

GLOSSARY

A

Abiotic: A situation or phenomenon that is characterised by the absence of living organism.

Acid rain: Rain water containing a level of acidity higher than normal, usually weak acidity is due to dissolution of carbon dioxide in rain water. The relatively high acidity of rain water is due primarily to the presence of oxides of sulphur and nitrogen (produced during burning of fossil fuels in automobiles and industrial set ups) in the air and their dissolution in the falling rain drops (generally forming sulphuric and nitric acids); usually acid rains occur far away from the places of origin of the gases as the gases are carried in the wind-drift to quite distant places.

Adaptation: The act of adjustment by an organism to environmental conditions through modifications of organs if necessary.

Aerosol: Fine liquid, solid or gas particulates that remain suspended in the atmosphere for varying periods; small containers of liquid with a propellant under pressure for spraying of pesticides, cosmetics, etc.

Afforestation: Establishment of a forest cover on land; planting trees on land that was previously used for purposes or raising a new forest after felling and clearing of an old forest.

Agenda 21: Document outlining the extent of global environmental problems and measures to control the same prepared and agreed upon at the UN Conference on Environment and Development (UNCED) Summit at Rio-de-Janeiro, Brazil in June 1992.

Agrochemicals (Syn: Agrichemicals): Chemicals used in agriculture including fertilisers, pre- and post-emergence herbicides, fungicides, insecticides, nematocides, hormonal chemicals etc.

AIDS (Acquired Immune Deficiency Syndrome): A condition in which the body's immune system is weakened and therefore less able to fight certain infections and diseases. It is caused by the Human Immunodeficiency Virus (HIV).

Air pollution: Any man-made or natural change in the normal composition of air, changing the concentration of one or more relative to the other gases.

Air: The invisible layer of odourless and tasteless mixture of gases which surrounds the earth all through out as a most essential cover, primarily restricted to 20 km above the sea level, and that has been responsible for the sustenance and evolution of most forms of life. Air is primarily composed of nitrogen (78 per cent) and oxygen (21 per cent) but other gases such as carbon dioxide (0.035 per cent), water vapour (0-4 per cent), ozone (0.00006 per cent) all have very important specific constitutional and regulatory roles; without air the earth would have been a barren land.

Algal Bloom: A population explosion of some pigmented marine algae seen as an explosion of colour on the ocean – orange, red, or brown.

Antarctica: The continental landmass measuring 13.8 million sq. km around the South Pole usually delineated by the Antarctic circle – a small circle of the earth parallel to the equator approximately 23° 27' from the South Pole, it is the world's fifth largest continent nearly 98 per cent of which is covered by snow and ice upto an average depth of 2 km.

Anthropocentric: Regarding man as the most significant entity in the universe, the anthropocentric views would consider components of the natural world to be valuable only as the means to some human end.

Aquaculture: Rearing in water of aquatic plants, fish and shellfish for food either in special structures or special ponds, or employing specific devices in certain parts of lakes or seas; also known as aquafarming.

Aquifer: Water-bearing stratum of porous rock, gravel, sand or soil; water accumulates in the layer and passes to wells and other structures built for collection of underground water.

Asbestosis: A disease of the lungs and respiratory tract (pneumoconiosis) caused by inhalation of fine asbestos particles; asbestos dust can cause some forms of lung cancer, blue asbestos (one form of asbestos) is banned in some countries because of high toxicity.

B

Bharat I, II, III and IV: These are emission standards that set specific limits to the amount of pollutants that can be released into the environment by automobiles and other powered vehicles. Standards generally regulate the emissions of NO_x, sulfur oxides, particulate matter (PM)

or soot, carbon monoxide (CO), or volatile hydrocarbons. Bharat I, II, III and IV are equivalent to the standards set by European countries i.e., Euro I, II, III and IV, respectively.

Bhopal Gas Tragedy: The world's most tragic industrial disaster took place in the midnight of December 3, 1984 when 36 tons of highly toxic methyl isocyanate (MIC) gas (used in the production of the insecticide sevin) leaked out of the storage tanks of the factory of the multinational company, Union Carbide, at Bhopal killing as per official records 2300 persons (unofficially over 10,000) and injuring to various degrees nearly half a million people. Lack of foresight, negligence on the part of the management and failure to take adequate precautionary steps were the major reasons of this man-made tragedy.

Bioaccumulation: The progressive accumulation over time of toxic components of pesticides and other chemicals and metals through the food chain; also known as biomagnification.

Biodiversity: The wide range and richness of the living world as manifested by the vast generic and specific distribution of flora and fauna giving rise to the large qualitative and quantitative differences in the living organisms.

Biogas: Usually methane (CH₄) gas (commonly mixed with carbon dioxide) produced through fermentation of farm wastes particularly excreta of farm animals; e.g., Gobar gas from cowdung.

Biological Oxygen Demand (BOD): A measure of requirement of oxygen for microbial degradation of organic matter present in water and is expressed as milligram of oxygen consumed for the biological degradation of organic matter present in one litre of water.

Biomagnification: Progressive increase in concentration of certain substances in the body over a long period because of passage through the food chain.

Biome: Geographically large ecological region characterised by broad similarity in vegetation and climate, the principal biomes of the world are the tundra, temperate coniferous forest, temperate deciduous forest, tropical rain forest, temperate grassland, tropical savannah and desert. A particular biome may often be present in different continents of the world but those regions do have a broad similarity in climate, topography

and soils which is reflected on the vegetation in particular and other organisms in general.

