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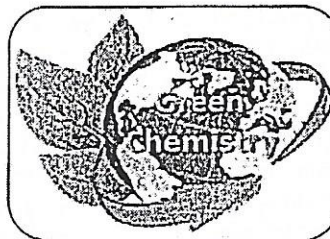
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GREEN CHEMISTRY: NATURE, CAUSES AND LOSS OF BIODIVERSITY & REMEDIAL MEASURES.

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ABSTRACT

The born of green chemistry leads to avoid the chemical hazardous, that organic and inorganic compounds had on the body of humans and animals. The chemical products from plastic to pharmaceuticals may leads to seriously damage our environment. No organic solvent has been used during any stage of the reaction for substrates giving product as solid. Product can easily isolate. The spent reagent cannot be recovered, regenerated and reused without any significant loss. Human society has started utilizing natural resources at a much larger scale and faster rate with scientific progress and technological development has caused and increasing demand for natural resources and has created a difficult situation. All these leads to damaging the biodiversity.



KEY WORDS: Green Chemistry, Pollution, Nuclear Wastes, Biodiversity loss.

INTRODUCTION:

Resources mean the useful material. For ex. Wood is used for making furniture for human society. Yarn obtained from cotton is used for weaving cloth. We use various machine tool and households' goods are made up of metals. These are treated as the natural resources. Thus air, water, soil, minerals, forest, wildlife as well as human being are resources. These all in balance manner gives the beauty to biodiversity. Biodiversity is the variety of all life forms including animals & plants that can be found either in just one location, or on the whole planet. It is also very common to define biodiversity in terms of a number of species present in a particular environment. Green Chemistry is a invention, design, development and application of chemical products and processes to reduce or to eliminate the use and generation of substances hazardous to human health and environment. Many chemical industries, fertilizer are emitting a big pollution in air as well as wastes on land subjected to water flow leads dangerous to the human health. To overcome these problems some environmentally safer procedures should be adopted to maintain the nature and biodiversity.

ORGANIC POLLUTANTS:

In 1996, Dow Chemical won the 1996 Greener Reaction Conditions award for their 100% carbon dioxide blowing agent for polystyrene foam production. Polystyrene foam is a common material used in packing and food transportation. Seven hundred million pounds are produced each year in the United States alone. Traditionally, CFC and other ozone-depleting chemicals were used in the production process of the

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foam sheets, presenting a serious environmental hazard. Flammable, explosive, and, in some cases toxic hydrocarbons have also been used as CFC replacements, but they present their own problems. Dow Chemical discovered that supercritical carbon dioxide works equally as well as a blowing agent, without the need for hazardous substances, allowing the polystyrene to be more easily recycled. The CO₂ used in the process is reused from other industries, so the net carbon released from the process is zero. In 2011, the Outstanding Green Chemistry Accomplishments by a Small Business Award went to Bio-Amber Inc. for integrated production and downstream applications of bio-based succinic acid. Succinic acid is a platform chemical that is an important starting material in the formulations of everyday products. Traditionally, succinic acid is produced from petroleum-based feed stocks. Bio-Amber has developed process and technology that produces succinic acid from the fermentation of renewable feed stocks at a lower cost and lower energy expenditure than the petroleum equivalent while sequestering CO₂ rather than emitting it. Several laboratory chemicals are controversial from the perspective of Green chemistry. The Massachusetts Institute of Technology created a "Green" Alternatives Wizard to help identify alternatives. Ethidium bromide, xylene, mercury, and formaldehyde have been identified as "worst offenders" which have alternatives. Solvents in particular make a large contribution to the environmental impact of chemical manufacturing and there is a growing focus on introducing Greener solvents into the earliest stage of development of these processes: laboratory-scale reaction and purification methods.

BIODIVERSITY LOSS: MAMMALS, BIRDS, FISH AND OTHER SPECIES:

Some estimates suggest that 25% of all mammal species may become extinct in the near future. As many as 50% of primates, 37% of hoofed mammals (ex., rhinos, horses, deer) and 26% of bats and carnivores (ex., bears & raccoons) are currently at high risk of total disappearance. Although, as of 1996, only about 11% of all identified bird species were officially classified as threatened with extinction, the trend for birds isn't encouraging - more and more of them are clearly in decline throughout the world. As for the fish, they are not doing better than other species - it has been assessed that 30% of all known fish species are now threatened with extinction as well. We observe a similar pattern with other species such as reptiles (20% threatened) and amphibians (25% threatened).

CAUSES OF BIODIVERSITY:

Causes of biodiversity loss have become all too apparent and it is really painful to realize that we - the human race - are one major problem as far as biodiversity preservation is concerned.


