



The Delaware City Refinery extracts up to **303 million** gallons of water each day from the Delaware River.



Over **45 million** fish, larvae and eggs are killed each year by the refinery's water intake system, including recreational and commercial species.



The refinery's cooling system intake structure has not been updated in over **50 years**.



The refinery's cooling system permit **expired in 2002**, yet the State of Delaware allows them to keep operating with their outdated technology that kills fish.



delawareaudubon.org



delaware.sierraclub.org



delawareriverkeeper.org



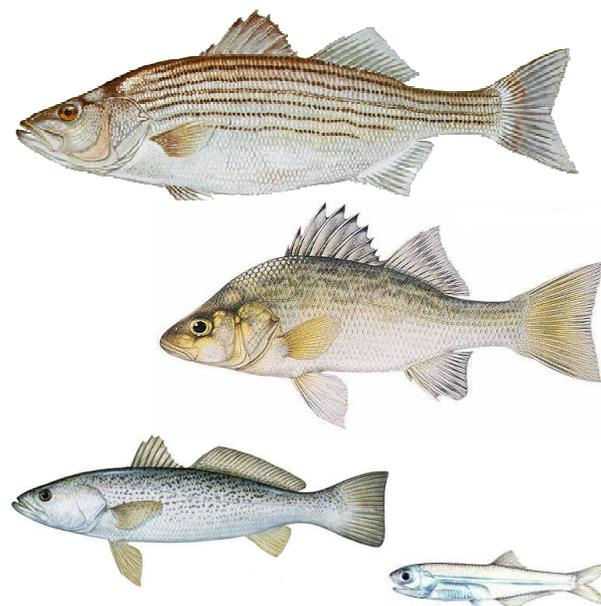
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DELAWARE CITY REFINERY:



STOP KILLING OUR FISH!



Refinery is a Deadly Fish Trap

The design of the intake structure makes the Refinery particularly deadly to fish. It is located at the end of a channel that is 4,673 feet from the Delaware River.

Fish that are filtered out of the water before entering the Refinery cooling system are placed back in the water in the same channel. These fish have to swim out of the channel and back to the River to make it to safety.

To accomplish this feat, the already screen-impacted fish, or those trying bravely to avoid getting smashed on the screen, have to swim against the velocity of water rushing towards the facility. For many, this is not a swim to safety, but a futile effort which results in their being repeatedly impinged upon the intake screen until they die.



A gruesome end for fish, impinged fish are dumped into piles in an empty field.

Impingement and Entrainment

Entrainment occurs when organisms are drawn through a cooling water intake structure into the facility's cooling system. These small fish, young fish and eggs are cooked by the water as it is heated by the refinery.

Impingement occurs when organisms are trapped against screening devices by the force of the water passing through the cooling water intake structure. Impingement can result in starvation and exhaustion, asphyxiation, descaling and death.



47 species of fish are being killed

47 different species have been identified as being caught by the cooling water intake structure. These include striped bass, white perch, bay anchovy and weakfish.

Federal regulations should apply

The State of Delaware has allowed the Delaware City Refinery to evade complying with section 316(b) of the Clean Water Act.

State is giving the refinery a sweetheart deal

The Delaware City Refinery's National Pollutant Discharge and Elimination System (NPDES) permit expired in 2002. Unfortunately the State has yet to force them to comply with the law. While DNREC has identified as closed cycle cooling as the path forward to minimizing fish kills, they have yet to require it at the Refinery.

There is an affordable solution

The State of Delaware's 2011 Best Technology Available (BTA) Determination report by the Delaware Department of Natural Resources and Environmental Control (DNREC) found that it was both **affordable and achievable** for the refinery to install a **closed-cycle cooling system**.

It will cost the Refinery an estimated \$75-\$120 million to install this existing and proven technology.

Environmental restoration needed to replace the number of striped bass alone that are killed each year by the refinery's cooling system would be \$428 million. Closed-cycle cooling is a comparative bargain.

TAKE ACTION

Call Governor Markell and Secretary O'Mara and ask them to stop the killing of fish by the Delaware City Refinery. Ask for a new NPDES Permit that requires an immediate upgrade to a closed-cycle cooling system at the refinery. We can't wait 10 more years to protect our fish.

Governor Markell: (302) 744-4101 • Secretary O'Mara: (302) 739-9000