Biomedical Waste: Waste that originates mainly from hospitals and clinics and includes blood, diseased organs, poisonous medicines, etc.

Biosphere: All the parts of the earth's lithosphere, hydrosphere, hydrosphere, atmosphere that (the parts) taken as a whole, accommodates the living organisms.

Biota: The living component of an ecosystem, also called the biotic community. The biotic community includes the plants, animals, and micro-organisms.

Biotechnology: Technology that manipulates the genes in an organism to change its characteristics.

Bog: Water-logged soil, which may or may not have trees.

Built-up Area: An area full of houses, shops, offices etc., specially built for urban or semiurban living and related purposes.

C

Cancer: A malignant tumorous growth beyond the usual control mechanism of the body and spread by metastasis via blood stream or lymph system.

Carbon Cycle: Cyclic movement of carbon in various forms from the environment to organisms and back to the environment.

Carbon monoxide (CO): A colourless and odourless gas produced in incomplete oxidation of carbon and highly toxic to the living system.

Carcinogen: A substance or an agent that may produce cancer or incite cancerous growth.

Carnivore: A flesh-eating animal.

Carrying Capacity: The maximum number of a species that can be accommodated in a given area, usually calculated as the number of individuals of a species per square kilometre. For man also, the term carrying capacity refers to the maximum number of persons that can be sustained per sq. km of area.

Cell: The basic unit of life composed of membrane-bound protoplasmic structure that contains the all-important nucleus (the controlling authority of the cell) in a bed of cytoplasm which with the help of a range of bio-organelles and molecules carry out the life-functions under the overall supervision of the nucleus. Unicellular micro-organisms (bacteria, protozoa, certain algae and

fungi) consist of a single cell but multicellular organisms may contain millions or even billions of cells.

Chemical Oxygen Demand (COD): A measure of the concentration of non-biodegradable substances dissolved in water, expressed as milligram of oxygen consumed for chemical oxidation of the non-biodegradable substances present in one litre of water.

Chemoprophylactic: Administration of a medication for the purpose of preventing disease or infection.

Chipko Andolan/Movement (Tree-Hugging Movement): An extraordinary environmental movement initiated in the early 1970s to prevent large scale ecologically damaging deforestation in the Himalayan foot hills of Tehri-Garhwal in Uttara Khand. Village women were organised into unique resistance groups who literally held the trees in embrace (three women per tree) for days and nights preventing commercial loggers to fell them. Nothing could dislodge these determined women and despite all efforts the local administration failed to implement logging for which permits were issued to contractors. Ultimately, the provincial as well as the government at the centre had to announce a stoppage of tree felling in Tehri-Garhwal.

Chlorofluorocarbons (CFCs): Gaseous compounds made up of carbon, fluorine and chlorine widely used as refrigerant of refrigerators and air coolers, in production of plastic foams, propellant for aerosol cans and cleansing agent of circuit boards of computers; CFCs are held responsible for stratosphere ozone depletion.

Chulha: A stove that uses wood or charcoal as fuel.

Coal: Solid black carbon-rich substance originating millions of years ago from decaying plants which initially formed peat and then under pressure from subsequent deposits were converted to various grades of coal of varying hardness and quality; anthracite is the hardest and best followed in order by bituminous coal and lignite; the same is true for quality and fuel efficiency.

Coastal Zone: The area that extends from the high tide mark on land to the edge of the continental shelf, which is the submerged part of the continent.

Community Reserves: Terms denoting protected areas of India which typically act as buffer zones to or connectors and migration corridors between established national parks, wildlife sanctuaries and reserved and protected forests of India. Such areas are designated as conservation areas if they are uninhabited and completely owned by the Government of India but used

for subsistence by communities, and community areas if part of the lands are privately owned. Administration of such reserves would be through local people and local agencies like the gram panchayat, as in the case of communal forests. Community reserves are the first instances of private land being accorded protection under the Indian legislature. It opens up the possibility of communally owned for-profit wildlife resorts, and also causes privately held areas under non-profit organisations like land trusts to be given protection.

Community: The assemblage of all the interacting populations of different species existing in a geographical area. It is a complex interacting network of plants, animals, and micro-organisms.

Consumer: An organism that feeds on producers or other organisms, also called a heterotroph.

Convention Energy/Fuel Sources: Usually traditional energy sources such as coal, wood, petroleum, natural gas etc; solar, tidal, wind power etc. are non-conventional sources of energy.

Coral Reef: A formation by huge colonies of tiny organisms called polyps that secrete a stony substance around themselves for protection. When the coral die, their empty outer skeletons form layers and cause the reef to grow.

Cost-Benefit Analysis: An analysis, in economic terms, of the advantages and disadvantages of a course of action; the total economic and social returns against the expenditure.

Crude Birth Rate: The number of live births per 1000 people in a population in a given year.

Crude Death Rate: The number of deaths per 1000 people in a population in a given year.

Culture: The totality of socially transmitted behaviour patterns, arts, beliefs, institutions, and all other products of human work and thought characteristic of a community or population.

Cyclone: A kind of tropical storm in which the wind rotates around a centre of low atmospheric pressure anticlockwise in the Northern Hemisphere and clockwise in the Southern Hemisphere with wind speed reaching 100 km per hour or more; in anticyclone the wind circulates round an area of high pressure clockwise in the Northern Hemisphere and anticlockwise in the Southern Hemisphere.

D

DDE (Dichlorodiphenyl Ethylene): An insecticide.

