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Opinion article

Causes of Environmental Toxicology and Its Impacts

Johnny Geurdes*

Department of Ecology and Evolutionary Biology, University of Michigan, Nanjing, China

DESCRIPTION

Environmental toxicology is the study of the effects of environmental toxins on human health and the environment. Environmental toxicants are substances released into the environment that can harm the health of living organisms such as humans, animals, and plants. The study of environmental toxicology is motivated by the realization that human survival is dependent on the well-being of other species as well as the availability of clean air, water, and food and anthropogenic and naturally occurring chemicals can have negative effects on living organisms and ecological processes. The study of environmental toxicology is thus concerned with how environmental toxicants influence the health and welfare of humans, animals, and plants through their interactions.

Development around the world in recent decades

An enormous industrial and economic development has occurred. One such example is the chemical industry, which has resulted in the production of a large number of chemical products. Many of these products, particularly fertilizers insecticides, and herbicides, were used on a global scale. Together with the development of new high-yielding grains, this resulted in dramatic increases in global food production. Many food-insecure countries, including China and India, developed the ability to produce enough grain food to meet their domestic needs. Several traditionally food-importing countries have even begun to export food. This remarkable achievement is commonly referred to as the Green Revolution. The dramatic increase in food production, combined with technological advancement and an increase in industrial output, resulted in global economic growth. Significant increases in the Gross National Product (GNP) were observed in many countries; these developments, along with improved medicine, medical science, and technology, aided in the improvement of general public health. For example, life expectancy and infant mortality, both of which are commonly used to assess a population's overall health, have increased. Overall mortality among of all ages has decreased significantly over the last years. The total population's life expectancy at birth reached.

Environmental law and pollution

While many people around the world were reaping the benefits of technological and economic advancement, as well as higher living standards, many scientists and the general public became aware that this extraordinary progress was not without cost. Indeed, the impact of global environmental changes associated with development in various areas has become a growing source of concern. The impact on human mind is one such concern. Many urban dwellers and residents living near industrial plants began to notice undesirable changes in the environment as early as the 1950s and 1960s, particularly a general deterioration of the quality of air and water. A significant amount of field and laboratory research was conducted, with the results revealing the gravity of environmental pollution problems. As a result, it became widely acknowledged that there was an urgent need to halt further deterioration of the environment and protect human health from the harmful effects of environmental pollution.

The establishment of ambient air quality standards with a margin of safety is large enough to ensure that the most sensitive people would not suffer adverse health effects. Six pollutants were identified by the EPA as requiring a national ambient air quality standard these pollutants were as follows:

- Fine-grained matter
- Sulphur dioxide(So_2)
- Carbon monoxide (Co)
- Hydrocarbons
- Photochemical Oxidants
- Nitrogen Dioxide (NO_2)

They were known to harm visibility, materials, vegetation, and other aspects of public welfare, as well as to affect human morbidity and mortality. In addition, the EPA made it clear for the first time that the federal government would choose the best technologies currently in use to meet performance standards for vehicles, industrial facilities, and other sources of air pollution.

Ecological toxicology

The Safe Drinking Water Act was subsequently passed in entire

Correspondence to: Johnny Geurdes, Department of Ecology and Evolutionary Biology, University of Michigan, Nanjing, China, E-mail: JohnnyGeurdes@calsu.us

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world this was the first law designed to make water purity a national standard across the United States With the passage of the Toxic Substance Control Act. "Chemical substances and mixtures which present an unreasonable risk of injury to health or the environment" were to be regulated. Because it empowered the EPA to demand that new chemicals be presumed guilty until proven innocent, the act is special. The law distinguishes between two major categories of chemicals: new and old. The chemicals industry was tasked with assessing the risks associated with the new chemicals, while the EPA was tasked with assessing the risks associated with the old ones. As a result of such legislation, there has been a significant effort to create techniques for assessing toxicity, forecasting environmental effects, tracking effects, and disaster mitigation.

The critical role of environmental toxicology

As a result, regulation and research are drawn in tandem with the field of environmental toxicology. Regulation guarantees quick and affordable standardized testing with results that can be used broadly. This has led to a focus on straightforward scenarios, like the conventional mortality test, which uses just one test species and one test substance. However, toxicological research is increasingly highlighting the significance of complex interactions among various anthropogenic chemicals, species, physiological processes, individual organisms, and environmental factors and the EPA's definition is "risk of the assessment and emerging as a comprehensive strategy" to assess the potential effects of specific induced stressors on the environment, this approach combines scientifically derived information with social and economic concerns. The development of a model for projecting a toxicant's long-term effects on environmental factors is a common outcome of risk assessments. However, since no two sites have the same characteristics, such models might not be transferable from one site to another. Finding the common principles that might enable extrapolation and prediction of the effects of toxicants on the environment is the current challenge for environmental toxicology. Traditional pharmacology or toxicology diverges from environmental toxicology. To determine the relative toxicity of the various compounds in question, traditional testing methods rely on the use of standard test organisms and laboratory techniques. Ecotoxicology, on the other hand, deals with a more complex range of issues. If intoxicants are released into the environment, when organisms are exposed to them the impact of physiological changes have a the community and population dynamics and effects the alterations in a species like prey, predators, or competitors and many organisms are exposed, affects the various compounds compare to those of just one. Such inquiries go beyond the scope of tests conducted in one-organism, one-compound laboratories. In the end, Eco toxicological effects will be clarified by combining long-term field observations with the application of assays and models.