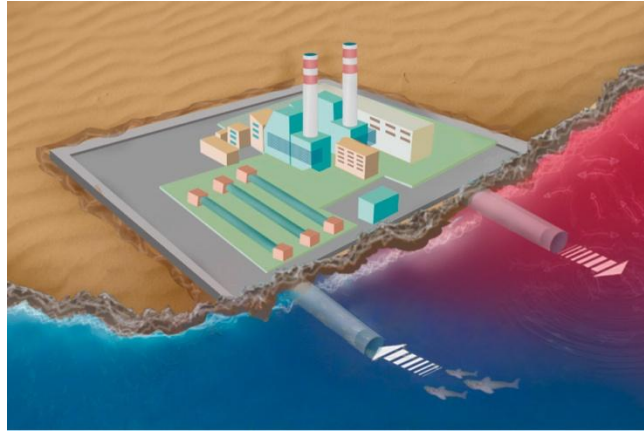


OTC = Once-Through Cooling



What is Once-Through Cooling? Nuclear power plants are located on rivers, lakes, or oceans, withdrawing billions of gallons of water each day. This water is used for "once-through cooling," an outdated technology where power plants suck in enormous volumes of water to cool down their systems. This water is then released back into the body of water at an elevated temperature.

Why is this problem?

Impingement	Entrainment	Thermal Effects
The power plant indiscriminately sucks in whatever aquatic life is near the intake pipe. In this process, larger fish and wildlife are smashed and mutilated against screens.	Aquatic organisms too small to be trapped against the screens become "entrained" - sucked into the plant's heat exchangers. They are crushed and boiled before being dumped back into the water.	The heated water that is discharged alters the surrounding ecosystem, compounding the damage caused by impingement and entrainment. Discharging warmer water into a river, lake, or ocean stresses and kills fish, plants, and other wildlife.

The marine life that is killed by OTC is mainly at the base of the food chain, but all aquatic species are adversely impacted and destabilized - from phytoplankton to fish eggs and larvae, the birds, and the marine mammals that rely on the complex food web.

What laws are in place to protect the marine environment from OTC?

In 1972, Congress passed the Clean Water Act. While it focuses mostly on the discharge of pollution, the law also regulates cooling water intake structures. It requires the EPA to issue regulations requiring "best technology available for minimizing adverse environmental impact."	In 2001, the EPA ordered new plants to use "closed-cycle cooling" where water withdrawn from a natural body of water is circulated through condensers to remove the plant's heat, then circulated through cooling towers, and then sent back to the condensers. This closed-cycle cooling system reduces total water withdrawals by about 95%, resulting in a corresponding reduction in the impact on fish and other species. The EPA, however, has not mandated existing power plants to modernize and phase out once-through cooling.	In 2010, the California State Water Resources Control Board (Water Board) adopted a policy requiring power plants to comply with the federal Clean Water Act. Water Board enforcement of this policy has not been enforced thus far.
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What is happening at Diablo Canyon Nuclear Power Plant?

The Diablo Canyon facility circulates 2.5 billion gallons of seawater throughout its cooling system each day. The water released back into the ocean is 20 degrees warmer. It annually sucks in and kills more than one billion fish in early life stages. The owner of Diablo Canyon, Pacific Gas & Electric Company (PG&E), has undertaken special studies to investigate alternatives for its facility to meet the State Water Board's policy requirements. A Review Committee composed of technical representatives with experience with nuclear plant issues met to oversee the special studies.

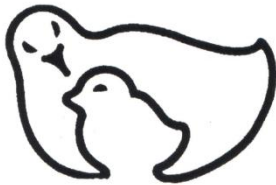
The compliance date for Diablo Canyon has been set for December 31, 2024 - with the caveat that this date may be changed to ensure electric supply reliability.

What are some of the options for compliance?

Cooling Towers	Modification	Mitigation	Plant Closure
The use of cooling towers is the most effective method for reducing the impacts of OTC. It is, however, costly. Estimated costs for building two huge cooling towers range between \$2 billion and \$10 billion.	One alternative is to modify the existing OTC system to include additional mesh screens and to bury the intake pipes offshore to reduce the number of larvae that enter the system.	Another option is to offset environmental damage by implementing mitigation projects. These projects would strive to increase the overall health and productivity of the ocean (development of rocky reefs, marine reserves to enhance fish stocks and increase biodiversity, etc.).	The immediate and permanent closure of Diablo Canyon would end the problems of impingement, entrainment, and thermal pollution. Mothers for Peace is working to convince the Water Board to immediately require Diablo Canyon to fully comply with state policy.

What can I do to help protect our marine environment?

Stay in touch with San Luis Obispo Mothers for Peace and be prepared to take action when needed. To be added to the OTC Committee email list, contact Jane Swanson at janeslo@icloud.com. Then look for instructions on timing and content of letters to the directors of the State Water Board - urging them to enforce California's OTC policy.



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