Decibel: One tenth of a “bel” – the unit of sound intensity, abbreviated as dB. Mathematically, $dB = 10 \log_{10} I/I_0$, where I is the intensity of any sound and I_0 is the intensity of a reference sound of the same frequency just audible to the average human ear. The audibility of human ear ordinarily ranges from 1 to 130 dB with the faintest perceptible sound taken as one decibel (1 dB).

Desertification: Land degradation in arid and semi-arid areas caused by human activities and climatic changes.

Dichloro diphenyl trichloroethane (DDT): A very potent organochlorine insecticide but a major disadvantage is large bioaccumulation and magnification through food-chain. Presently not recommended (banned in the USA since 1973) because of persistence and bioaccumulation (gradual build up in the food via insect → small predatory animal → bigger predatory animal) leading to the detection of DDT or its stable breakdown products DDD or DDE. Further, many insects have acquired resistance against DDT.

Dioxin: A highly poisonous chemical, 2,3,7,8-tetra chlorodibenzo-p-dioxin produced in very small quantities as a by-product during the manufacture of 2,4,5-T, a herbicide and in a number of other chemical industries.

Diversity: Physical or biological complexity of a system. Usually a measure of the number of different species in an ecosystem.

DNA fingerprinting: A technique used to distinguish between individuals of the same species using only samples of their DNA. Although two individuals will have the vast majority of their DNA sequence in common, DNA profiling exploits highly variable repeat sequences called VNTRs. These loci are variable enough that two unrelated humans are unlikely to have the same alleles. The technique was first reported in 1984 by Dr. Alec Jeffreys at the University of Leicester, and is now the basis of several national DNA identification databases.

E

Earth Summit: The high level inter-governmental meeting on environment of the earth held in Rio-de-Janeiro, Brazil in June 1992 namely “United Nations Conference on Environment and Development”

abbreviated as UNCED but popularly known as Earth Summit. The points of broad agreement reached at the meeting have been circulated as the Rio Declaration.

Earth: It is a planet of the sun (a star of the Milky Way galaxy of the universe) and third in order of distance from the sun and revolves round the sun in nearly circular orbit, with its natural satellite the moon, in approximate 365 days.

Earthquake: The shaking and trembling of the earth due to movement inside the lithosphere that could be tectonic or volcanic in origin. The intensity of the earthquake is measured in the Richter scale (after Charles Richter) with values ranging from 0 to 10 (logarithmic scale), scale values above 5 would cause damage; the values taper off with increasing distance from the epicentre (the surface of the earth above the focus of the quake).

Ecological Balance: A more or less stable state in which the numbers of different organisms in a natural habitat have reached a steady level and remain nearly the same over time.

Ecological Footprint: A measure of the ecological impact of an entity, expressed as the extent of land needed to completely sustain the entity.

Ecology: The science that studies the relationships between living things and their environment. It is often considered to be a discipline of biology.

Ecosystem Diversity: The variety of habitats found in an area, that is, the variety of forests, deserts, grasslands, aquatic ecosystems, etc., that occurs in the area.

Ecosystem Service: The ecological service provided by an ecosystem, such as the maintenance of the biogeochemical cycles, modification of climate, waste removal and detoxification, and control of pests and diseases.

Ecosystem: A complex mutually interacting assemblage of a group of coexisting organisms that interact with the environment forming a functioning whole in nature, the size of such a system may vary from a very small one to a vast geographical area.

Effluent: Something that flows out; in pollution control, the term usually refers to liquid household and industrial wastes (often applied to gaseous pollutants as well).

Endangered Species: The state of a species when the number of survivors is so small that it could soon

become extinct over all or most of its habitat. Unless it is protected, it will move into the critically endangered category, before it becomes extinct.

Energy: Ability to do work or produce a change by pushing or pulling some form of matter to cause a heat transfer between two objects at different temperatures.

Entomologists: Those involved in the scientific study of insects.

Environment: The term literally means “something the environs” (encircles, surrounds or covers up); as such, it includes the overall effect of the surroundings on an organism, groups of organisms or an ecological community implicating thereby highly complex interactions of climatic, edaphic and biotic factors on the liveliness, sustenance and finally survival of the organism and other members of the community.

Environmental Health: Those aspects of human health that are determined by physical, chemical, biological, social, and psychosocial factors in the environment.

Environmental Impact Assessment (EIA): A comprehensive and critical assessment and evaluation of the short and long term consequences of a big construction programme or a development project on the environment on the basis of evidences and experiences as available locally and globally for similar activities.

Environmental Studies: The branch of study concerned with environmental issues. It has a broader canvas than environmental science and includes the social aspects of the environment.

Environment-Friendly (Ecofriendly): Any activity or activities and actions which do not harm the environment; any thing that helps protecting the environment.

Ethics: Principles (code) of conduct based on moral values for individuals and groups especially professionals as to what is good and what is bad, and what should be done and what should not be, keeping in view, the interest of mankind and biosphere as a whole.

Eutrophication: The enrichment of a standing water body by nutrients such as phosphorus and nitrogen.

Evolution: The process by which a population of a species changes its characteristics over time in response to changes in environmental conditions.

E-Waste: Electronic waste that results from discarded devices like computers, televisions, telephones, and music systems.

Ex-situ Conservation: Conservation that attempts to preserve and protect the species in a place away from their natural habitat.

Extractive Reserve: Protected forests, in which local communities are allowed to harvest products like fruits, nuts, rubber, oil, fibres, and medicines in ways that do not harm the forest.

F

Fauna: The animals and animal-life of a region.

