ENVIRONMENTAL STEWARDSHIP

MPC EMPLOYEES VALUE CLEAN AIR, CLEAN WATER AND CLEAN LAND IN THE COMMUNITIES WHERE THEY LIVE AND WORK; THE COMPANY REFLECTS THEIR VALUES BY PROTECTING THESE FACETS OF OUR LIVES.

As MPC expands and optimizes its operations to meet growing energy demand in the U.S. and international markets, we keep in mind our Responsible Care®-driven vision of no accidents, no injuries and no harm to the environment. MPC’s commitment to environmental stewardship is a natural extension of its culture of continual improvement; when refineries, terminals, transportation systems and office complexes are safe and efficient, they are also environmentally sound.

In 2011, the environmental stewardship metrics that MPC reports reflected our ongoing efforts to increase efficiency even as we expand our processing capacities in order to better meet the needs of fuel consumers in the U.S. and in overseas markets. With the expansion of our Garyville, La., refinery completed toward the end of 2009 – as well as many other factors, including global and domestic fuel demand – our crude oil throughput increased from 2009 to 2010, and again in 2011. This increase is reflected in energy consumption, given the energy-intensive nature of the refining business.

Despite the increases in crude oil throughputs, we were able to continue reducing our criteria air pollutant emissions and the volume of waste we recycled has risen significantly over the past few years, while the volume of hazardous waste we dispose of has continued to decline.

Why it matters
MPC reports total emissions of volatile organic compounds, nitrogen oxides, sulfur oxides, carbon monoxide and particulate matter. We work to reduce these emissions in compliance with relevant regulations, and toward our objective of protecting the health of our employees and their families, friends and neighbors in the communities where our facilities are located.

How we improve
As a company committed to the Responsible Care vision of no environmental harm, MPC works toward continual improvement of its emissions performance. We evaluate emissions-reduction opportunities for new facility construction and for existing operations. Reduction efforts include cost-effective energy efficiency measures, incident prevention, prudent operations to reduce flaring and use of best control practices.

From 2007 to 2011, we have reduced our total criteria air pollutant emissions by more than 20 percent.

CRITERIA AIR POLLUTANT EMISSIONS
Tons

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Why it matters
GHG emissions have come under scrutiny at the federal and state levels, and legislation and regulations have accordingly sought to address GHG emissions. MPC reports how much GHG is emitted in terms of tonnes of carbon dioxide equivalent (CO\(_2\)e).

How we improve
MPC works to implement processes and install equipment that increase energy efficiency and avoid increasing emissions whenever possible. Our efforts have yielded positive results. In our Refining organization – by far the largest source of our GHG emissions – our GHG emissions intensity has gone down over recent reporting periods. In 2009, our Refining direct emissions were 8.4 tonnes CO\(_2\)e per barrel of daily throughput, while in 2010 that figure was down to 7.5 tonnes, and in 2011 it was 7.3 tonnes.

MPC's Catlettsburg, Ky., refinery.
**Why it matters**

In addition to the cost-advantages of reducing the amount of waste MPC must dispose of, less waste means higher operational efficiency and less material sent to landfills and hazardous waste disposal sites.

**How we improve**

All MPC facilities have pollution prevention and waste minimization programs in place, whether it’s a refinery or an office building. These plans are designed to identify opportunities to reduce waste generation and drive continual improvement in waste disposal activities.

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**MPC’s energy use increased from 2009 to 2010 primarily due to completion of a major expansion project at our Garyville, La., refinery in late 2009.**

**Our energy use dropped from 2010 to 2011 due primarily to the sale of the St. Paul Park, Minn., refinery and related assets in late 2010.**

**Why it matters**

As a manufacturing company, MPC is always seeking ways to increase operational efficiency and reduce costs. Energy use is a reliable measure of efficiency. Reduced energy use also allows us to reduce emissions and conserve natural resources.

**How we improve**

Because of the cost and environmental benefits inherent in reducing energy consumption, MPC has an Energy Efficiency Team in place to identify efficiency opportunities and recommend measures to save energy. We implement process improvements and technological solutions that increase energy efficiency across all of our operations. Just two examples include installation of energy-efficient lighting at retail and office locations, and ensuring that our plant expansions – such as those at our Detroit, Mich., and Garyville, La., refineries – incorporate the most advanced energy-efficient technologies appropriate to our needs. By the end of 2011, the U.S. Environmental Protection Agency had recognized MPC refineries with 21 of the 26 ENERGY STAR designations it has awarded to refineries since 2005.
Why it matters
Consistent with our vision of no accidents, no injuries and no harm to the environment, oil spills must be prevented because of their negative impact on each of these three components of our vision. Therefore, we track spills both in terms of the number of incidents and their severity, as indicated by the volume spilled. For the purposes of this metric, we include crude oil and refined product in our spill measurements.

