

Commitment to the Environment

- BP Whiting Refinery is committed to meeting all of the environmental regulations and rules that governments have developed and put in place to protect our shared natural environment.
- We are employing many of the latest technologies and processes to help us minimize our impact on the environment. We will continue exploring ways to reduce our impact – even further.
- BP is investing **\$1.4 billion** in environmental enhancements to the facility, including waste water improvements, air emission reductions, and systems to remove sulfur from gasoline and diesel.
- We are investing millions of dollars in academic research studies to help us go beyond what is required by law in minimizing harm to the environment around us. For example, we have provided a \$5 million research grant to Purdue Calumet Water Institute and Argonne National Laboratory to explore new ways for industries to protect the fresh water that we, and the communities around us, rely upon.

Water

A key element of BP Whiting Refinery's water treatment strategy is the pre-treatment of waste water during processing, *before* this process waste water stream even reaches the refinery's own waste water treatment facility:

(A) Internal – Upstream Improvements

- **Desalters:** BP's Whiting Refinery is installing new units to remove dissolved salts, such as sodium and chloride, from raw crude oil at its main crude processing unit. The Refinery is also installing a 'Profiler' – to help us control the desalter operation, and prevent disruptions to Whiting Refinery's waste water treatment plant.
- **Sour Water Stripper:** The Whiting Refinery will be constructing a new sour water stripper that will allow us to remove 98% of ammonia before the waste water even reaches our waste water treatment plant. The Refinery is also implementing controls so that we can cycle back waste water for re-treatment as needed.

The Whiting Refinery is also making a series of improvements to its waste water treatment facility in order to reduce our impact on the environment:

(B) Internal – Lakefront Treatment Improvements

- **Brine Treatment Unit:** Whiting Refinery is building a new, first-of-its-kind, brine treatment unit at its waste water treatment plant to help remove about 40% of total suspended solids from our waste water stream.
- **Waste Water Equalization Tank:** We are increasing our waste water surge and equalization capacity by adding an 11.8 million gallon holding tank. This will help us to contain almost 60% more waste water, and reduce, even further, the small chance of a disruption to our treatment process.

- **Tertiary Filters:** Whiting Refinery is improving its 'final treatment' capabilities by installing new tertiary filters at its waste water treatment plant. This investment will increase the Refinery's filtering capacity by 150%.

(C) Monitoring Improvements

- **Online Analyzer:** We are adding an Online Analyzer tool that will continuously monitor waste water for total organic carbon and total nitrogen, so that if an upstream (internal) spill is identified in the plant, we can quickly store the untreated stream, and then treat the stream, in a controlled manner, once the problem has been corrected.
- **Online Turbidity Analyzer:** We are adding an Online Turbidity Analyzer that will enable us to – in real time – identify any sudden changes in effluent turbidity.

Other Water Improvements

We are reducing the amount of 'once through' cooling water we use, and increasing water re-use, by sending water back and forth between the process exchangers that heat the water, and the cooling towers.

Air

From 2001-2006, the Whiting Refinery decreased regulated emissions by 68%. (Regulated emissions include emissions such as NOX, VOCs, CO, PM10, and metals such as mercury and lead).

- As part of the Whiting Refinery Modernization Project, BP is removing older, less efficient, equipment, and installing emission controls on upgraded and other units, in order to reduce its environmental footprint. These measures will help us to reduce regulated emissions by another 7% by 2012.
- Carbon Monoxide (CO) emissions will go down through the installation of new 'fuel gas-fired heaters,' and setting lower airborne emission limits for the 'fluid catalytic cracking units' (these FCC units use a hot catalyst to crack longer chain catalysts into shorter, more valuable hydrocarbons).
- We are reducing VOC emissions by: (a) halting the practice of gasoline loading to and from barges, and instead using pipelines to move product; (b) instituting an enhanced 'leak, detection and repair program' for hydrocarbons; and (c) removing a greater amount of sulfur from the 'refinery fuel gas system' which captures byproduct fuel gases from various units throughout the refinery, and uses this gas to power heaters and boilers throughout the refinery. In some cases, we use natural gas as a substitute or a supplement.

Whiting Refinery's Green Initiative

Whiting Refinery's 'Cal-A Storehouse' has taken the lead on a new Green Initiative. In 2008, the facility managed to decrease its energy consumption by 27%. The Facility reduced paper and cardboard use over the same period by 7200 lbs, and is now recycling plastic and wood pallets. The Refinery is taking the lessons learned from this success, and is now applying its Green Initiative to office buildings.