Flora: Groups of plants growing naturally in a region.

Fluorosis: An ailment caused by the excess intake of fluoride.

Fly ash: Fine particles of noncombustible fraction of a solid burning fuel like coal carried away by air draft and spread over a large region; fly ash may be collected and used for brick making and other purposes.

Food Chain: The series of organisms involved in the passage of energy of food from the primary producer (plant) to the series of consumers through herbivorous animals to different levels of carnivores.

Forest: Large land area with a natural assembly of trees and shrubs (or trees planted by man) and animals with trees as the dominant members of the community.

Fossil Fuel: Remains of organisms that lived 200-500 million years ago that were converted by heat and pressure into coal, oil, and natural gas.

Fossil: The remains, traces, impressions of an organism, large or small, of past geological ages in the earth's crust in petrified form.

Frugivorous: Fruit-eating, relying on fruit as a sole source of food.

Fuel Cell: An electrochemical unit that burns hydrogen to produce electricity.

G

Ganga Action Plan: A master plan to control the large scale pollution of the most important river of the country (mother Ganga as people call it) by domestic, municipal and industrial wastes and effluents taken up in the early nineteen eighties. The plan envisaged, besides physical cleaning up of certain areas, compulsory treatment of raw sewage and industrial effluents before discharging to the river, periodic monitoring of water quality and

various other steps. Although a good beginning has been made much more needs to be done on a continuously operating basis to protect the river from abuse and exploitation.

Gasification: The process of converting coal into gas in a gasifier for use in gas-fuelled power stations.

Gene: Appropriate unit of DNA (deoxyribonucleic acid) on a chromosome which governs the synthesis of a specific enzyme that is characteristic of the organism concerned.

Genetic Diversity: The variety in the genetic makeup among individuals within a species.

Global Warming: The slow gradual rise in the temperature of the earth due to emission of excess quantities of a number of radiation-trapping gases such as carbon dioxide, methane, chlorofluorocarbons, ozone (tropospheric), nitrogen oxides, collectively called “green house gases” (as the prevent radiating back of heat rays as in a glass house for growing green plants – also called a green house).

Grassland: Regions where the average annual precipitation is high enough for grass and a few trees to grow.

Green House Effect: A rise in temperature of the atmosphere due to rise in the levels of certain gases (carbon dioxide, methane, chlorofluorocarbons, water vapour, etc.) that prevent heat loss in a manner similar to the trapping of heat in a glass-covered ‘green house’ (used commercially in the temperate countries for raising vegetables and flowers during cold winter months).

Green House Gas: A gas like carbon dioxide that surrounds the earth and prevents some of the sun’s heat from being reflected back out again.

Green Revolution: The rapid increase in world food production, especially in the developing countries, during the second half of the twentieth century, primarily through the use of lab-engineered high-yielding varieties (HYVs) of seeds.

H

Habitat Fragmentation: The process by which continuous areas of species habitat are reduced in extent or divided into a patchwork of isolated fragments due to human impact.

Habitat: The area or type of environment in which an organism or biological population normally lives or occurs.

Health: The condition in which the body is sound and the mind is free.

Herbicide: A substance that kills a plant on contact (contact herbicide, e.g., Dinitrophenol, diquat) or systemically through absorption by plant (systemic herbicide, e.g., 2,4-D).

Herpetologists: Those involved in the scientific study of reptiles and amphibians.

High Yielding Varieties (HYVs): Any of a group of genetically enhanced cultivars of crops such as rice, maize and wheat that have an increased growth rate, an increased percentage of usable plant parts or an increased resistance against crop diseases. Those crops formed the basis for the Green Revolution.

HIV (Human Immunodeficiency Virus): The virus that causes AIDS.

Holistic Approach: Dealing with something in its totality rather than in parts or sections.

Hot Spot: A place showing higher background radiation than what is normal, very often indicating presence of radioactive materials.

Hurricane: Violent storm with very strong winds experienced mainly in the western Atlantic Ocean.

Hydrological Cycle: The cycle that incorporates the events starting from evaporation of water of the sea by solar radiation, formation of cloud, precipitation on land and sea, and final return to the sea.

Hydropower (Hydroelectric Power, Hydel Power): Electric power obtained by using water to drive the turbines.

Hydrosphere: All sources of water taken as a whole, namely water in the oceans and seas, in land (lakes, rivers, ponds, etc.) and in the atmosphere.

I

Incineration: The process of burning waste materials to ashes in a special furnace (or incinerator).

Infestation: The spread of an insect pest or a parasite or pathogen in large number that may cause a lot of harm.

In-situ Conservation: Conservation that tries to protect species where they are, that is, in their natural habitat.

Integrated Pest Management (IPM): A holistic approach for control of agricultural pests incorporating appropriate cultural practices, biological control if possible, along with minimal use of toxic chemical pesticides.

Internal Combustion Engine: The type of engine in which the fuel, a mixture of petrol and air is burnt in closed combustion chamber for generation of the required energy for moving the pistons.

Issue: A point of discussion, debate, or dispute.

J

Joint Forest Management (JFM): A model of forest management in which the local communities are involved in the planning of the conservation programme.

Jungle: Tangled mass of thick vegetation, usually tropical trees and shrubs of diverse nature, often difficult to penetrate.

L

Label: Written information given on a product marketed for the consumer that includes in case of a health related product, the nature of product, origin, date of preparation, date of expiry, price and all relevant facts the consumer is entitled to know.

