

## A Detailed note on Ecotoxixology

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### Perspective

#### INTRODUCTION

Ecotoxicology is the study of the effects of dangerous chemicals on biological species, especially at the population, community, ecosystem, and biosphere levels.

Ecotoxicology's ultimate goal is to uncover and forecast pollution's effects in the context of all other environmental elements. The most efficient and effective measure to prevent or repair any negative effects can be identified based on this knowledge. Ecotoxicological research can help determine the best course of action for restoring ecosystem services, structures, and functions in ecosystems that have already been impacted by pollution. Ecotoxicology differs from environmental toxicology in that it considers stressor effects at all levels of biological organization, from the molecular to whole communities and ecosystems, whereas environmental toxicology includes human toxicity and frequently focuses on effects at the organism level and below. Ecotoxicology is a relatively new field in the environmental sciences, having first appeared in the 1970's. Its toxicological methodological components are broadened to include the human environmental area and the biosphere as a whole. Ecotoxicology aims to examine the influence of chemical, physical, and biological stresses on populations and communities, displaying the impacts on entire ecosystems, while conventional toxicology focuses on the cellular, molecular, and organismal scales. Ecotoxicology considers dynamic equilibrium under stress once again in this regard.

Ecotoxicology arose as a result of post-World War II pollution events that raised awareness of the dangers of toxic chemical and wastewater releases to humans and the environment. During an environmental symposium in Stockholm in 1969, René Truhaut, a toxicologist, coined the word "ecotoxicology" for the first time.

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#### DESCRIPTION

As a result, he is often regarded as the founder of the subject. In fact, Truhaut's assistant, Jean-Michel Jouany, had a key role in conceptualizing the discipline and establishing its goals. Is now widely acknowledged. Ecotoxicology, in Jouany's

opinion, is largely linked to ecology because its purpose is to limit the impact that stress factors can have on the relationships that exist between species and their environment. René Truhaut was authorized at the moment to propagate the nascent discipline proposed by his young assistant at an international level, and Jean-Michel Jouany was his young and talented mentor. In 1969, Jean-Michel Jouany received a promotion to full professor at the University of Nancy. In 1971, he and his colleague, Jean-Marie Pelt, established the teaching and research concepts for ecotoxicology at the University of Metz.

During the 1980's and 1990's in France, two universities made significant contributions to the growth of this expanding discipline. In this regard, a number of institutions have followed suit. Indeed, CEMAGREF, INERIS, IFREMER, and CNRS, as well as other French universities, established ecotoxicology research departments. Landscape ecotoxicology emerges as a new branch of ecotoxicology in the 1990's, with the goal of taking into account interactions between landscape biological processes and environmental toxicants, particularly for species experiencing obstructions associated to migratory passageways\* (e.g., salmonids).

### Common environmental toxicants

- Coolant and insulating fluids, pesticide extenders, adhesives, and hydraulic fluids all include PCBs (polychlorinated biphenyls).
- Pesticides are commonly employed to prevent, destroy, or repel any creature that is potentially hazardous. Commercially farmed fruits, vegetables, and meats are common sources.
- Methyl parathion is a pesticide that is extensively used in agriculture. For humans, soil and water, freshwater fish, and other hydrophilous species in the ecosystem, methyl parathion causes the creation of hazardous media. Methyl parathion is linked to a number of life-threatening health risks.

### Exposure to toxic chemicals

- Chemicals offer the risk of destroying another animal's food supply, affecting the prey population as a whole.
- Because of the food chain that runs through the many groups, animals can be on the verge of extinction. Because their food sources (fish and other birds) were contaminated with chemicals, birds, ospreys, and peregrine falcons, for example, were on the danger of becoming extinct.
- Between the communities of living things, we are all related. Toxins can be absorbed by plants via their roots and leaves. Chemicals are constantly ingested by animals and humans through the air we breathe, the items we touch, and the food we eat.
- Animals and humans can eat contaminated animals or plants, spreading poisons further. This is called as secondary poisoning.

### Effects of eco toxicity on a community

- Predator-prey relationships either the toxin affects the predator population, causing a decrease in the predator population and thus increasing the prey population; or the toxin affects the prey population, causing a decrease in the prey population, causing a decrease in the predator population due to a lack of food resources.
- The impacts of all contaminants on patterns and species abundance, diversity, community composition, and species interactions are studied in community ecotoxicology. Communities that rely largely on competition and

predation will struggle to adjust to and thrive in the face of pollutant perturbations. A population with a diverse range of species has a better probability of rebounding from an exotoxin disturbance than one with a limited range of species. A species could be wiped off quickly at the cost of foreign chemical pollution. Protecting different levels of community, such as species richness and variety, is critical for sustaining a healthy, well-balanced ecosystem.

### CONCLUSION

Chemicals have been proven to prevent the germination of seeds from a variety of plant species. Plants, often known as primary producers, are the most important trophic level in the biomass pyramids. Every other organism in an ecosystem relies on the health and abundance of the primary producers to thrive because they are at the bottom of the pyramid. If plants suffer from diseases caused by chemical exposure, other creatures will starve to death or contract the disease by eating diseased plants or animals. As a result, ecotoxicology is a never-ending conflict that emerges from a variety of sources and has the potential to impact everything and everyone in an ecosystem.