



INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

U.S. Steel-Gary Works 2009 Draft Wastewater Permit

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Introduction

Federal law requires a permit for all facilities that discharge to a water of the United States. The Indiana Department of Environmental Management (IDEM) is responsible for issuing discharge permits to Indiana facilities. U.S. Steel Corporation in Gary needs a permit for its discharge of wastewater generated in its manufacturing processes, non-contact cooling water used in its operations, and storm water run-off. The facility's current permit was issued in 1994 and needs to be brought up to date with current federal and state regulations.

Following public notice of a draft permit in 2007, IDEM received comments from the public and from the United States Environmental Protection Agency (U.S. EPA). Since that time, IDEM has worked, in consultation with U.S. EPA, to write a strong permit that is protective of public health and our environment. Staff has reexamined permit limits, examined new data, and made some changes to the draft permit that assure current water quality standards are being met. IDEM has received a letter of non-objection from U.S. EPA. This fact sheet summarizes the features of the 2009 draft permit, differences between the 2007 and 2009 draft documents, and steps taken to resolve U.S. EPA's concerns about the 2007 draft permit.

Features of the 2009 draft permit

The 2009 draft permit complies with current state and federal water quality regulations for limiting pollutants known or expected to be in the facility's discharges, along with monitoring and reporting requirements that will help protect the water quality of the Grand Calumet River and Lake Michigan. Features of the draft permit include:

- **Permit limits reflect current water quality standards.** Many water quality standards have been updated since the last renewal date in 1994. This includes more stringent water quality standards under the Great Lakes Initiative, which were adopted by Indiana in 1997. While permit modifications in 1997, 1998 and 1999 would have incorporated some new requirements under GLI, the 2009 draft permit fully incorporates GLI standards.

- **Updated water quality modeling data.** The 2009 draft permit takes into consideration new water quality modeling data that supports permit limits, a new reasonable potential analysis for individual pollutants and whole effluent toxicity (WET), and a more detailed analysis, including comparison tables, for antidegradation requirements.
- **More stringent permit limits for benzo(a)pyrene.** Permit limits for benzo(a)pyrene were calculated based on water quality-based effluent standards, resulting in more stringent limits in the 2009 draft permit than interim limits currently in effect.
- **A more detailed compliance schedule for meeting new mercury limits.** The 2009 draft permit contains limits for specific outfalls where mercury exhibited reasonable potential and must comply with current water quality standards. A detailed compliance schedule is included, which outlines the facility's requirements for evaluating, selecting and installing mercury control technologies or best practices within five years.
- **More stringent requirements for temperature.** To ensure temperature limits are met in the Grand Calumet River, the 2009 draft permit requires continuous monitoring at three locations closer to the facility's outfalls that have the greatest thermal impact. This increases the number of sampling locations from two to three and sampling frequency from grab to continuous. The compliance schedule proposed in 2007 was reevaluated and has not been changed in the 2009 draft permit. The facility has one year to install permanent monitoring devices and begin continuous reporting, and two additional years, a total of three years, to demonstrate compliance under the more stringent temperature requirements.
- **Numeric limits and more stringent monitoring requirements for whole effluent toxicity (WET) testing.** The 1994 permit required quarterly testing for two years at outfalls 005, 010, 028/30 and 034. In contrast, the 2009 draft permit establishes permit limits for outfalls 005 and 034, and quarterly testing for the duration of the permit for outfalls 005, 010, 028/030 and 034.
- **More stringent requirements for the operation of the cooling water intake structures.** The 2009 draft permit includes requirements for studies to ensure minimal adverse impact to aquatic life.

Summary of key differences

Following are a summary of key differences in requirements in the 2007 and 2009 draft permits.

Appropriate compliance schedules. IDEM received additional justification for all compliance schedules remaining in the 2009 draft permit. The remaining schedules were evaluated and adjusted, as appropriate. The schedule for benzo(a)pyrene has been shortened and the schedule for mercury now includes more detail. The schedule of compliance for temperature was found to be appropriate and has not changed.