Land Slide: The rapid downward movement of a mass of earth or a block of rock or an artificial landfill made of waste materials and earth; landslide is common in hilly or mountainous terrains during the rains especially when the trees and other vegetation have been cleared from the mountain slopes. The slope of the terrain particularly its degree of inclination, the extent of deforestation, the amount and nature of precipitation, seepage and flow of water are important factors in landslips.

Landfill: An area, usually located just outside the city, on which municipal waste is dumped.

Lichen: A highly specialised form of complex thallophytic plants made up of symbiotic association of a photosynthetic alga and a saprophytic fungus on solid surface such as a rock or on the trunk of a tree, sensitive to air pollution.

Liquified Petroleum Gas (LPG): Mostly propane, butane and their combination obtained by refining petroleum, cooled and bottled for domestic use.

Lithosphere: The solid part of the earth consisting of native rocks, rocks at different stages of weathering, soils of different kinds, etc.

Lithotroph: An organism that uses reduced inorganic compounds as electron donors (energy sources) for nutrition.

Local Authority: An official body responsible to a higher body doing some of the administrative and welfare work of the locality e.g., Panchayats.

Local Extinction: The state of a species when it is no longer found in the area it once inhabited. It is, however, present elsewhere in the world.

M

Mammalogists: Those involved in the scientific study of mammals.

Man: A human being – a bipedal mammalian primate related to the great apes but with greater development of the brain resulting in greater power of abstract reasoning and better articulated speech faculty. Man (*Homo sapiens*) is the sole non-extinct representative of the family, Hominidae and consists of a variable number of freely interbreeding races distributed across the globe.

Mangrove: A tropical maritime vegetation of shrubs and trees which are especially adapted to salt water swamps in the estuaries of big rivers in Asia and America.

Mariculture: A specialised branch of aquaculture involving the cultivation of marine organisms for food and other products in the open ocean, an enclosed section of the ocean, or in tanks, ponds or raceways which are filled with seawater. An example of the latter is the farming of marine fish, including finfish and shellfish e.g., prawns, or oysters and seaweed in saltwater ponds. Non-food products produced by mariculture include: fish meal, nutrient agar, jewellery (e.g., cultured pearls), and cosmetics.

Marsh: Wetland with few trees.

Mass Extinction: A global, catastrophic extinction of species, with more than 65 per cent of all species becoming extinct over some million of years. It is characterised by a rate of disappearance significantly higher than background extinction.

Maximum Sustainable Yield (MSY): The largest yield/catch that can be taken from a species' stock over an indefinite period. It is used extensively in fisheries management where it refers to the yield of a species of fish that we could harvest annually leaving enough breeding stock for the population to renew itself. It is the amount of a fish species that we can catch every year indefinitely.

Megadiversity: High levels of biodiversity. Some of the countries where megadiversity is observed include Australia, Brazil, China, Colombia, Ecuador, the United States, India, Indonesia, Madagascar, Mexico, Peru and the Democratic Republic of the Congo). These countries contain 70 per cent of our planet's biodiversity.

Melanoma: Malignant tumour containing dark pigments believed to be caused by over exposure to sunlight.

Memes: Culturally transmitted patterns of behaviour.

Metropolis: A city or town that is a major centre of activity.

Monitor: To scrutinise or check systematically with a view to collecting certain specified categories of data.

Montreal Protocol (Montreal Protocol on Substances that Deplete the Ozone Layer): A successful agreement made under the auspices of the United Nations in 1987 to phase out production and release of substances that are responsible for the destruction of the protective ozone layer (the protection by ozone involves the blocking of the ultraviolet radiation emitted by the sun), particularly by the chlorofluorocarbons (CFCs) and also several other ozone-depleting chemicals. An amendment to the protocol was made in 1992 and signed by 93 nations including India and China agreeing to eliminate the use of CFCs, carbon tetrachloride and halogens by 2000 AD and methyl chloroform by 2005 AD.

Moon: The only known natural satellite of planet earth (with a mass of about one eightieth of the earth and mean distance of about 3.8×10^5 km from the earth) moving in an elliptical orbit round the earth in about 27.5 days (one complete moon cycle with four phases – full moon, new moon and two half-moons) shining in the sun's reflected light; the moon besides its aesthetic appeal and other unknown effects on the earth's abiotic and biotic systems directly influences through gravitational effect the tides in the oceans and waterbodies connected with the ocean.

N

Natural Resources: Mineral deposits, water, air, plant and animal resources, in the lithosphere, hydrosphere, atmosphere and biosphere.

Natural Selection: An essential component of the evolutionary process: selection in nature of organisms with such heritable characters (with required genetic

changes brought forward by mutation) that enable them to adjust to changed conditions imposed by nature, and elimination of those who cannot.

Nature Conservation: Maintenance of a favourable balance of nature with respect to the quantity and quality of the physical components of nature through prevention of over-exploitation of non-renewable natural resources, effective trapping of renewable resources, preservation of biodiversity and judicious management practices to avoid undue conflict between economic development and environmental degradation.

Nature: The visible and perceived world with all its abiotic and biotic natural resources.

Network: An interconnected or interrelated system of communication (including wireless communication), channels, groups, etc.

NGO (Non Governmental Organisation): An organisation that works outside the government either independently or in collaboration with other public or private institutions, charitable organisations, trusts and endowments on issues relating to various aspects of environment (or other activities) through a range of action, often even direct nonviolent physical resistance to achieve the goal.

Niche: A place of special habitat within an ecosystem that supplies the necessary factors for the existence of an organism or species.

