Thermal pollution assignment

It is one of the pollution that effects on living things and the environment badly. The definition of thermal pollution is the degradation of water quality by any process that changes ambient water temperature. A common cause of thermal pollution is the use of water as a coolant by power plants and industrial manufacturers. When water used as a coolant is returned to the natural environment at a higher temperature, the change in temperature decreases oxygen supply, and affects ecosystem composition.

Urban runoff?? seawater discharged to surface waters from roads and parking lots-can also be a source of elevated eater temperatures. When a power plant first opens or shuts down for repair or Other causes, fish and other organisms adapted to particular temperature range can be killed by the abrupt change in water temperature known as " thermal shock. * Effects of thermal pollution on the environment There are several effects of thermal pollution * The dissolved oxygen content of water is decreased as the solubility of oxygen in water is decreased high temperature * High temperature becomes a barrier for oxygen penetration into deep Goldwater. * Toxicity of pesticides, detergents and chemicals in the effluents increases with increase in temperature. * The composition of flora and fauna changes because the species sensitive to increase temperature due to thermal shock will be replaced by temperature tolerant species. Metabolic activities of aquatic organisms increase at high temperature inadequate more oxygen level falls under thermal pollution. * Discharge of heated water near the shores can disturb spawning and can Bienville young fishes. * Fish * Sudden migrations are affected due to formation of various thermal zones and periodic increase in temperature producing a thermal effect * Distribution of

organisms among major and minor communities. Changes to reproductive powers and increased susceptibility to disease * production of heat shock proteins for thermonuclear. Bio indicators are the first to show the effects. * Decrease in productivity of the water body . * Economic and environmental damage * Effects of thermal pollution on the living things All plant and animal species that live in water are adapted to temperatures within a certain range. When water in an area warms more than they can tolerate, species that cannot move, such as rooted plants and shellfish, will die. Species that can move, such as fish, will leave the area in search of cooler notations, and they will die if they can not find them.

Typically, other species, often less desirable, will move into the area to fill the vacancy. Warm water Warm water are elevated temperature typically decreases the level of dissolved oxygen (DO) in water. The decrease in levels of DO can harm aquatic animals such as fish, amphibians and scooped. Thermal pollution may also increase the metabolic rate of aquatic animals, as enzyme activity, resulting in these organisms consuming more food in a shorter time than if their environment were not changed.

An increased metabolic rate may result n food source shortages, causing a sharp decrease in a population. Changes in the environment may also result in a migration of organisms to another, more suitable environment, and to in-migration of fishes that normally only live in warmer waters elsewhere. This leads to competition for fewer resources; the more adapted organisms moving in may have an advantage over organisms that are not used to the warmer temperature. As a result one has the problem Of compromising food chains Of the old and new environments.

Biodiversity can be decreased as a result. Elevated temperature typically decreases the level of dissolved oxygen in water. This can harm aquatic animals such as fish, amphibians and other aquatic organisms. Thermal pollution may also increase the metabolic rate of aquatic animals, as insensitivity, resulting in these organisms consuming more food in a shorter time than if their environment were not changed. An increased metabolic rate may result in fewer resources; the more adapted organisms moving in may have an advantage over organisms that are not used to the warmer temperature.

As a result, food chains of the old and new environments may be compromised. Some fish species will avoid stream segments or coastal areas adjacent to a thermal discharge. Biodiversity can be decreased as a result. High temperature limits oxygen dispersion into deeper waters, contributing to anaerobic conditions. This can lead to increased bacterially when there is ample food supply. Many aquatic species will fail to reproduce at elevated temperatures.

Primary producers are affected by warm water because higher water temperature increases plant growth rates, resulting in a shorter lifespan and species overpopulation. This can cause an algae bloom which reduces oxygen levels. Temperature changes of even one to two degrees Celsius can cause significant changes in organism diabolism and other adventurously biology effects. Principal adverse changes can include rendering cell walls less permeable to necessary osmosis, coagulation of cell proteins, and alteration Of enzyme metabolism.

