Environmental Stressors Glossary

Appendix 7

Environmental stressors are defined as the physical, chemical or biological agents that cause impacts to human health and welfare, environmental resources or global systems. Stressors relate to the predominant emissions expected from a project. The following definitions are often used in the discussion of stressors:

Acid deposition. Commonly referred to as "acid rain", acid deposition is created when sulfur oxides (and to some extent, nitrogen oxides) given off by fossil fuel combustion react in the atmosphere to form sulfuric (and nitric) acid. This returns to the earth in the form of rain, snow, fog, gases, or dry particles (wet or dry acid deposition).

Acids/bases. Changes in water pH, presence of corrosive or anti-corrosive agents.

Aerosol/particulates (PM_{10}). Particles less than or equal to 10 microns in diameter that are small enough to be inhaled deeply into the lungs.

Ambient. The conditions of the surrounding environment, most often used to mean the encompassing atmosphere (e.g., air temperature, pressure) water, or soil.

BOD/COD. Biological oxygen demand is the requirement for dissolved oxygen in water to degrade or decompose organic matter within a measured time period at a given temperature. COD (chemical oxygen demand) is the requirement for dissolved oxygen in water to combine with chemicals, essentially of an inorganic nature, which are introduced into a stream as a result of disposal operations.

Channelization/impoundment. Channeled or confined water, which can cause human health impacts by increasing vector-borne diseases as well as damages to fisheries and aquatic ecosystems.

CO. Carbon monoxide, which is formed by incomplete combustion of carbon-containing materials.

CO_2. Carbon dioxide, which is released by plant and animal respiration and is a product of the combustion of carbon-containing materials such as fossil fuel, wood and natural gas. CO_2 is the primary "heat-trapping" gas associated with global warming.

Deposition. Matter that falls from the sky such as acid rain and ash.

Diseases/pathogens. Bacteria, viruses, and other disease agents.

Dissolved oxygen. The amount of oxygen dissolved in water which is needed to support fish and other species living in natural waters, and to effect the biological degradation of natural and manufactured materials that reach the water. Low dissolved oxygen levels can stress fisheries by impeding respiration processes and can increase mortality in some species.

Effluent. Waste material in liquid form (such as liquid industrial refuse, or sewage), treated or processed in some form and discharged into the environment.

Electromagnetic radiation. Electric/magnetic fields generated by power transmission, which are thought to cause cancer in humans and animals.

Erosion. The reduction of land surface toward sea level by natural or human processes. Erosion results in loss of soil, which can cause sedimentation in rivers, which leads to impacts on aquatic and terrestrial ecosystems, and agricultural practices. Erosion control can be a benefit for projects that reduce seasonal flooding.

Exotics. Accidentally or deliberately introduced species of nonnative plants or animals.

Fertilizers. Organic or inorganic plant nutrients (e.g., nitrogen, potassium, phosphorous).

Fine particulate matter (<PM_{10}). Aerosols formed by PM_{10}, NO_x, and SO_2 emissions. They result from the combustion of fossil fuels and include sulfate and nitrate aerosols, acid aerosols, and other chemical constituents. They are small enough to be inhaled into the lungs and can cause chronic and acute respiratory diseases and premature mortality.

Greenhouse gases (GHGs). Carbon dioxide, methane, nitrous oxide, chloroflourocarbons, and other chemicals that may affect global climate. Some of these gases (e.g., CO_2) exist naturally in the atmosphere, while others (e.g., chloroflourocarbons) are artificial.

Methane. A gaseous hydrocarbon (and greenhouse gas) that is a product of organic matter in marshes and mines, or of carbonized coal.

Noise. Unwelcome or excessive sound.

NO_x. Nitrogen oxides, which are formed primarily by fuel combustion and contribute to the formation of acid rain. They also combine with hydrocarbons in the presence of sunlight to form ozone, a major constituent of smog.

Odor. Putrid smell.

Organics. Chemicals derived from plant or animal sources, for example, hydrocarbons, volatile organic compounds (VOCs), and chlorofluorocarbons (CFCs).

Overharvest. Harvesting beyond sustainable yield.

Oxidants. Photochemical smog and ozone. Oxidants can degrade some materials including rubbers and plastics.

Ozone. An air pollutant that is produced in the atmosphere by reactions between volatile organic compounds and nitrogen oxides (both are direct emissions from the combustion of fossil fuels) and sunlight. Ozone can be an irritant to respiratory symptoms, may cause premature mortality in adults and children, and can reduce crop and forest yields and cause damages to terrestrial resources.

Particulates (>PM_{10}). Particulate matter with a diameter greater than 10 microns in the form of dust that is emitted directly from power stations or formed in the presence of SO_2 or NO_X gas emissions. Particulates greater than PM_{10} reduce visible range.

Particulates/sedimentation. Increased turbidity and settling.

Primary pollutants. Pollutants released directly into the atmosphere, which can react with other chemicals, the sun, etc. to produce secondary pollutants. For example, NO_X and SO_2 are primary emissions from a power plant, which produces secondary pollutants such as PM_{10} and acid deposition. Care must be taken not to double count primary and secondary pollutants in an impacts evaluation.

Salinization. Increased salt content of waters and/or soils.

SO_2. Sulfur dioxide, which is produced by the burning of fossil fuels (e.g., coal, oil, natural gas). It contributes to the formation of sulfate aerosols and is the primary pollutant involved in the formation of acid rain. SO_2 can cause respiratory system damage in humans.

Thermal alteration. A change in temperature (usually increased temperature).

Waste products. Animal or human waste and other biological wastes.

Source: ADB, 1996.