TRANSPORTATION: CONTRIBUTION TO THE GROWTH OF NATIONAL ECONOMY

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ENVIRONMENTAL IMPACT OF TRANSPORATION

AND

ITS REMEDIES

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ABSTRACT:-

The paper mainly focuses on the impact of transportation on marine environment and its remedies. “Environmental Impact” does not come as a new word for any of us, everybody know about its barrier growing day by day, therefore a serious study, involvement and action needs to be taken in order to create a lively place for our upcoming generation. Various threats have been pointed out which aroused due to the expansion of excessive and uncontrolled transportation sector such as overfishing, climate change, ocean acidification and habitat destruction.

An overview is discussed about the functions and unique features of penalties and other remedies available to the legislators and administrators who seek to enforce the existing environmental laws and regulations in order to control the present scenario of this serious issue.

KEY-WORDS :-
Overfishing activities, Climate changes, Habitat destruction, Penalties, Alternative remedies.

MAIN TEXT

“A CONCERNING ISSUE TO LOOK UPON TO AVOID PROBLEMS BEFORE THEY HAPPEN.”

ENVIRONMENT

As we all know environment is the circumstances or conditions surrounding and affecting all of us. But as the human civilization began developing, its related activities degraded the environment which is referred to as Environmental Pollution. There are two types of environment – related pollution. The first type of pollution arises due to violation of the enviromental laws by business houses, hospitals, industries, municipal authorities, various nursing homes and the general public. The second type of environment pollution is the result of the nature of the law and other problems arising from the environmental deterioration. First kind of pollution is easily understood but second type of pollution certainly requires more elaboration to understand. This can be best understood from the tragedy of gas leakage at Bhopal. We all know that although more than two decade has elapsed but no worthwhile measures have been taken so far to remove the grievances of thousands of affected people.
In other parts of the world also, similar environmental pollution hazards have occurred such as in Chernobyl in Russia, mercury poisoning in Japan, Eire Lake in the United States becoming dead and so on. The most recent is the air pollution disaster of unprecedented magnitude in South – East Asia caused by a combination of drought and the deliberate burning of forests in Indonesia.

POLLUTION

Pollution is an undesirable change in the physical, chemical or biological characteristics of our land, air & water that may or will harmfully affect human life. Pollution has

become the hallmark of the present day discussions. What is meant by the word pollution. To make a thing foul or filthy is what pollution is all about. The air is polluted by the smoke emanating from thousand of vehicles plying the roads daily, a rich gift of modernization in movement, along with the industries that are responsible for polluting the air.

Now Talking About Its Impact With Reference To Marine Environment, The Threats Encountered Are:-

1.Overfishing
Which is depleting stocks of fish beyond their ability and disrupts the ecosystem and eliminates a valuable source of food and income.

2. Predator loss
Releases prey populations from both the pressure and risk of predation. Their removal can cause a potentially irreversible cascade of complex knock-on effects, destabilising marine ecosystems to their - and our - severe detriment.

3. Climate change
Is warming the oceans and making them more acidic. This will create vast dead zones as plankton and corals - the primary producers for nearly all marine life - struggle to survive under increasingly inhospitable conditions. Also the increased level of CO_2 will contribute to global warming.

4. Pollution
Can poison marine life and decimate entire marine environments. Vast quantities of solid and chemical waste from human activities are continually dumped and leach into the oceans, including plastics, sewage, oil and toxins that accumulate in food webs.

5. Habitat destruction
Physically limits the suitable living space available to marine life. Coastal development, trawling, and aquaculture all destroy important marine habitats vital for supporting ocean health, such estuaries and mangrove systems that function as nurseries.

1. OVERFISHING

It occurs when fish and other marine species are caught faster than they can reproduce. It is the result of growing demand for seafood around the world, combined with poor management of fisheries and the development of new, more effective fishing techniques. If left unchecked, it will destroy the marine ecosystem and jeopardise the food security of more than a billion people for whom fish are a primary source of protein. The statistics are grim: 3/4 of the world's fish stocks are being harvested faster than they can reproduce Scientists predict that if current trends continue, world food fisheries could collapse entirely by 2050.