How we improve
MPC prevents spills in a variety of ways, including intensive training of personnel, detailed procedures for critical tasks, rigorous preventive maintenance, equipment inspections and various mechanical safeguards. When a spill occurs, it is immediately addressed by highly trained emergency responders, and we conduct an investigation into its causes to determine steps that can prevent future occurrences.
Energy efficiency

IN 2011, FOUR MPC REFINERIES EARNED THE U.S. ENVIRONMENTAL PROTECTION AGENCY’S (EPA) ENERGY STAR DESIGNATION.

To attain EPA ENERGY STAR status, applicants must meet two stringent requirements: first, the site must perform in the top quartile for energy efficiency, and second, it must have no unresolved environmental compliance actions from either state or federal regulators.

The MPC plants that earned the designation in 2011 were our refineries in Canton, Ohio; Detroit, Mich.; Garyville, La.; and Texas City, Texas. Only one other U.S. refiner received the 2011 recognition. By year-end 2011, EPA ENERGY STAR recognitions had been issued to refineries only 26 times in the U.S. since the award’s inception in 2005. MPC has received 21 of those 26 awards.

Marine environmental awards

MPC’S COMMITMENT TO OPERATIONAL EXCELLENCE AND ENVIRONMENTAL STEWARDSHIP IS BASED ON OUR VALUES.

Our Marine Transportation organization has been recognized for excellence in this area by the Chamber of Shipping of America (CSA), which presented its Environmental Achievement Award to 12 MPC Marine vessels in 2011.

To be eligible for the CSA Environmental Achievement Award, vessels must have operated for at least two years with no reportable spills, no U.S. Coast Guard or port state citations for marine pollution violations, and no violations of state and local pollution regulations.

Marine Transportation also has won five William M. Benkert Marine Environmental Protection Awards from the U.S. Coast Guard since 2002. The Benkert Awards recognize outstanding achievements in marine environmental protection that go beyond mere compliance with industrial and regulatory standards.

Maintaining response capabilities

MPC IS COMMITTED TO CONTINUALLY STRIVING TOWARD NO ACCIDENTS, NO INJURIES AND NO HARM TO THE ENVIRONMENT, BUT WE ARE ALSO PREPARED TO RESPOND TO INCIDENTS QUICKLY AND THOROUGHLY WHEN THEY TAKE PLACE.

The company’s Emergency Preparedness Group (EPG) is responsible for maintaining our readiness to respond, which it does by establishing clear processes and procedures for how incidents are handled based on their severity and type, training responders throughout the company and conducting regular drills that bring all the components together.

EPG conducts dozens of drills each year to exercise various aspects of the company’s emergency response capabilities. Many of these bring together our own employees with representatives of federal, state and local agencies. These drills provide an opportunity for government stakeholders and MPC emergency responders to interact cooperatively in the context of our incident command structure, further enhancing our working relationships with the agencies.

EPG also coordinates one major drill each year that brings together several company organizations to practice responding to a major incident. These major drills, usually lasting three days, include participation by representatives of the federal government – typically the U.S. Coast Guard – as well as state and local agencies and officials. In 2011, the major drill was conducted in Florida and Louisiana simultaneously to determine the company’s ability to accommodate two separate, major incidents.

Left: The MV Louisville on the Ohio River. Right: An MPC employee at a dock in Catlettsburg, Ky.
Preventing pipeline releases

ONE OF THE MOST IMPORTANT FACETS OF PIPELINE SAFETY IS INTEGRITY MANAGEMENT, AND MPC MAINTAINS A RIGOROUS PROGRAM TO MAINTAIN THE SAFETY OF ITS PIPELINES.

We use multiple inspection tools to assess pipeline integrity, checking for metal loss, cracking and third-party damage, depending on the unique needs of each segment. Inspections continuously evaluate pipelines such that every mile of our regulated pipelines is inspected on no longer than a five-year rotation – an average of approximately 1,200 miles of pipeline inspected each year.

In 2011, MPC conducted integrity assessments on dozens of pipeline segments totaling more than 1,000 miles. Because some segments were assessed multiple times with different technologies and methods, the total number of assessment miles came to more than 5,000. The pipeline assessments were followed by an evaluation and investigation process, resulting in pre-emptive repairs and other remedial actions that are designed to address issues before they become problems.

Left: A pipeline right of way. Right: An MPC survey team. Bottom: An operations analyst at the Marathon Pipeline Operations Control Center in Findlay, Ohio.

Ethanol

MPC HOLDS EQUITY INTERESTS IN TWO MIDWEST ETHANOL PLANTS TO HELP PROVIDE ECONOMICALLY PRICED ETHANOL FOR ITS BLENDING NEEDS.

We hold a 50 percent equity interest in an ethanol plant in Greenville, Ohio, and a 36 percent equity interest in a Clymers, Ind., plant. The plants have a combined nameplate production capacity of 220 million gallons per year.

In 2011, the profitability of both plants was enhanced by adding corn oil separation technology.