These cellular level effects can adversely affect mortality and reproduction. A large increase in temperature can lead to the denaturing of life-supporting enzymes by breaking down hydrogen- and disulphide bandwidths the quaternary structure of the enzymes. Decreased enzyme activity in aquatic organisms can cause problems such as the inability to break down lipids, which leads to malnutrition. In limited cases, warm water has little deleterious effect and may even lead to improved function of the receiving aquatic ecosystem.

This phenomenon is seen especially in seasonal waters and is known as thermal enrichment. An extreme case is derived from the aggregation habits of the manatee, which often uses power plant discharge sites during winter. Projections suggest that manatee populations would decline upon the removal of these discharges. Cold water In general, 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.

Some organisms do thrive in warm water, often with undesirable effects. Algae and other plants grow more rapidly in warm Water than in cold, but they also die more rapidly; the bacteria that decompose their dead tissue use up oxygen, further reducing the amount available for animals. The dead and decaying algae make the water look, taste, and smell unpleasant Releases of unnaturally cold water from reservoirs can dramatically change the fish and microdensitometer Anna of rivers, and reduce river productivity.

In Australia, where many rivers have warmer temperature regimes, native fish species have been eliminated, and microdensitometer fauna have been drastically altered. Due to the sudden fall of water temperature the contraction on dam and bridge pylon may take place. * Control Of thermal pollution Cooling tower at Gustavo Innkeeper Power Station, Dortmund, Germany industrial wastewater In the United States, thermal pollution from industrial sources is generated mostly by power plants, petroleum refineries, pulp and paper mills, chemical plants, steel mills and smelters.

Heated water from these sources may be controlled with: * cooling ponds, man-made bodies of water designed for cooling by evaporation, convection, and radiation * cooling towers, which transfer waste heat to the atmosphere through evaporation and/or heat transfer * generation, a process where waste heat is recycled for domestic and/or industrial heating purposes. Some facilities use once- through cooling (ETC) systems which do not reduce temperature as effectively as the above systems.

For example, the Petrol Generating Station in San Francisco, which uses ETC, discharges water to San Francisco Bay approximately 100 C (200 F) above the ambient bay temperature. Urban runoff During warm weather, urban runoff can have significant thermal impacts on small streams, as seawater passes over hot parking lots, roads and sidewalks. Seawater management facilities that absorb runoff or direct it into groundwater, such as overexertion systems and infiltration basins, can reduce these thermal effects.

Retention basins tend to be less effective at reducing temperature, as the water may be heated by the sun before being discharged to a receiving stream. Noise Pollution Noise pollution is excessive, displeasing human, animal, or machine- created environmental noise that disrupts the activity or balance of human or animal life. The word noise may be from the Latin word nauseas, which means disgust or discomfort. The source of most outdoor noise worldwide is mainly construction and transportation systems, including motor vehicle noise, aircraft noise, and rail noise.

Poor urban planning may give rise to noise pollution, since side-by-side industrial and residential buildings can result in noise pollution in the residential area. High noise levels can nutrient to cardiovascular effects in humans, a rise in blood pressure, and an increase in stress and vasoconstriction, and an increased incidence of coronary artery disease. In animals, noise can increase the risk of death by altering predator or prey detection and avoidance, interfere with reproduction and navigation, and contribute to permanent hearing loss.

Types of noise pollution There are many different types of noise pollution. There are man-made noises, such as those created by city traffic, construction sites, airports and subway terminals. In fact, most forms of transportation have an associated noise factor. The other type of noise that can be disruptive and irritating are environmental, such as a loud thunderstorm or the noise created by barking dogs and other animals. * City Life and Noise Pollution If you live in a city, then noise is a common everyday element that you don’t consciously notice.