- **Benzo(a)pyrene and Whole Effluent Toxicity (WET).** The 2009 draft permit contains shortened schedules of compliance for meeting the final limits: a 34-month schedule of compliance is required for outfall 005, which involves the construction of additional treatment at the coke plant, and a 24-month schedule of compliance for outfall 010, which involves the elimination of the discharge from this outfall.
- **Mercury.** The 2009 draft permit contains a more detailed compliance schedule requiring the company to perform an engineering evaluation, and select and install mercury control technologies within five years for meeting mercury limits imposed at outfalls 005, 010, 015, 018, 019, 020, 028/030 and 034.
- **Free Cyanide.** Limits for free cyanide have been added at outfall 010 based on a reevaluation of the potential to exceed water quality based effluent limits.
- **Enhanced Storm Water Requirements.** Storm water requirements in the 2009 draft permit include both non-numeric permit conditions in addition to the storm water pollution prevention plan (SWPPP). These new requirements are based on the most up-to-date federal guidance, U.S. EPA's Storm Water Multi-sector Permit Language issued by U.S. EPA in 2008.
- **Ammonia.** The 2009 draft permit contains more stringent limits for ammonia at the internal source, outfall 501 at the Coke Plant. Previous limits at outfall 005 were removed based upon the reasonable potential to exceed analysis. To further ensure unpermitted levels of ammonia are not being discharged to the Grand Calumet River, monitoring and reporting are required at the external discharge point (outfall 005) prior to entry into the Grand Calumet River.
- **Copper.** A review of up-to-date data indicated that there is no reasonable potential to exceed copper water quality standards at outfall 018, but the 2009 draft permit continues to require monitoring of this pollutant.
- **Reassessment of Water Quality Based Effluent Limits and Technology Based Effluent Limits.** Permit limits were reevaluated and adjusted based on new data, including recent monthly monitoring reports, recent stream data, updated modeling, up-to-date information about water quality impairments, and updated flow calculations. IDEM applied water quality based effluent limits for parameters at external outfalls where technology-based effluent limits at internal outfalls were less stringent.

- **Outfalls 017, 040 and internal outfall 508 have been closed and are removed from this draft.**

Summary of concerns and resolutions

U.S. Steel is currently operating under a valid permit that was issued in 1994 and modified in 1996, 1997, 1998 and 1999. IDEM invited public comment on draft permits in 2003 and 2007. Comments were received from the public, and U.S. EPA issued letters to IDEM on October 1, and October 16, 2007, expressing concerns about specific issues. The following are U.S. EPA's key concerns and how IDEM has resolved them.

- **Water quality based effluent limitations (WQBELs). U.S. EPA expressed concern that IDEM had not applied the appropriate water quality based effluent limitations for CBOD₅ at outfall 034, whole effluent toxicity at outfall 028/30, and whole effluent toxicity at outfall 034.**

It was further researched and confirmed that the limits for CBOD₅ in the 2007 draft were correct.

IDEM updated the modeling and conducted a new "reasonable potential to exceed" analysis using more recent effluent data for individual pollutants and whole effluent toxicity. IDEM determined:

- Free Cyanide limits are necessary at outfall 010.
 - Copper limits aren't necessary at outfall 018, but they still have to monitor for copper.
 - WET limits were not required at outfalls 010 and 028/030.
 - IDEM applied water quality based effluent limits for parameters including lead (028/030), and cadmium, copper and silver (034) at external outfalls where technology based effluent limits at internal outfalls were less stringent.
- **Technology based effluent limitations. U.S. EPA expressed concern about discrepancies between the fact sheet and 2007 draft permit at internal outfall 604 for monthly average limits for copper, lead, and zinc, as well as daily maximum limits for lead and zinc.**

IDEM resolved the discrepancies by making sure the fact sheet is consistent with the permit. Additionally, IDEM analyzed technology limits and placed more stringent permit limits at final outfalls where water quality based effluent limits were more stringent than technology based effluent limits.