2. PREDATOR LOSS

In both marine and terrestrial ecosystems, predator removal can cause a potentially irreversible cascade of complex knock-on effects that destabilize food-webs and the marine environment as a whole. Predators, such as sharks, tuna, have substantial influence on the structure and function of ecological systems, both directly by regulating prey populations and indirectly through the interactions between their prey and other members of the ecosystem. These indirect effects that occur further down the food-web are referred to as trophic cascades. It is estimated that in excess of 90% of all marine predators have already been lost from the oceans, including tuna, billfish, swordfish and sharks. This is almost entirely due to overfishing, but other factors also contribute. For instance it is estimated that 96.1% of all threats posed to shark populations stem from fishing (57.9% by-catch, 31.7% directed commercial fishing, 5.8% artisanal and 0.7% recreational), with habitat destruction and pollution comprising 2.9% and 0.4% of threats respectively. Soaring demand for sharks in Asian markets is accelerating these declines in shark populations, and it remains largely uncertain just how severe the knock on effects will be.

REMEDIES

- Sustainable fisheries management is required, with enforced, scientifically-informed quotas.
- More selective fishing gear, as much of the problem is by-catch.
- Consumers exercising their purchasing power to favour sustainable fish stocks, and avoiding shark-fin soup and other shark-derived products.

3. CLIMATE CHANGE

The scientific consensus is that anthropogenic (human-caused) CO2 emissions are steadily warming the planet, and that the climate will change significantly as greenhouse gasses build up in the atmosphere. The oceans absorb up to half of all human CO2 emissions. Their heat capacity is nearly 1000 times that of the atmosphere; by absorbing heat in the summer and releasing it in winter, they are instrumental in moderating our climate and ensure that changes happen gradually. Anthropogenic climate change is making the oceans warmer and more acidic, and if these processes are allowed to continue unchecked, they will drastically alter our climate and the marine ecosystem.

OCEAN ACIDIFICATION

The global ocean absorbs between 25% and 50% of all human CO_2 emissions .While this process slows down the greenhouse effect, which lowers the ph of seawater, making it more acidic. The effects of ocean acidification are particularly devastating to calcifying organisms, such as corals, shellfish, and sea snails; when exposed to elevated CO2 levels, the shells of these animals begin to dissolve. Once a certain level of acidity is reached, calcium carbonate shells and skeletons cannot form. The increased acidity, combined with rising temperatures, stimulates the growth of turf-forming algae. These algae can inhibit the growth of, and even replace, kelp forests. Whales and dolphins will also be affected, as acidification reduces the sound absorption of seawater, causing ambient noise levels to rise significantly.

REMEDIES

- Significantly and rapidly cutting worldwide CO_2 emissions. While recent history has demonstrated that this will not be easy to accomplish, it is the only real solution to the problem.
- Setting targets for atmospheric CO_2 levels that take into account the effects of ocean acidification.

4. POLLUTION

The oceans are enormous but they are not infinite. In the past the oceans were treated as a giant disposal area for all types of refuse (including radio-active waste as recently as 1982) with the belief that the enormous size of the oceans would be enough to dilute and render harmless any materials we put into them.
The ocean ecosystem as a whole is under tremendous stress from a variety of sources of pollution. By putting too much pollution into the oceans, humans are threatening to permanently alter the oceans and all life within them in ways we are only beginning to understand.

PLASTIC

One of the most common pollutants in our oceans is plastic. It's not known exactly how long it takes plastic to biodegrade. Estimates for plastic shopping bags range from 500 years to a 1,000 years or even longer .Ocean currents collect the plastic into concentrated areas known as gyres resulting in vast areas of ocean being completely saturated with plastic. More than half of all thermoplastics will sink in seawater.
Plastic is often mistaken for food by marine animals such as turtles (plastic bags look a lot like jellyfish), sea birds and even the oceans smallest feeders can be misled by tiny plastic fragments which are indistinguishable from plankton. An estimated 86% of turtle species, 43% of seabird species, and 44% of marine mammals have plastics in their gut. Plastic can fill the digestive system of these animals causing them to starve.