Noise Pollution: The act of damaging the tranquility of the surroundings with levels of unpleasant, disturbing and annoying sound.

Noise: Sound usually of a high level that is noticeably unpleasant, disturbing and cause annoyance.

Nomad: A person who does not settle permanently in a particular place but keeps on moving, staying only in temporary shelters e.g., Herdsmen who graze cattle and sheep, nomadic hunters etc.

Non-biodegradable: Not decomposable by biological means, implying that the enzymes that break up complex synthetic substances are as yet nonexistent in nature.

Non-degradable: Not possible to degrade or decompose naturally by agents (physical, chemical or biological present in the surroundings).

Non-point Source: Source of pollution in which wastes are not released at one specific, identifiable point but from a number of points that are spread out and difficult to identify and control.

Non-renewable Resources: Usually an exhaustible natural resource which cannot be replaced, e.g., coal, petroleum, etc.

Nucleic Acid: Polynucleotide such as deoxyribonucleic acid (DNA) or ribonucleic acid (RNA) – a nucleotide is composed of nitrogenous base, a pentose sugar and phosphate – many such nucleotides combine to give rise to a polynucleotide (nucleic acid).

O

Odour: Smell, the quality of a substance that stimulates or sensitises the olfactory nerves; the term is usually used to mean unpleasant smell.

Organic Farming: A method of farming that does not use chemical fertilisers and chemical pesticides. It is a return to the traditional methods like crop rotation, use of animal and green manures, and some forms of biological control of pests.

Ornithologists: Those involved in the scientific study of birds.

Ozone Hole: The creation of a very thin area or “hole” in the stratospheric ozone layer because of destruction of ozone molecules through reaction with chlorine molecules (especially from chlorofluorocarbons, CFCs), nitrogen oxides from fossil fuels in presence of water molecules, molecules of methane gas, etc.

Ozone Layer: A layer of ozone that exists in the upper atmosphere, or stratosphere, between 10 and 50 km above the earth.

P

PAN (Peroxyacetyl Nitrate): A substance present in low concentrations in photochemical smog.

Patent: An official privilege or right that confers to an inventor of a new product or a scientific process the exclusive rights to make, use and sell the invention for commercial exploitation for a specific term of years.

PCB (Polychlorinated Biphenyl): Similar to PBB except that bromine has been substituted by chlorine, fat soluble highly toxic chemicals that persist for a long time.

PEAT: Decayed and partly decomposed vegetation (mosses and other plants) that has become partially carbonised, quite often found in bogs and boggy soils.

Persistent Organic Pollutants (POPs): Compounds which are extremely resistant to natural degradation,

persist unaltered with the possibility of bioaccumulation (accumulation in different organisms) and bio magnification (gradual increase in concentration within the body of organisms). The polycyclic aromatic compounds, particularly the organochlorine compounds such as polychlorinated biphenyls (PCBs) polybrominated biphenyls (PBBs), polycyclic aromatic hydrocarbons (PAHs), many of which are widely used in agriculture and industry are all of the persistent type and are therefore ecologically hazardous.

Photochemical Smog: A form of outdoor air pollution formed by chemical reactions between sunlight, unburnt hydrocarbons, ozone, and other pollutants.

Photodegradation: The degradation of photodegradable molecule caused by the absorption of photons, particularly those wavelengths found in sunlight, such as infrared radiation, visible light and ultraviolet light.

Photosynthesis: The process by which green chlorophyllous plants utilise the energy of sunlight for synthesis of food (usually carbohydrates, initially) from carbon dioxide and water and release oxygen (from the breakdown of water) as a byproduct.

Phytoplankton: Minute aquatic plants that float or drift on water, especially abundant in sea water serving as food for small aquatic animals.

Phytoremediation: The use of certain plants to clean up soil, sediment, and water contaminated with metals and/or organic contaminants such as crude oil, solvents, and polycyclic aromatic hydrocarbons (PAHs).

Pisciculture: Breeding, hatching and rearing of fish under controlled conditions.

Plankton: Free-floating micro-organisms that cannot swim easily and are buffeted about by the waves and currents.

Point Source: Source of pollution that involves discharge of pollutants from an identifiable point such as a smoke-stack or sewage treatment plant.

Polluter: A company or a person that is responsible for pollution of the environment, for example a paper mill, an asbestos factory; a person who throws any sort of garbage in a public place etc.

Pollution: Naturally-occurring or man-made processes by which the usually favourable natural conditions for a healthy living is disturbed or disrupted; pollution of air, water and soil being areas of special emphasis.

Polythene: Polyethylene – a tough thermoplastic chemically resistant flexible material produced by polymerisation of ethylene (C_2H_2), used as a good electrical insulating material and various other purposes.

Prairie: Plain grass-covered land in North America (also in Canada) especially the vast area of rolling land in the Mississippi valley with rich fertile soil.

Precipitation: All the forms in which water comes down on earth, for example, rain, snow, and hail.

Producer: An organism such as a green plant that can produce food from simple inorganic substances. Also called autotrophy.

R

RAD: The unit of absorbed dose of ionising radiation, one rad is equal to the energy absorption of 100 ergs per gram of irradiated material.

Rainfall: The amount of rains that fall in an area over a period of time usually measured in centimeters or inches.

Rainforest: Thick tropical forest growing in an area with high rainfall usually over 250 cm.

Raw Material: Material used for manufacture of finished products for example iron ore for making steel, cotton lint as raw material for cloth etc.