- **Compliance schedules. U.S. EPA expressed concern that five-year compliance schedules were contained for benzo(a)pyrene, free cyanide, chronic whole effluent toxicity (WET), copper, zinc, ammonia and mercury.**

IDEM eliminated many of the compliance schedules from the 2007 draft and reduced the amount of time allowed to comply with new limits for the following pollutants:

- benzo(a)pyrene at 005 (34 months);
- benzo(a)pyrene at 010 (24 months);
- Whole effluent toxicity at 005 (34 months).

IDEM requires the installation of permanent temperature monitoring devices and allows one year for installation of these devices and the continuous reporting of temperature and two additional years three (3) total to meet the temperature limits. The three monitoring locations are closer to the outfalls with the most thermal impacts on the Grand Calumet River. U.S. EPA agrees that these schedules of compliance are appropriate. U.S. Steel must continue to meet temperature limits at locations where temperature is currently being monitored during the compliance schedule.

IDEM required US Steel to submit new information to justify the compliance schedule for mercury. The Compliance Schedule in the 2009 draft permit requires US Steel to do the following:

- perform an engineering evaluation;
- select mercury control technologies; and,
- install control technologies or best practices.

All compliance schedules require U.S. Steel to report progress on installing technologies to meet limits and include language that requires the company to meet the limit in a shorter time period if possible.

The 2009 draft permit does not contain compliance schedules for free cyanide, copper, zinc or ammonia. A reevaluation of data supports that the facility is able to meet limits that are included for free cyanide. Because outfall 040 is being taken out of service, new ammonia, zinc and copper limits will not apply there and therefore there is no need for a compliance schedule. Because it was determined that copper did not have the reasonable potential to exceed water quality standards at outfall 018, the limit was removed, making a compliance schedule unnecessary. Monitoring and reporting requirements were retained for copper.

- **Antidegradation. U.S. EPA expressed concern about whether the new limits for zinc at internal outfall 603 and several pollutants at internal outfall 604 met the antidegradation requirements of the state's water quality standards.**

The 2009 draft permit does not allow an increase in the permit limit for zinc at outfall 603. Technology based effluent limits for the several pollutants added at outfall 604 were authorized, but not applied in the previous permit. In the 2009 draft permit, the effluent limits for these pollutants were set equal to the limits that were authorized but not applied in the previous permit. The new limits at outfall 604 do not allow an increase above what was authorized in the previous permit, so the current antidegradation requirements have been met.

- **Cooling Water Intake Structures. U.S. EPA expressed concern that the 2007 draft did not contain requirements for minimizing adverse environmental impact associated with cooling water intake structures.**

Based upon the review of the information U.S. Steel submitted in relation to the cooling water intake structures, IDEM has included a best technology available (BTA) evaluation and added language to both the 2009 draft permit and fact sheet to support this review. The 2009 draft permit now requires U.S. Steel to conduct both impingement and entrainment studies at the Lakeside and #2 pump stations to ensure that the best technology available continues to minimize adverse environmental impacts. The purpose is to further characterize the nature and extent of the environmental impacts from the cooling water intake structures. Entrainment and impingement have been determined to be appropriate measures of whether adverse impacts have been minimized. The 2009 draft permit also requires quarterly confirmation reporting that the screen intake velocities do not exceed 0.5 feet per second.

- **Freeze protection water. Public comments were submitted concerning a need to address freeze protection water.**

IDEM requested more information from US Steel concerning the issue, and U.S. Steel has defined "freeze protection wastewater" as clean water that is used in various piping systems in the plant during the winter months to maintain the integrity of equipment. U.S. Steel does not use any chemical additives for the purpose of freeze protection and so is not seeking permit authorization to discharge any such freeze protection additives. IDEM will incorporate this definition in the technical fact sheet for the 2009 draft permit prior to issuance.

More Information:

The public may review the 2009 draft permit documents (*technical fact sheet, draft permit and attachments*) on IDEM's Web site at www.idem.IN.gov.

Citizens may direct questions to the IDEM Office of Water Quality Permits Branch at (800) 451-6027, ext. 2-8631.