ANTHROPOGENIC IMPACT

Anthropogenic impact on the water environment should be defined as a cumulative manifestation of all kinds of human activity which causes obvious and/or hidden disturbances in the natural structure and functions of water biotic communities, anomalies in their habitats, changes in the hydrology and geomorphology of water bodies, diminishing their fisheries and recreational value, and other negative effects of ecological, economic, or socioeconomic nature. This definition is based on the concept of a multifactorial nature of anthropogenic impact on the hydrosphere. This impact cumulatively results in structural and functional responses of the water ecosystems and biota

MARINE POLLUTION

At least two reasons allow us to consider pollution as the main, most widespread, and most dangerous factor of anthropogenic impact on the hydrosphere. First, pollution accompanies most kinds of human activities, including offshore oil and gas production and marine oil transportation. Second, in contrast with land ecosystems, in the water environment, pollutants quickly spread over large distances from the sources of pollution. In the freshwater and inland ecosystems, the effects of pollution are obvious. They literally appear right in front of our eyes. In contrast, the World Ocean has a large inertia of response to all forms of external impact. It requires a long hidden (latent) period to manifest the evidence of non-obvious consequences of this impact.

POLLUTANT INPUT INTO THE MARINE ENVIRONMENT

Among all the diversity of human activities and sources of pollution, we can distinguish three main ways that pollutants enter the marine environment:

- Direct discharge of effluents and solid wastes into the seas and oceans (industrial discharge, municipal waste discharge, coastal sewage, and others);
- Land runoff into the coastal zone, mainly with rivers;
- Atmospheric fallout of pollutants transferred by the air mass onto the seas' surface.

Certainly, the relative contribution of each of these channels into the combined pollution input into the sea will be different for different substances and in different situations. Quantitative estimates of these processes are difficult because of the lack of reliable data and the extreme complexity of the natural processes, especially at the sea-land and sea-atmosphere boundaries. There are numerous examples when extremely high concentrations of oil and gas hydrocarbons, heavy metals, radionuclides, nutrients, and suspended substances are not connected with human activity at all. These phenomena should be taken into consideration in order to get the objective assessment of anthropogenic impact and its consequences in the hydrosphere.

Sources, composition, and degree of hazards of pollution components

Depending on the type of impact on the water organisms, communities, and ecosystems, the pollutants can be grouped in the following order of increasing hazard:

- Substances causing mechanical impacts (suspensions, films, solid wastes) that damage the respiratory organs, digestive system, and receptive ability;
- Substances provoking eutrophic effects (e.g., mineral compounds of nitrogen and phosphorus, and organic substances) that cause mass rapid growth of phytoplankton and disturbances of the balance, structure, and functions of the water ecosystems
- Substances with saporogenic properties (sewage with a high content of easily decomposing organic matter) that cause oxygen deficiency followed by mass mortality of water organisms, and appearance of specific microphlora;
- Substances causing toxic effects (e.g., heavy metals, chlorinated hydrocarbons, dioxins, and furans) that damage the physiological processes and functions of reproduction, feeding, and respiration;

Oil Pollution Of The Marine Environment

Table 1 shows the variety of oil pollution sources and give expert estimates of the scales of distribution and impact of each of these sources on the marine environment. .

Table 1 Estimates of global inputs of oil pollution into the marine environment (thousands tons/year of oil hydrocarbons)

Source	1973	1979	1981	1985	1990
Land-based sources: Urban runoff and discharges	2,500	2,100	1,080 (500-1,250)	34%	1,175 (50%)
Coastal refineries	200	60	100 (60-600)	-	-
Other coastal effluents	-	150	50 (50-200)	-	-
Oil transportation and shipping: Operational discharges from tankers	1,080	600	700 (400-1,500)	45%	564 (24%)
Tanker accidents	300	300	400 (300-400)	-	-
Offshore production discharges	80	60	50 (40-60)	2%	47 (2%)
Atmospheric fallout	600	600	300 (50-500)	10%	306 (13%)
Natural seeps	600	600	200 (20-2,000)	8%	259 (11%)
Total discharges	**5,340**	**4,470**	**2,880**	**100%**	**2,351**

These diffuse sources continuously create relatively low but persistent chronic contamination over huge areas. Many aspects of chemical composition and biological impacts of these contaminants remain unknown.

REMEDIES

- Do your bit to minimise your impact on ocean pollution. Recycle, reuse and reduce. Avoid plastic wherever possible. Don't use cosmetics that contain plastic micro-beads (particularly facewash containing polyethylene). Take part in beach cleanups. Reduce you carbon footprint.
- Put pressure on governments and regulatory bodies to tighten regulations on industrial, agricultural and domestic pollution.

