

*Performance Track Case Study*

## Monsanto Company— Muscatine, Iowa Plant

**A**s a charter member of EPA's Performance Track program, the Monsanto Company's facility in Muscatine, Iowa has developed a strong reputation for environmental excellence. In November 2004, EPA and the Wildlife Habitat Council presented the facility with a special certificate of recognition for its commitment to outstanding environmental performance and wildlife habitat enhancement and restoration. The Muscatine plant is a multiple winner of the Iowa Governor's Awards for Environmental Excellence—in 2004, the plant received the award for environmental habitat restoration and in 2003 for air quality emissions and energy reductions. In addition, this leading facility received two American Chemistry Council Energy Efficiency Awards in 2002 and 2003.

**"It's nice to get a third party [such as the Wildlife Habitat Council] and your regulatory body to recognize you as one of the best. It makes our community very comfortable, and employees proud to know that they work for a good company that is making products in a way that adds value for everyone."**

Susie Hidalgo, environmental safety and health area leader,  
Monsanto Company, Muscatine, Iowa Plant

According to Susie Hidalgo, “The Muscatine plant is committed to integrity in its operations. We assure that as we manufacture our products, we do so in a way that is safe, good for the environment, and adds value to our community.”

## Joining and Implementing Performance Track

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Joining the Performance Track program was an easy decision for Muscatine. Performance Track offered the facility an opportunity to be recognized for its previous achievements while at the same time challenging the plant’s managers to set new performance commitments. Membership in Performance Track formalized the environmental work that the facility’s dedicated employees do on a daily basis. Tracking the commitments made the plant accountable for meeting and exceeding its goals.

## Keys to

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### SUCCESS AS A PERFORMANCE TRACK MEMBER

Key elements of the Muscatine plant’s participation in Performance Track include a focus on employee safety, environmental protection, and community engagement. Employee safety is a top priority at Muscatine. For example, there are 11 safety planning and execution committees in the facility, involving 130 employees. Each committee performs specific activities to promote and enhance safety, including areas such as contractor safety, off-the-job safety, procedures, and ergonomics. In addition, the plant has 13 Area Safety Coordinators (ASCs) whose full-time job involves ensuring the safety of the employees and the work environment. The ASCs are also responsible for training and raising awareness about recent or potential safety issues.

The plant has been involved in local habitat restoration and preservation since the early 1980s with the establishment of the adjacent 510-acre Big Sand Mound Nature Preserve, certified in 1992 as a Wildlife Habitat Council site. In 1993, the Muscatine facility began a sand prairie restoration project, planting 65 acres with native grasses and wildflowers, and later expanding the site to 200 acres—including a 1-acre butterfly garden. Today, the sand prairie is a valuable educational resource for community groups, local schools, and plant employees.

The Muscatine plant prides itself in supporting the community. Monsanto is a strong advocate for ensuring that the community surrounding the plant is a place where all citizens would like to live. As a result, the organization involves the community as it makes environmental management decisions. This involvement comes in the form of a Community Advisory Panel, composed of 12 citizens in the community who meet quarterly to serve as a sounding board for Muscatine. In addition, every three years the plant hosts a community open house to showcase its accomplishments, operations, and products. The most recent open house, held in August 2004, drew a crowd of about 1,000 attendees.

The following elements are pivotal to the Muscatine plant’s success in the Performance Track program:

- Support from top management;
- Employees’ contribution, involvement, and sense of pride;
- Interactive relationships with regulatory agencies and the community; and
- Feedback and recognition from EPA, highlighting environmental progress.

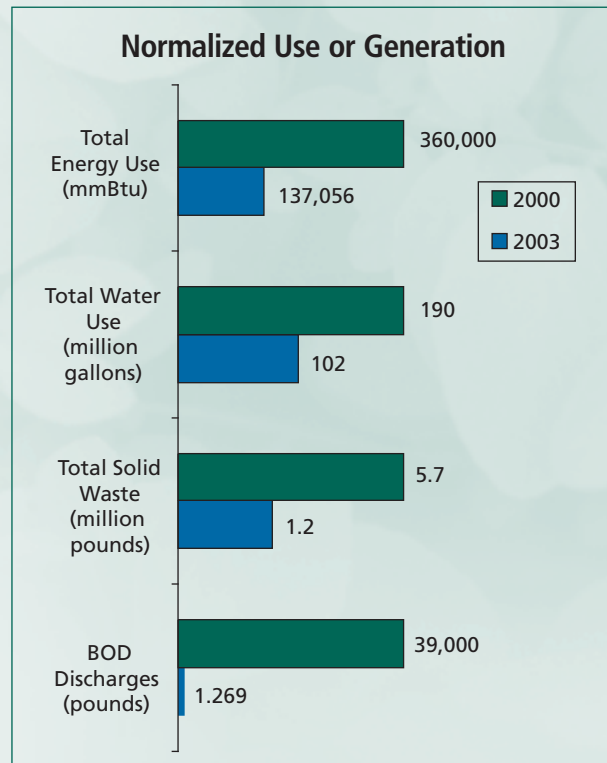
## Results of Performance Track Membership