However, simply being conditioned to noise doesn’t mean there isn’t a physical side-effect. Your mind just turns the noise down to a livable degree. * Other Causes of Noise Pollution Many types of manmade products and equipment cause noise pollution. For example, household appliances, televisions, electronic cooling fans, vacuum leaner’s, and HAVE equipment all contribute to daily noise pollution. Even your pets may create a certain level of noise. * Effects of noise pollution on the environment and living things Human health Noise pollution effects both health and behavior.

Unwanted sound (noise) can damage physiological and psychological health. Noise pollution can cause annoyance and aggression, hypertension, high stress levels, tinnitus, hearing loss, sleep disturbances, and other harmful effects. Furthermore, stress and hypertension are the leading causes to health problems. Chronic exposure to noise may cause noise-induced hearing loss. Older males exposed to significant occupational noise demonstratesignificantly reduced hearing sensitivity than their non-exposed peers, though differences in hearing sensitivity decrease with time and the two groups are indistinct useable by age 79.

A comparison of Mbabane tribesmen, who were insignificantly exposed to transportation or industrial noise, to a typical U. S. Population showed that chronic exposure to moderately high levels Of environmental noise contributes to hearing loss. High noise levels can contribute to cardiovascular effects and exposure to moderately high levels during a ingle eight hour period causes a statistical rise in blood pressure of five to ten points and an increase in stress and vasoconstriction leading to the

increased blood pressure noted above as well as to increased incidence of coronary artery disease.

Noise pollution is also a cause of annoyance. A 2005 study by Spanish researchers found that in urban areas households are willing to pay approximately four Euros per decibel per year for noise reduction. The effects of noise pollution on human health is a complex topic since not only does it have a physical effect, but also a behavioral and even mental effect. Noise can make a person nervous, antsy, irritable and, in some cases, angry. Some noises are cited as being responsible for aggressive behavior in some individuals.

Wildlife health Noise can have a detrimental effect on animals, increasing the risk of death by changing the delicate balance in predator or prey detection and avoidance, and interfering the use of the sounds in communication especially in relation to reproduction and in navigation. Acoustic overexposure can lead to temporary or permanent loss of hearing. An impact of noise on animal life is the reduction of usable habitat that noisy areas may cause, which in the case f endangered species may be part of the path to extinction.

Noise pollution has caused the death of certain species of whales that bigheartedness after being exposed to the loud sound Of military sonar (see also Marine mammals and sonar). Noise also makes species communicate louder, which is called Lombard vocal response. Scientists and researchers have conducted experiments that show whales’ song length is longer when submarine- detectors are on. If creatures do not “ speak” loud enough, their

voice will be masked by anthropogenic sounds. These unheard voices might be airings, finding of prey, or preparations of net-bubbling.

When one species begins speaking louder, it will mask other species' voice, causing the whole ecosystem to eventually speak louder. European Robins living in urban environments are more likely to sing at night in places with high levels of noise pollution during the day, suggesting that they sing at night because it is quieter, and their message can propagate through the environment more clearly. The same study showed that daytime noise was a stronger predictor of nocturnal singing than night-time light pollution, to which the phenomenon is often attributed.

Zebra finches become less faithful to their partners when exposed to traffic noise. This could alter a population's evolutionary trajectory by selecting traits, sapping resources normally devoted to other activities and thus lead to profound genetic and evolutionary consequences. * Control Of noise pollution * Roadway noise can be reduced by the use of noise barriers, limitation of vehicle speeds, alteration of roadway surface texture, limitation of heavy vehicles, use of traffic controls that smooth vehicle flow to reduce braking and acceleration, and tire design.

An important factor in applying these traceries is a computer model for roadway noise, that is capable of addressing local topography, meteorology, traffic operations and hypothetical mitigation. Costs of building-in mitigation can be modest, provided these solutions are sought in the planning stage of a roadway project. * Aircraft noise can be reduced by using quieter jet engines. Altering flight paths and time of day runway has benefited residents

near airports. * Industrial noise has been addressed since the sass via redesign of industrial equipment, shock mounted assemblies and physical barriers in the workplace.