- Be a wise consumer. Support companies that are environmentally conscious. Buy organic foods as these the minimise agricultural impacts from chemical fertilizers and pesticides.

5. HABITAT DESTRUCTION

Coastal areas are home to over 90 percent of all marine species, which thrive in ecologically-rich and diverse shallow water habitats. These habitats – chief among which are coral reefs, mangrove forests, and seagrass meadows – are being lost at alarming rates.
Overfishing, pollution, and climate change all contribute to the degradation of coastal ecosystems. Another major factor is the accelerating development of coastlines for industry, agriculture, and tourism. According to the UN, nearly two-thirds of the world's population now lives within 60 kilometers of the coast. Overdevelopment and aquaculture – fish and shrimp farming – have been responsible for severe declines of these productive habitats over the past decades, and particularly of mangrove forests, which protect coastlines by absorbing storm forces and supply nutrients vital to marine life. As these habitats disappear, both people and the environment suffer: marine animals lose both their food and shelter, leading to the collapse of food webs from the bottom up, and human settlements become increasingly exposed to the effects of storms and flooding.

CORAL REEFS

Coral reefs are some of the most biologically productive and diverse ecosystems on the planet. They occupy less than 1% of the ocean surface, yet are home to a quarter of all marine life. Reefs are extremely fragile and slow-growing, and face a number of threats: ocean acidification, warming waters, and outright destruction through over development and unchecked tourism are a few of them. Less known, but equally dangerous, is eutrophication (the introduction of excess nutrients from fertilizers used in agriculture into the ecosystem). Rich in nitrogen and phosphorus, this waste ultimately flows into the oceans, where the increased levels of nutrients stimulate the growth of algae, causing what are known as "algal blooms". These blooms can smother reefs when they occur over them, as they block the sunlight required by the zooxanthellae in the coral to complete photosynthesis. The algae also sink to the bottom when they die, covering reefs in slime.

REMEDIES

- Removing subsidies on fertilizer use, which would limit their use and reduce the problem of marine dead zones.
- Rapid legislative protection of vital ecosystems, like coral reefs and mangrove forests, in the form of Marine Protected Areas (mpas), biosphere reserves, and marine parks.
- Reducing the conversion of important and valuable coastal ecosystems to aquaculture facilities and real estate.

DAMAGES

Damages are a financial remedy administered with the aim of providing the plaintiff with monetary compensation equivalent to his or her losses resulting from the actions of the defendant. Types of damages include:

TYPES OF DAMAGES:-

1. General Damages
2. Consequential Damages
3. Substitution Cost
4. Punitive or Exemplary Damages.
5. Standardized Damages
6. Litigation Costs.
7. Adjustments for Time Differentials or
8. Adjustments for Benefits Reaped

Alternative Remedies

Restitutional Remedies :- Restitutional remedies are a form of damages used to prevent unjust enrichment by making defendants give up what they wrongly obtained from plaintiffs.

1. Restitution in Specie:
2. Measurement of Defendant's Benefits:
3. Market Value.
4. Use Value:
5. Gains Realized
6. Savings or Profits:

Coercive Remedies :- Typified by an injunction, this type of remedy coerces the defendant to act or not act under threat of being found in contempt, which subsequently results in fines or imprisonment.

1. Specific Performance
2. Structural Injunction.
3. Provisional Injunctions

PENALTIES

Civil Penalties

Civil penalties are fines, payable to the government, following a breach of the relevant governing statute. The underlying policy consideration when applying civil penalties requires the administrator to calculate
the economic benefit of non-compliance and ensure that the penalty burden is at least as great as the benefit of the violation, so that there is a compelling motivation for compliance.

The Gravity Component:

While the economic benefit component ensures that a company cannot profit from its violations, the gravity component reflects the seriousness of the violation. The following components are considered when calculating the gravity factor:

1. Actual or Possible Harm: This factor contains within it a number of sub factors that attempt to determine the likelihood that the activity of the defendant actually resulted or was likely to result in a violation.
2. Toxicity of the Pollutant.
3. Sensitivity of the Environment.
4. Overall Severity of the Environmental Harm.
5. Length of Time of the violation: A penalty is assessed for each separate violation as well as the length of time that the violations occurred.

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