The greatest benefit of Performance Track membership is the sense of pride that it gives Muscatine employees, who are further motivated to do what it takes to exceed the facility's commitments. Employees are heavily involved in the environmental processes at the plant. They contributed to the development of an Aspect Analysis, an inventory used to determine the organization's four commitments as a member of Performance Track. An Aspect Analysis takes a detailed look into every aspect of each process. Examples of aspects include energy consumption, waste generation, and material use. Each aspect is ranked based on the potential frequency of occurrence and impacts to the community and environment. For items such as energy and material use, the ranking is based on the amount generated and the potential cost savings. Once the aspects have been ranked, they are used to help identify new commitments.

The Muscatine facility achieved the following normalized results during its first three years in Performance Track:

- Reduced its total energy use per pound of product by 62 percent through the conversion of portions of the production process from batch to continuous operation, which lowered steam and electricity demand;
- Reduced its water use per pound of product by 47 percent through the batch-to-continuous conversion, which reduced the demand for water to produce steam and increased the quantity of water recycled within the production process;
- Reduced its total solid waste per pound of product by 79 percent through the organization of a manufacturing process to reduce impurity formation coupled with the institution of recycling within a portion of the process; and
- Reduced its discharges to water, in terms of biological oxygen demand (BOD), by 97 percent (exceeding its commitment by 25 percent) through process optimization and additional internal recycling, which reduced the BOD loading to the facility's wastewater treatment plant.

The following chart illustrates the Muscatine plant's four Performance Track commitments and subsequent reductions. These reductions have resulted in cost savings in the manufacturing of products.



The Muscatine plant recently renewed its membership in Performance Track for another three years. Its new commitments include:

- Reducing raw material use by 2 million pounds through the installation of an additional reactor in the herbicide manufacturing process that will improve reaction time and product yield from an herbicide intermediate, thus reducing the demand for the intermediate;
- Reducing raw material consumption by 11,000 pounds through a process modification that will allow for reduced consumption of an herbicide manufacturing processing aid;
- Reducing total energy use by 1.5 million kilowatt-hours through modifications to the facility's compressed air system that include leak repair, addition of a larger surge tank, and installation of a control system to more efficiently operate compressors; and
- Reducing transportation energy use by 17 percent through the reduction of waste water generated by the herbicide formulation production process and the corresponding decrease in the need to ship waste water for off site disposal.

reduced energy per pound of product by 62%

## Spreading the Word

The Muscatine plant values its membership in Performance Track and is using its experience to spread the word about the benefits of the program. The plant currently serves as a mentor to another Monsanto facility, helping the other plant recognize and reap the benefits of a Performance Track membership.

Muscatine offers the following advice to other organizations that are new to Performance Track:

- Obtain commitment from upper management to improve processes;
- Involve your employees in the process and in celebrating the results;
- Organize your environmental management systems and programs;
- Use other Performance Track members as mentors; and
- Share your efforts with the community.

## Ready to Get Started?

For more information about other members' commitments and accomplishments and to learn how you can become a member of Performance Track, visit our Web site at [www.epa.gov/performancetrack](http://www.epa.gov/performancetrack) or call (888) 339-PTRK (7875).

## PROFILE

**Company Name:** Monsanto—  
Muscatine, Iowa Plant

**Location:** 2500 Wiggins Road  
Muscatine, IA 52761

**Phone/Fax:** (563) 262-5673  
(563) 262-5604

**Plant Size:** 555 acres  
(16 acres are developed)

**Type of Business:** Agricultural herbicide  
manufacturing

**Total # of Employees:** 410, plus  
100 contractors

**Years in Business:** 44

**Customers:** Agricultural producers

**Certifications:** ISO 9001/2000  
registered

**"I was a believer in working with Mother Nature long before I joined Monsanto. I am now closing in on 30 years of employment, and I have a lot of pride in working for a company that sees the environment as something to incorporate in how we do business rather than conquer."**

Joseph Furlong, a production technician  
Monsanto Company, Muscatine, Iowa Plant

