What is Thermal Pollution?

It is the change in water temperatures of lakes, rivers, and oceans caused by man-made industries and practices. These temperature changes may adversely affect ecosystems by contributing to the decline of wildlife populations and habitat destruction.

A common cause of thermal pollution is the use of water as a coolant by power plants and industrial manufacturers.

Thermal Pollution in Cape Cod Bay...

The Pilgrim nuclear plant in Plymouth is a primary source of thermal pollution in Cape Cod Bay. The plant operates a once-through cooling system, which uses up to 510 million gallons of water from the Bay daily. The water is used to cool equipment and condense steam produced for electricity generation. The water is discharged back into the Bay up to 32°F hotter than ambient temperature.

The thermal plume in Cape Cod Bay covers nearly 5 square miles (up to 1°C A), however findings are based on limited field data and current data are non-existent. The size and effects of the thermal plume could be larger or differ from what has been previously reported.

Impacts on Our Ecosystem...

Thermal pollution can negatively affect metabolic rates, feeding behavior, reproduction and distribution of marine organisms. It also encourages parasites and invasive species, and can cause thermal shock in some species.

Scientific evidence has shown that marine ecosystems may be more sensitive to slight changes in temperature than terrestrial ecosystems. An average annual increase of approximately 1.8°F (1°C) can have significant effects on coastal marine community dynamics.

Species such as cod, mackerel, lobster, krill, copepods, and other plankton have been found to be particularly vulnerable to warming temperatures – populations tend to shift ranges seeking more optimum water temperatures and become more susceptible to disease, disrupted predator-prey dynamics, and invasive species. For all marine species, only an optimal temperature range allows for successful reproduction and growth.

What about Climate Change?

Thermal pollution in Cape Cod Bay intensifies the effects of climate change and warming sea temperatures, resulting in increasingly devastating effects on the ecosystem.

For more info: capecodbaywatch.org