

Pesticides Impact on Human Health and Environment

Aijie Wang*

Department of Environmental Science & Engineering, Harbin Institute of Technology, Heilongjiang, China

Description

Pesticides have become widely utilized in agriculture in recent years to control a variety of harmful organisms that wreak havoc on crops. Agrochemicals are employed in over 600 different ways around the world. They are unquestionably beneficial to agricultural output, even if low levels of certain residues may linger in the food supply, air, water, and soil, potentially posing a significant human exposure pathway. Dicofol (DCF) for example is used as a pre-harvest miticide on cotton, citrus, vegetables, almonds, date palms and other crops all over the world. Chemical pesticides have been used in agriculture since the early 1900s. During Second World War, German chemists produced a new class of pesticides known as OP chemicals, some of which turned out to be chemical warfare weapons. OP pesticides are a class of highly toxic agricultural compounds that are commonly employed to protect plants. Despite their severe toxicity, OP insecticides like parathion and methamidophos are routinely used around the world. OP pesticides are of particular importance because they account for the majority of agricultural pesticides now in use.

Furthermore, pesticide chemicals are increasingly being employed in the management of human, animal and plant pests. Weeds, insects, microbiological illnesses and other agricultural pests all cause losses in food production; hence pesticides are crucial in agriculture. Pests are currently damaging approximately 35% of all potential food crops before harvest. Insects, plant diseases, and weeds are the main causes of these losses. Various researchers have demonstrated in recent years that compounds belonging to the OPs groups are hazardous to human life due to toxic effects such as mutagenic, teratogenic, and carcinogenic consequences. Leukemia, lymphoma, and Parkinson's disease have all been proven to be connected to OPs exposure. Organophosphorus also has negative effects on the neurological systems of the creatures afflicted, as it inhibits acetyl cholinesterase. Organophosphorus Pesticides (OPs) are a preferred alternative to the more lasting organochlorine substances that are suspected of bioaccumulating in food chain.

Recently, it has been discovered that OPs chemicals or their metabolites diminish human fertility, which is generally linked to a fall in testosterone levels. Furthermore, some studies have linked organophosphate herbicides to behavioral issues, particularly in youngsters. Organophosphates play a role in human and animal

immunological disorders, including disease infection resistance. Integrated pest management, integrated crop management, and sustainable agriculture are some of the solutions accessible to farmers as chemical alternatives. These instruments are the only way for humans to reduce the use of pesticides to the bare minimum, thereby ensuring a clean environment.

Integrated pest management, integrated crop management and sustainable agriculture are some of the solutions accessible to farmers as chemical alternatives. These instruments are the only way for humans to reduce the use of pesticides to the bare minimum, thereby ensuring a clean environment. Because of its potential toxicity, high persistence, and delayed disintegration, pesticide pollution is one of the most significant problems facing the planet. Biotechnology is currently preoccupied with reducing pesticide pollution. Pesticide residues from organophosphate pesticides not only harm non-target creatures, but also disrupt the ecology of pesticide-degrading microbes.

Organophosphate biodegradation by soil microorganisms has been well studied. Some bacteria have been discovered and identified that can break down Profenofos in soil. Water, on the other hand, is the world's primary source of life. However, as a result of human activity, water has become contaminated with pesticides and industrial pollutants. As a result, water treatment is a critical technique for removing contaminants and disease-causing substances and reducing the risk to human health and the environment.

Microbial biofilms are one of the newest developments in dealing with contaminated water. Biofilms are extremely dynamic organisms. Many biotechnological processes used in materials recovery and handling, such as pollution management and effluent treatment, are mediated by biofilms. Degradable organic matter in the surrounding water is eventually broken down and converted into inorganic chemicals by the biofilm's metabolic processes. Biofilms also play an important role in the removal of organic and inorganic pollutants from water and wastewater.

How to cite this article: Wang, Aijie. "Pesticides Impact on Human Health And The Environment." *J Environ Anal Toxicol* S9 (2021) : e001.

*Address for Correspondence: Dr. Aijie Wang, Department of Environmental Science & Engineering, Harbin Institute of Technology, Heilongjiang, China; E-mail: ajwang@ac.edu.cn

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Received: December 02, 2021; **Accepted:** December 16, 2021; **Published:** December 23, 2021