



## Environmental Science: An Interdisciplinary Academic Field

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**Received:** 30-October-2023, Manuscript No. JREST-24-118808; **Editor assigned:** 02-November-2023, PreQC No. JREST-24-118808 (PQ); **Reviewed:** 16-November-2023, QC No. JREST-24-118808; **Revised:** 08-April-2024, Manuscript No. JREST-24-118808 (R); **Published:** 29-April-2024, DOI: 10.14303/2315-5698.2024.685

### INTRODUCTION

Environmental science is an interdisciplinary academic field that applies physics, biology and geography to the study of the environment and the solution of environmental problems (including ecology, chemistry, plant science, zoology, mineralogy, oceanography, limnology, soil science, geology and physical geography and atmospheric science). During the enlightenment, environmental science arose from the sciences of natural history and medicine. It now offers a comprehensive, quantitative and interdisciplinary approach to the study of environmental systems. Environmental studies include more social sciences to better understand human relationships, perspectives and environmental policies. Environmental engineering is concerned with the design and application of technologies to improve environmental quality in all aspects.

Environmental scientists study the earth's physical, chemical, biological and geological processes in order to better understand how issues like alternative energy systems, pollution control and mitigation, natural resource management and the effects of global warming and climate change influence and affect the earth's natural systems and processes. Physical, chemical and biological processes usually invariably interact in environmental challenges. Environmental scientists examine environmental challenges from a systems perspective. An effective environmental scientist must be able to relate space and temporal relationships, as well as perform quantitative analysis.

### DESCRIPTION

Environmental science arose as a substantive, active field of scientific investigation in the 1960's and 1970's as a result of: The need for a multi-disciplinary approach to analyzing complex environmental problems; the arrival of substantive environmental laws requiring specific environmental protocols of investigation and growing public awareness of the need for action in addressing

environmental problems. The publication of Rachel Carson's landmark environmental book *Silent Spring*, as well as major environmental issues becoming very public, such as the 1969 Santa Barbara oil spill and the Cuyahoga River of Cleveland, Ohio, "catching fire" (also in 1969), fueled this development and helped create this new field of study.

Although the terms "environmental science" and "ecology" are frequently used interchangeably, ecology solely refers to the study of organisms and their interactions with one another, as well as how they interact with the environment. Ecology could be regarded a subset of environmental science, which could include solely chemical or public health issues that ecologists are unlikely to investigate. In practice, ecologists' work and that of other environmental scientists shares many commonalities. Ecology and environmental science share many similarities with the fields of fisheries, forestry and wildlife.

#### Ancient civilizations

Environmental concern has long been chronicled in archives around the world. In terms of agriculture and natural resources, ancient civilizations were primarily concerned with what is today recognized as environmental science. Scholars believe that early environmental awareness originated around 6000 BCE, when ancient civilizations in Israel and Jordan fell owing to deforestation. As a result, the first legislation prohibiting deforestation was enacted in Mesopotamia around 2700 BCE. A community in the Indus River Valley monitored the neighboring river system to enhance cleanliness two hundred years later, about 2500 BCE. This entailed adjusting the flow of water to account for public health concerns. Numerous ancient central American city-states collapsed in the Western Hemisphere circa 1500 BCE due to soil erosion from extensive agriculture. Those that survived from these civilizations paid more attention to the impact of farming practices on the land's sustainability and consistent food production. Furthermore, the Minoan civilization on the Greek island of Crete perished in 1450 BCE as a result of deforestation and the subsequent environmental degradation of natural resources. Pliny the

Elder addressed ancient civilizations' environmental issues in the classic *Naturalis Historia*, published between 77 and 79 ACE, which provided an overview of numerous relevant subdivisions of the discipline.

Although conflict and sickness were important concerns in ancient culture, environmental concerns were critical to the existence and dominance of various civilizations. As more communities recognized the value of the natural world in their long-term success, an interest in environmental research arose. Throughout the 1970's and 1980s, catastrophic disasters and social movements fueled most of the interest in environmental science. After carcinogenic contaminants were discovered buried underground near residential areas in Love Canal, New York, hundreds of people were moved in 1978. The next year, in 1979, the Three Mile Island nuclear power facility in Pennsylvania melted down, raising concerns about the perils of radioactive waste and the safety of nuclear energy. In response to landfills and toxic garbage frequently disposed of near their houses, a Black neighborhood in North Carolina launched the official environmental justice movement in 1982. Two years later, the poisonous methyl isocyanate gas was leaked to the public as a result of a power plant tragedy in Bhopal, India, hurting hundreds of thousands of people who lived nearby, the repercussions of which are still felt today.

In 1985, a British team of researchers investigating Antarctica discovered signs of an ozone hole, motivating global accords prohibiting the use of Chlorofluorocarbons (CFCs), which were previously used in practically all aerosols and refrigerants. Notably, the meltdown at the Chernobyl nuclear power facility in Ukraine in 1986 spilled radioactive material into the public, prompting international research on the consequences of environmental disasters.

## CONCLUSION

The Brundtland Commission (previously known as the World Commission on Environment and Development) published our common future over the next few years and the Montreal Protocol established the International Panel on Climate Change (IPCC) as an international communication focused on finding solutions to climate change and degradation. Exxon Valdez was punished in the late 1980s for spilling enormous amounts of crude oil off the coast of Alaska and the subsequent cleaning, which required the expertise of environmental specialists. After hundreds of oil wells were destroyed in conflict in 1991, the surrounding atmosphere was polluted barely below the air quality threshold that environmental specialists considered was life-threatening.