

# Microplastics in The Environment And Their Impact on Living Organisms

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**Abstract-** *Microplastics are plastic particles smaller than 5 mm that originate from the degradation of larger plastic materials or are manufactured for commercial use. In recent years, microplastic pollution has become an important environmental concern because these particles are now found in water, soil, and even the atmosphere. Due to their small size, microplastics can be easily ingested by living organisms and may accumulate in biological systems. The present paper reviews the sources, distribution, and possible impacts of microplastics on living organisms, particularly aquatic species. It also discusses the ecological and potential human health implications associated with microplastic pollution*

**Keywords:** Microplastics, Plastic pollution, Aquatic ecosystems, Bioaccumulation, Environmental impact

## I. INTRODUCTION

Plastic is widely used in modern society because it is lightweight, durable, and inexpensive. However, excessive production and improper disposal of plastic materials have led to serious environmental problems. Over time, plastic waste present in the environment breaks down into smaller fragments due to sunlight, mechanical forces, and other environmental processes. These small fragments are commonly referred to as microplastics. Microplastics are typically defined as plastic particles smaller than 5 mm in diameter. They have been detected in oceans, rivers, lakes, sediments, and even drinking water.

## II. OBJECTIVES OF THE STUDY

1. To understand the major sources of microplastics in the environment.
2. To study the distribution of microplastics in aquatic ecosystems.
3. To examine the effects of microplastics on living organisms.
4. To highlight the possible environmental and health risks associated with microplastic pollution.

## III. METHODOLOGY

The present study is based on a review of existing scientific literature related to microplastic pollution. Information was collected from research articles, environmental reports, and academic publications.

## IV. SOURCES OF MICROPLASTICS

Microplastics originate mainly from two sources: primary microplastics and secondary microplastics. Primary microplastics are intentionally manufactured small plastic particles used in cosmetic products, personal care items, and industrial applications. Secondary microplastics are formed from the breakdown of larger plastic objects such as plastic bags, bottles, and packaging materials.

## V. DISTRIBUTION IN THE ENVIRONMENT

Microplastics are widely distributed in marine and freshwater ecosystems. Due to their small size and lightweight nature, they can travel long distances through water currents. Some microplastics remain suspended in the water column, while others settle in sediments.

## VI. EFFECTS ON LIVING ORGANISMS

Many aquatic organisms such as plankton, fish, mollusks, and crustaceans may ingest microplastics during feeding. This ingestion can lead to physical damage to digestive tissues and may interfere with nutrient absorption. Microplastics may also carry toxic chemicals that can enter the body after ingestion.

## VII. TRANSFER THROUGH THE FOOD CHAIN

Microplastics ingested by small organisms can be transferred to higher trophic levels when predators consume contaminated prey. This process may lead to the accumulation of plastic particles in the food chain.

### **VIII. ENVIRONMENTAL IMPLICATIONS**

The presence of microplastics in ecosystems may disturb ecological balance and affect biodiversity. Since plastic materials degrade very slowly, microplastics may persist in the environment for long periods.

### **IX. PREVENTION AND CONTROL**

Reducing microplastic pollution requires better plastic waste management and increased public awareness. Important measures include reducing the use of single-use plastics, promoting recycling practices, and encouraging the use of biodegradable alternatives.

### **X. CONCLUSION**

Microplastics have become an emerging environmental concern due to their widespread presence and potential impacts on living organisms. Their ability to enter the food chain highlights the need for improved waste management and increased awareness regarding plastic pollution.

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