Iowa Department of Natural Resources

Leading Iowans in caring for our natural resources

Cooling Water Intake Structures

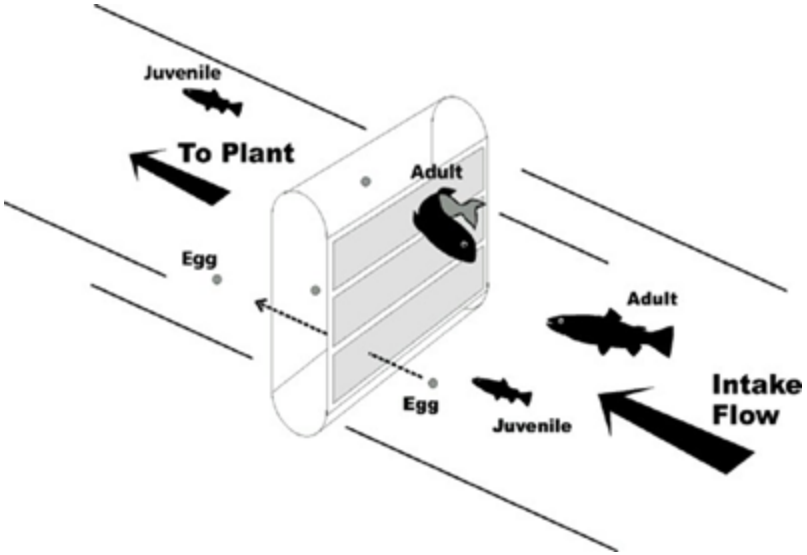
- Section 316(b) of the Clean Water Act requires that NPDES permits for facilities with cooling water intake structures ensure that the location, design, construction, and capacity of the structures reflect the best technology available (BTA) to minimize harmful impacts on the environment.

- EPA promulgated the Existing Facilities Rule pursuant to Clean Water Act Section 316(b) on August 15, 2014. The rule became effective on October 14, 2014

- The rule establishes BTA standards to reduce impingement and entrainment of aquatic organisms at existing power plants and manufacturing facilities.

Adverse Environmental Impacts

- Aquatic organisms drawn into an intake structure are either impinged on components of the intake structure or entrained in the cooling water system itself.
- Technologies to reduce impingement are often different than those used to reduce entrainment.
- Fewer options for entrainment controls.



Rule Summary

- Existing facilities that withdraw at least 25% of their water from a water of the U.S. exclusively for cooling purposes and have a design intake flow of greater than 2 million gallons per day (MGD) are required **to reduce impingement mortality and entrainment**.

- Existing facilities that withdraw very large amounts of water—at least 125 million gallons per day—are required to conduct studies to help their permitting authority determine whether and what site-specific controls, if any, would be required **to reduce the number of aquatic organisms entrained** by cooling water systems.

- Rule provides application requirements for the next NPDES permit.

Permit Application Requirements for All Impacted Facilities in 40 CFR 122.21(r)

Section	Study Name	Study Contents
(r)(2)	Source water physical data	Water body description, hydrology, chemistry, area of influence of the intake structure
(r)(3)	Cooling water intake structure data	Configuration of intake, flows, water balance diagram, typical operations
(r)(4)	Source water baseline biological characterization data	Species present, susceptibility to impingement and entrainment, spawning periods, seasonal patterns; Threatened and Endangered species documentation
(r)(5)	Cooling water system data	Configuration of cooling water system, water reuse
(r)(6)	Intended method of compliance with impingement mortality standard	Select impingement mortality compliance path, option-specific info (e.g., monitoring plan for BTA, documentation of velocity); Impingement Technology Performance Optimization Study
(r)(7)	Existing entrainment performance studies	Previous studies on technology efficacy, studies from other facilities, other entrainment studies
(r)(8)	Operational status	Age, utilization, past upgrades

Permit Application Requirements for Facilities that Withdraw > 125 mgd

Section	Study Name	Study Contents
(r)(9)	Entrainment characterization study	Entrainment data collection plan and data collection
(r)(10)	Comprehensive technical feasibility and cost evaluation study	Evaluate feasibility of all technologies, engineering/social cost estimates
(r)(11)	Benefits valuation study	Monetized losses from impingement and entrainment, other benefit categories
(r)(12)	Non-water quality and other environmental impacts study	Energy penalty, air emissions, safety, reliability, etc.
(r)(13)	Peer Review of (r)(10), (11), and (12)	External peer review of Feasibility, Costs, Benefits, and Environmental Impacts Studies; Must notify Director of reviewers; Director may disapprove and/or require additional reviewers

Timing of Submission of Information Required in Permit Applications

- In the case of any permit expiring on or after July 14, 2018, the facility must submit a permit application that includes all the information required in 40 CFR 122.21(r) with its NPDES permit renewal application.

- Permits expiring prior to July 14, 2018 will be reissued with a schedule to submit the information with the next permit application (54 months later).

Requirement to Reduce Impingement Mortality

- Facilities are required to reduce impingement mortality using one of seven options if they withdraw at least 25% of their water for cooling purposes and have a design intake flow of greater than 2 MGD.
- Options:
  - Closed-cycle
  - Design intake velocity < 0.5 fps
  - Existing offshore velocity cap
  - Actual intake velocity < 0.5 fps
  - Modified traveling screens with fish return
  - System of technologies (ex. intake location, behavioral deterrents)
  - As demonstrated through biological monitoring

Controls to Reduce Entrainment of Organisms

- Entrainment BTA is determined on a site-specific basis for all facilities with intake structures over 2 mgd.
- Existing facilities that withdraw very large amounts of water—at least 125 million gallons per day—are required to conduct studies to help their permitting authority determine whether and what site-specific controls, if any, would be required to reduce the number of aquatic organisms entrained by cooling water systems.
- DNR must consider:
  - Number and type of organisms affected, including the numbers of federally-listed species and designated critical habitat to the lowest taxonomic classification possible.
  - Changes in air emissions
  - Land availability
  - Remaining useful plant life
  - Social benefits and costs

Additional 316(b) Resources

- Wendy Hieb, IDNR

  wendy.hieb@dnr.iowa.gov

  515-725-8405
- John Dunn, USEPA Region 7

  dunn.john@epa.gov

  913-551-7594
- EPA websites
  - http://water.epa.gov/lawsregs/lawsguidance/cwa/316b/
  - http://water.epa.gov/lawsregs/lawsguidance/cwa/316b/implement.cfm