount.

While the immediate ROI of the storm water recovery system is minimal, the environmental and safety impacts are far more substantial.

**Honorable Mention: Specialty & Construction Facility: Cedartown, GA**

The Cedartown facility's waste water treatment plant (WWTP) was experiencing frequent high chemical oxygen demand (COD) loading in the wastewater coming from the production facility. The high COD loading forced the WWTP to use significantly amounts of water treatment chemicals, specifically aluminum chlorohydrate (ACH) and anionic polymer.

**Project:**

The plant set a goal of reducing COD loading to the WWTP by 20%. The plant recorded COD loading to the WWTP daily and investigated each incidence of high COD to determine the cause. They then addressed the causes of the high COD loading. Using this approach the plant was able to meet their goal of a 20% reduction in COD loading to the WWTP.

The reduction in COD loading allowed the WWTP to reduce its use of water treatment chemicals by 31.6%.

**Environmental Benefit:**

The project benefits include:

1. Reduction in COD loading to the WWTP of approximately 20%.
2. Reduction in the amount of water treatment chemicals used of approximately 590,000 lbs/year.

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