Recombinant DNA: It is a form of artificial DNA that is engineered through the combination or insertion of one or more DNA strands, thereby combining DNA sequences that would not normally occur together.

Recycling: Processing of waste materials for reuse – metals, glass, paper, plastic, etc., can be recycled and reused (recycling is an environment-friendly process and is officially encouraged).

Reforestation: The restocking of existing forest and woodlands which have been depleted with native tree stock.

Renewable: Resource that theoretically can last indefinitely without reducing the available supply, either because it is replaced more rapidly through natural processes than are nonrenewable resources or because it is essentially inexhaustible.

Rio Declaration: The directive principles of a environmentally-sound developments contained in the 27-page document approved at the 1992 Earth Summit (held at Rio-de-Janeiro, Brazil) of the heads of the participating governments of different countries.

S

Sacred Grove: A forest that is protected by the local community through social traditions and taboos that incorporate spiritual and ecological values.

Safe Dose: Dose of medicine that is not harmful; dose of radiation that can be absorbed by the body without causing harm.

Salinity: The degree or extent of saltiness of a solution of salt in water.

Savannah: Tropical or subtropical grassland in Africa, South America (Florida), etc., with scattered trees and drought resistant plants (in the tropics).

Scheduled species: All the species listed in The Wild Life Protection (Amendment) Act, 2002, Schedule I - IV. The degree of punishment and penalty varies for offences relating to wild animals (or their parts and products) included in Schedule-I or part II of Schedule-II and those relating to hunting or altering the boundaries of a sanctuary or national park.

Scrubber: A device for removing impurities and fine particulate matters especially from gases; cleaning waste gases by removing sulphur and other pollutants, etc.

Sewage Treatment Plant: An area with accessories and equipment for treatment and purification of liquid sewage for safe disposal to a river or sea.

Sewage: Waste water, human excreta, etc., flushed down the toilets and carried away by the sewers.

Shellfish: Aquatic invertebrate animal covered with a shell, especially edible mollusks and other crustaceans.

Silent Valley: The site for a proposed highly controversial hydroelectric project by building dams across river Kunthipura in the Palghat district of north Kerala, India that attracted national and international attention because its implementation would have destroyed an ecologically important primitive rainforest with rare flora and fauna. In view of the tremendous pressure mounted against the project by leading environmentalists and organisations like Kerala Shastra and Sahitya Parishad (KSSP) who played a key role in arousing public awareness and interest, the Silent Valley Hydel project was ultimately shelved.

Slum: Highly congested area usually within the city limits (often located centrally) with very poor living conditions in unplanned poorly constructed houses and hutments on very narrow lanes or passages with extreme lack of sanitary facilities inhabited by poor people who are mostly engaged manual works as daily wage earners, domestic hands, hawkers, etc.

Smog: A relatively dark, smoky, fine dust and soot containing fog which under certain meteorological conditions such as temperature inversion (temperature lower at ground surface than in air above) tend to hang over the ground surface for a considerable period and results in poor visibility and serious respiratory problems; photochemical smog is attributed to the photochemical action of ultraviolet rays in sunlight on unburnt hydrocarbon and oxides of nitrogen in the exhaust fumes and smokes of cars and engines, producing smog with traces of toxic ozone gas (tropospheric).

Social Forestry: The planting of trees, often with the involvement of local communities, in unused and fallow land, degraded government forest areas, in and around agricultural fields, along railway lines, roadsides, river and canal banks, in village common land, government wasteland, and panchayats land.

Society: A group of human beings broadly distinguished from other groups by mutual interests, participation in characteristic relationships, shared institutions, and a common culture.

Soil Pollution: The act of damaging the quality of soil by dumping of garbage, rubbish, municipal wastes containing toxic substances, industrial effluents containing hazardous chemicals, excessive and indiscriminate use of agricultural chemicals such as fertilisers, fungicides, insecticides, herbicides, fly ash from thermal power stations, radioactive materials (nuclear wastes deposition through accidents or use of land as atomic test sites).

Soil solarisation: It involves the use of solar heat as a lethal agent. It is done by spreading thin transparent polyethylene sheet on soil surface with its margins sealed by dumping a layer of soil along boundary and is particularly done in summer months to achieve the maximum kill of the pathogens or its structures surviving in the soil. It is, thus, a sort of soil disinfection method aims at controlling the diseases by reducing or eradicating the inoculum existing in the soil prior to plantation.

Solid Waste: Waste matter that is relatively hard and cannot be put directly into the drain pipes.

Sorption: The action of both absorption and adsorption taking place simultaneously.

Species Diversity: The number of plant and animal species present in a community or an ecosystem.

Species: A species is a set of organisms that resemble one another in appearance and behaviour. The organisms in a species are potentially capable of reproducing naturally among themselves. The term includes all members of a certain kind, even if they exist in different populations in widely separated areas.

Spill: A liquid that has come out accidentally from the container as in oil spills from oil tankers in seas causing serious environmental hazards.

Storm: Atmospheric disturbance caused by gale-force winds accompanied most often by thunder and rains.

Stratosphere: Upper atmosphere above the troposphere and below the mesosphere, approximately between 11 and 50 km depending on latitudes etc.

Succession: Process in which communities of plant and animal species are replaced in a particular area over time by a series of different and usually more complex communities.