The Greenville plant began selling carbon dioxide, and both plants began selling E-85 fuel (up to 85 percent ethanol). We continued evaluating other possibilities for the plants, including biodiesel production capability and siting an algae plant nearby that would produce biodiesel, leveraging the carbon dioxide stream produced by the ethanol distillation process. We also worked with a global biotech firm to explore the possibility of producing cellulosic ethanol from corn cobs and corn stover at the Clymers and Greenville plants. The evaluation is ongoing.

Left: A lab technician at the Catlettsburg, Ky., refinery lab. Right: An ethanol plant in Greenville, Ohio, in which MPC holds an equity interest.
**Other alternative fuels**

MPC continued evaluations during 2011 with various partners, both formal and informal, toward establishing alternative fuels sources:

- We have been in discussions with developers in Ohio, Florida, Iowa and California to determine the potential of algae-based fuel. At a research and development facility at our refinery in Catlettsburg, Ky., we are testing algae oils to determine their suitability as a transportation fuel.

- We are exploring the use of municipal solid waste as a potential source of ethanol or cellulosic diesel, and we are working with two Midwest-based companies to evaluate the possibilities.

- In collaboration with an Ohio-based company, we are evaluating the potential for pyrolysis technology to contribute meaningfully to our alternative fuels slate. Pyrolysis is a process by which biomass or other substances are heated in the absence of oxygen to produce fuels.

**Solar power**

In an effort to gather information about the technology, operations and potential utility of solar power to MPC operations, we signed an agreement with the city of Findlay, Ohio, in 2011 to install a 1-megawatt capacity solar array at the city's Water Pollution Control Center.

The 5,100 panels will be a combination of first- and second-generation solar technology, and all power generated by the array will be donated to the city.
These habitat sites are certified as either Wildlife at Work or Corporate Lands for Learning sites, and in some cases both. The Wildlife at Work program provides a structure for cooperative efforts between management, employees and community members to create, conserve and restore wildlife habitats on corporate lands. Corporate Lands for Learning is a certification program that gives us a framework for opening our habitats to members of the community for educational purposes.

MPC volunteers – often in collaboration with other local community organizations – actively manage these 17 sites, which include more than 1,400 acres. MPC employees devote their time to removing invasive plant species, planting native species, building nest boxes for native birds and bats, monitoring wildlife, educating schoolchildren on the importance of the habitats and much more.

Garyville, La., refinery property
Acres managed for wildlife: 450
Wildlife at Work certified since 2001

Savage Branch Wildlife Reserve, Catlettsburg, Ky.
Acres managed for wildlife: 360
Wildlife at Work certified since 1994, and Corporate Lands for Learning certified since 1999

Big Spring, Ky.
This site is unique in that the land is not owned by MPC, although MPC has a right of way for an underground pipeline through the property. The property, including the right of way, is managed for wildlife habitat cooperatively between MPC and the landowner.
Acres managed for wildlife: 203
Wildlife at Work certified since 2001

Martinsville Tank Farm, Martinsville, Ill.
Acres managed for wildlife: 151
Wildlife at Work certified since 1999, and Corporate Lands for Learning certified since 2008

Palestine Neil Pit, Robinson, Ill.
Acres managed for wildlife: 80
Wildlife at Work certified since 2006, and Corporate Lands for Learning certified since 2008
Lincoln Trail College and Palestine High School Nature Habitat, Robinson, Ill.
Acres managed for wildlife: 50
Wildlife at Work certified since 2010. MPC also makes the property available to students and local citizens for various learning and activity opportunities.

Speedway Corporate Office Complex, Enon, Ohio
Acres managed for wildlife: 42
Wildlife at Work certified since 1999

Washington Park, Robinson, Ill.
Acres managed for wildlife: 31
Wildlife at Work and Corporate Lands for Learning certified since 2005. Local schools use the habitat for various educational programs, and signage along the nature trail provides students and other community members information about butterflies, local trees and trail safety.

Kuttawa Asphalt Terminal, Kuttawa, Ky.
Acres managed for wildlife: 20
Wildlife at Work certified since 2004

Huntington Light Product Terminal, Huntington, Ind.
Acres managed for wildlife: 8
Wildlife at Work certified since 2011

Cane Run Asphalt Terminal, Louisville, Ky.
Acres managed for wildlife: 5
Wildlife at Work certified since 1999

Mt. Vernon Asphalt Terminal, Mt. Vernon, Ind.
Acres managed for wildlife: 5
Wildlife at Work certified since 2009

St. Elmo Asphalt Terminal, St. Elmo, Ill.
Acres managed for wildlife: 4
Wildlife at Work certified since 2011

Hutsonville School Nature Habitat, Hutsonville, Ill.
Acres managed for wildlife: 3

Former Old Dutch Refinery, Muskegon, Mich.
Acres managed for wildlife: 1
Wildlife at Work certified since 2011

Nashville Asphalt Terminal, Nashville, Tenn.
Acres managed for wildlife: 1
Wildlife at Work certified since 2007

Findlay Office Complex, Findlay, Ohio
Acres managed for wildlife: <1
Wildlife at Work certified since 2000