BIODIVERSITY LOSS: HABITAT LOSS:

Habitat loss is not only a physical destruction of natural treasures; it is also an egregious violation of animal rights. Habitat loss is by far the leading factor [of biodiversity loss]: At least three-quarters of all threatened bird species are in trouble because human activities have transformed and fragmented unique habitats. Forests, wetlands, and grasslands have been altered by *intensive agriculture*, *heavy livestock grazing*, *commercial plantation forestry*, and *suburban sprawl*. As an example, migratory songbirds winter in coffee plantations, where coffee bushes have traditionally been grown under a shady canopy of native forest trees. Unfortunately, this habitat is disappearing as plantations intensify and replant with higher-yielding, sun-tolerant coffee varieties that do not require shade. The result is that Neotropical migrants *must search even harder* to find suitable wintering territory. More than 40,000 large dams and hundreds of thousands of smaller barriers plug up the world's rivers, altering water temperatures, sediment loads, seasonal flow patterns, and other river characteristics to which native fish are adapted. Levees disconnect rivers from their floodplains, eliminating backwaters and wetlands that are important fish spawning grounds. Engineering projects alter river inflows, and agricultural and industrial pollution of waterways further reduces fish habitat.

BIODIVERSITY LOSS: DEFORESTATION:

Deforestation is of course a big part of the habitat loss issue since forests are homes to thousands and thousands of animal & plant species. We single this problem out because rainforests are by far the biggest and most important storages of our planet's natural treasures - learn more about rainforest biodiversity here.

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Rainforests are complex ecosystems which sustain numerous relationships of all types of life forms between each other. Losing rainforests means losing this incredible wealth that the nature has endowed us with. It is interesting to note that while the indigenous peoples were "guardians" of tropical rain forests for many centuries - up to the end of the 19th - beginning of the 20th century, the forest cover didn't show any significant signs of degradation. But the advent of *new technologies*, explosions in *population numbers* and a seemingly insatiable *human demand* for natural resources have accelerated the process of tropical deforestation and certainly led to high levels of biodiversity loss in different parts of the world.

BIODIVERSITY LOSS: EXCESSIVE EXPLOITATION OF WILD ANIMALS:

Wild animals, especially those inhabiting rainforests, are exploited for pet trade, bush meat trade, for their furs and body parts and for biomedical research. Orangutans - among the most endangered animal species on Earth - have fallen victim to such human actions as well as. Not only is their habitat being consistently destroyed, orangutans are also illegally traded as pets to satisfy the whims of the unaware (or quite simply uncaring) public. In another shocking example, boa constrictor snakes had been used for both drug and wildlife smuggling when they arrived from Colombia to Miami Airport in 1993 and were found to carry inside them 39 kg of cocaine. All of the snakes subsequently died.

BIODIVERSITY LOSS: ENVIRONMENTAL POLLUTION:

Although effects of environmental pollution on animals have not been measured in as much detail as its effects on humans, we are pretty safe to assume that animals suffer just as much from pollution as the human populations. For example, fish and other aquatic animals have been severely affected by acid rain during the last decades of the 20th century, although this issue is now mostly under control.

While excessive ultraviolet radiation coming through the ozone layer in the upper atmosphere can cause skin cancer in animals, ozone in the lower atmosphere may damage their lung tissues.

Extreme pollution cases, as well as slow but steady rates of pollution, may also unfortunately lead to biodiversity loss and animal extinction.

BIODIVERSITY VALUE AND EFFECT OF BIODIVERSITY LOSS:

Rainforest as the Global Climate Regulators:

Rainforests - the biggest storages of Earth's biodiversity - are extremely important global climate regulators. Rainforests act as *pollution filters* by absorbing *carbon dioxide* from the atmosphere. Carbon dioxide (CO₂) is a powerful air pollutant which contributes to global warming and therefore to the destabilization of climate patterns throughout the world. By removing carbon dioxide from the atmosphere, rainforests help keep the global climate stable and functioning properly. But it is exactly a full spectrum of animal & plant diversity within the rainforests which *sustains* these complex ecosystems and *maintains* their health. In other words, rainforest biodiversity is the basis without which the rainforests simply cannot exist. Rainforests become weaker, disintegrate and lose their capacity to absorb carbon dioxide leading to more global warming and other climate change problems.

CONCLUSION:

We should survive forest instead of deforestation. While operating the chemical process, precaution should be taken to minimize pollution. We should keep the high level of outlets of industries and others. We would like to finish off by quoting two renowned authors - John Tuxill and Chris Bright - and their take on the importance of biodiversity to us all: The loss of species touches everyone, for no matter where or how we live; biodiversity is the basis for our existence. Earth's endowment of species provides humanity with food, fiber, and many other products and "natural services" for which there is simply no substitute. Biodiversity underpins our health-care systems: One-fourth of drugs prescribed in the United States include chemical compounds derived from wild organisms, and billions of people worldwide rely on plant- and animal-based traditional medicine for their *primary health care*. Biodiversity also supplies a wealth of genes essential for maintaining the vigor of our crops and livestock. It provides *pollination services*, mostly in the form of insects, without which we could not feed ourselves. Frogs, fish, and birds *control pests*; mussels and other aquatic organisms *cleanse our water supplies*; plants and microorganisms *create our soils*.

But these essential natural goods and services constitute a minor part of the picture. Most of what we are losing is still a mystery to us. As the noted Harvard University biologist Edward O. Wilson puts it, we live on an unexplored planet. We have barely begun to decipher the intricate ecological mechanisms that keep natural communities running smoothly.

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