Sun: A star of the Milky Way galaxy of the universe and is the central figure of the solar system consisting of nine planets, including our planet earth and a belt of asteroids that revolve round the sun in nearly circular orbits in nearly the same plane. The sun having a mass of 2×10^{30} kg (i.e. 332900 times the mass of the earth) is about 150 million km away from the earth requiring 8.3 minute for sunlight to reach this planet. The sun is the ultimate source of energy on earth and all forms of life on this planet owe their existence to the sun.

Sunderbans: Riverine delta region in the Ganga estuary on the Bay of Bengal built up of silt and mud deposits washed away and brought from the vast hinterland of the river over ages. The area is characterised by a specialised unique vegetation and equally adapted fauna. The Sunderbans occupy an area of about 10,000 sq. km of which more than half falls in Bangladesh (the estimated area in West Bengal is 4264 sq. km) and is criss-crossed by tidal canals. As such, much of the coastal areas remain periodically submerged depending on the tides and the flora and fauna in this unique ecosystem, known as the mangrove ecosystem, adapt wonderfully to the daily periodic submergence and recession, the semisalinity or salinity of water (depending on the season and the extent of mixing of river water and salty sea water of the bay).

Sustainability: The property of something or some action the advantage of which will not end abruptly but

will continue to benefit many succeeding generations e.g., afforestation of denuded land (in fact, most ecofriendly actions would be sustainable).

Sustainable Development: Development that meets the needs of the present without compromising the ability of future generations to meet their own needs.

Syndrome: Signs and symptoms occurring together showing or suggesting the characteristics of a particular abnormality or disease.

T

Thermal Pollution: The adverse effect of a rise in atmospheric temperature due to release of heat such as from a power-plant cooling tower.

Threatened Species: A species that is still found in reasonable size in its natural habitat, but in declining numbers. Unless conservation measures are taken, it is likely to move into the next category, that is, the endangered list.

Tsunami: An extremely large wave in the ocean caused by an earthquake.

Typhus: A severe disease causing high fever, intense headache, dark red rash on the body caused by the microorganism *Rickettsia prowazekii* that is transmitted by body lice.

U

UNEP (United Nations Environment Programme): The United Nations have been deeply concerned with the ongoing environmental degradation and over the years took major initiatives to safeguard the environment of the world by arranging major conventions and formalising international treaties such as the Antarctic Treaty, 1959; Montreal Protocol on Ozone-Depleting Substances, 1987, Biodiversity Convention, 1992 etc.

UV Rays (Ultraviolet rays/radiations): Rays having wavelength shorter than the wavelengths of visible light but longer than X-rays (range of wavelength 5 to 400 nm).

V

Vaccination/immunisation: It is the administration of antigenic material (the Vaccine) to produce immunity to a disease. Vaccines can prevent or ameliorate the effects of infection by a pathogen. It is considered to be

the most effective and cost-effective method of preventing infectious diseases.

Value: A principle, standard, or quality considered worthwhile or desirable.

Virus: Submicroscopic infection-causing agent, visible under the electron microscope, considered to be an object in between living and nonliving, consists of nucleic acids (DNA in DNA-viruses, RNA in RNA-viruses) coated with proteins and functional only within the body of the host where the virus takes over the metabolic machinery of the host cell and multiplies itself in the same way as genes (nucleic acid) but the rate is much more rapid, the viruses are responsible for a large number of diseases of plants and animals.

W

Waste Disposal: The methods involved in dumping of wastes whenever necessary after ensuring that the matter is safe for disposal.

Waste Management: All the procedural and managerial work involved in collection, treatment and disposal of wastes.

Waste Treatment: Treatment of waste including separation, recycling and reuse of certain things and treatment of nonutilisable things for safe disposal.

Waste: Useless, unneeded, discarded, unused or excess material such as ashes, garbage, by-products.

Water Pollution: Any man-made or natural act that adversely affects or changes the usual physico-chemical and biological characteristics of water. The common sources of pollution are sewage contamination (pathogenic micro-organisms, chemical salts, organic matter etc.), industrial effluents (wastes from petrochemical complexes, fertiliser and other agricultural industries, sugar, textile, paper, leather and pharmaceutical industries etc.), agricultural chemicals (fertilizers, pesticides, etc.), farm wastes, etc., which need to be controlled through various methods of treatment.

Water Quality: The extent of purity of water for drinking as well as for various other uses. As such, water quality standards would be different for different purposes.

Water Table: The level of first layer of water below the ground surface.

Water: The most common liquid on the earth,

chemically a compound of hydrogen and oxygen (H_2O), water is inseparable from life.

Weedicides: Used to kill weeds or unwanted plants.

Wetlands: A natural ecosystem having the properties of terrestrial and aquatic systems with the land remaining submerged at least during a part of the year. The soil is basically undrained giving rise to swamps, bogs and marshes. They also include estuaries and deltas, tidal mud flats and mangroves and even waterlogged paddy fields and shallow fisheries. Wetlands play an important role in aquifer recharging and flood control.

World Wide Fund for Nature-India (WWF-India): The largest organisation engaged in wildlife and nature conservation in the country. Established as a Charitable Trust in 1969, it has an experience of over three decades in the field. WWF-India is engaged in a multitude of activities for protection and conservation of the environment.

X

Xerophyte: Specialised group of plants morphologically and physiologically adapted to dry edaphoclimatic conditions in arid and semiarid desert regions capable of retaining moisture within the body and preventing water loss by transpiration, e.g., cacti and succulents.

X-Ray (Roentgen Rays): X-rays are electromagnetic rays that may pass through tissues and leave images on photosensitive films (wave lengths lie in between ultraviolet and gamma rays, i.e. 6×10^{-3} to 5 nm).

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