

Course Code:MCC102A
Course Title:Environmental Studies

Lecture No: 17
Title: Thermal pollution
Course Leader : Ms. Priyanka N



Lecture-17

Intended Learning Outcomes

At the end of this lecture, students will be able to

- Define thermal pollution
- Describe the effects of thermal pollution
- Explain the major causes for thermal pollution
- Discuss the preventive measures of thermal pollution



Thermal pollution

- Thermal pollution is caused by either dumping hot water from factories/ power plants
- Removing trees and vegetation that shade streams, permitting sunlight to raise the temperature of these waters.
- Thermal pollution is widespread, affecting many lakes and vast numbers of streams and rivers



Major sources of thermal pollution

- Electric power plants
- Factories
- Decay of organic matter
- Heating room



Electric power plants

- To condense the steam, cool water is brought into the plant and circulated next to the hot steam.
- In this process, the water used for cooling warms 5 to 10 Celsius degrees (9 to 18 Fahrenheit), after which it may be dumped back into the lake, river, or ocean from which it came.



Heat Island Phenomenon



Effects of Thermal Pollution

- When thermal pollution drives water temperatures up, most aquatic and marine wildlife cannot survive.
- Immobile organisms, such as plants and shellfish, simply die.
- Cold waters are better habitat for plants and animals than warm ones because cold waters contain more dissolved oxygen
- Many freshwater fish species that are valued for sport and food, especially trout and salmon, do poorly in warm water



Preventive Measures

- Instead of discharging heated water into lakes and streams, power plants and factories can pass the heated water through cooling towers or cooling ponds
- Alternatively, power plants can be designed or refitted to be more efficient and to produce less waste heat in the first place.
- In a process called cogeneration, the excess heat energy from generating electricity can be used in another manufacturing process that needs such energy.



Summary

- Major sources of thermal pollution are Electric power plants, Factories ,Decay of organic matter and Heating room
- Effects of thermal pollution –Since DO is reduced, aquatic species will be effected along with the rise in temperature of water body
- Cooling towers should be provided so that water which is left out from the factories are reused

