

Chapter 1

Pesticides as Water Pollutants

Anamika Srivastava
Banasthali Vidyapith, India

Nirmala Kumari Jangid
Banasthali Vidyapith, India

Manish Srivastava
Banasthali Vidyapith, India

Varun Rawat
Amity University, India

ABSTRACT

A chemical that is toxic to one animal may also be toxic to other forms of animal life. Although it might take a larger dose of pesticides to harm humans than pests, such as insects, many pesticides are still toxic to humans. The doses needed to kill a pest might not kill us, but may still harm us. Many pesticides classified as herbicides are designed to target plant pests. The exceptions to this are broad spectrum herbicides that are designed to kill a wide variety of plants. An herbicide that is specific to one or more species of plants does not ensure that it is safe to enter the water system. Some of the dangers from these chemicals are yet to be fully understood. Caution should be used to ensure that these products do not unnecessarily enter the water system. Using safe, well-planned applications of materials, such as pesticides, decreases the risk to humans and other animals. The overall picture is not as bleak as one might be imagining as the optimization of these important water resources are available at present and will also be available in the near future. Owing to the threat to water systems and mechanisms, those that may cause water to become polluted are now well-understood and precautions have been taken to protect the quality of water.

DOI: 10.4018/978-1-5225-6111-8.ch001

INTRODUCTION

Water is an essential source for our life. With the growth of the modern civilization, our life is in danger due to pollution of water both from surface and underground. In India, the scarcity of pure drinking water is so much felt that about 50% of urban people and 80% of water for rural people are affected by water pollution (Hegde, 2012). Historically, people looked at water pollution as a problem affecting people far away. Most people thought that they had clean, unpolluted water but it is not true. However, since 1970s the general public found that some water sources were in fact polluted. In some areas of our country, the water was not safe to drink because they contain high level of heavy metal, pesticide, herbicide and bacterials. These contaminants in water supplies came not only cities and industry's waste but from livestock and field runoff. Not only there were problems with the surface water but problems were beginning to show up in water deep below the surface. Water pollution has emerged as one of the most burning tribulations of this century. The aquatic ecosystems pollution occurs globally which includes an assortment of sources, impacts and is escalating. No other natural resource is more contested than water. It is imperative to differentiate the effects of human actions from natural phenomena, e.g. mud slides, and volcanic eruptions etc. Water pollution linked with anthropogenic activities is characteristically brisk and outstrips the evolutionary potential of ecosystems, leaving them in a deperate state (Kamble & Rao, 2016).

Water pollution threatens the survival of life on this planet and efforts to eradicate sources of pollution and reinstate impacted systems become a main concern with worldwide. Although over 70% of the planet is covered with water less than 3% is available as freshwater of that only 1% is utilized to maintain life. Exponential population growth, urbanization, industrialization and getting higher food production amplify the stipulate for water and additional decrease the limited amount obtainable (Cassardo & Jones, 2011).

With the advent of Green Revolution in the second half of the 20th century farmers began to use advance technology to enhance yields by using synthetic fertilizers, pesticides and herbicides. Now a day the use of pesticides has become common around the world not only on farms but in backyard gardens as well. These chemicals were developed in the lab and are petroleum-based have allowed farmers and gardeners of every stripe to exercise greater control over the plants they want to grow by enriching the immediate environment and warding off pests. But such benefits have not come without environmental costs like pollution of streams, rivers, ponds, lakes and even coastal areas, as these harmful synthetic chemicals run-off into the nearby water ways (FAO, 2013).

When the excess nutrients from all the fertilizers we use, run off into our waterways, they cause algae blooms sometimes big enough to make waterways infertile. When the algae die, sink to the bottom and decompose in water by the process that removes oxygen from the water. Fish and other aquatic species cannot flourish in this environment called as "dead zones" they either die or move on to other greener water pastures. The related issue is the poisoning of aquatic life. According to the United State Centers for Disease Control (CDC), citizens of America alone agitate through 75 million pounds of pesticides each year to keep the bugs off their peapods and petunias. When these harmful chemicals enter into waterways, fish ingest them and become diseased. Humans who eat these diseased fish can themselves become ill (EIFAC, 1968). Industrial processes produce toxic waste containing heavy metals and harmful by products which are lethal to marine life. The constructions of industries are responsible for contaminating our water resources with cement, lubricants, plastics, its byproducts and heavy metals. Rivers and lakes are also polluted from heavy silt or sediment run-off from industries construction sites. Natural

17 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage:

www.igi-global.com/chapter/pesticides-as-water-pollutants/213493

Related Content

Challenges Turning Environment and Sustainability Science Into Policy: An Interdisciplinary Review

Catherine M. Dieleman, Chad Walker, David Pipher and Heather Peacock (2019). *Intellectual, Scientific, and Educational Influences on Sustainability Research* (pp. 168-197).

www.irma-international.org/chapter/challenges-turning-environment-and-sustainability-science-into-policy/230821

Intelligent Bidding in Smart Electricity Markets

Magda Fotiad and Manolis Vavalis (2017). *Renewable and Alternative Energy: Concepts, Methodologies, Tools, and Applications* (pp. 712-734).

www.irma-international.org/chapter/intelligent-bidding-in-smart-electricity-markets/169611

Relationships Between Climate Parameters and the Density of Phlebotomus papatasi, the Main Vector of Zoonotic Cutaneous Leishmaniasis

Ahmed Karmaoui and Siham Zerouali (2019). *Climate Change and Its Impact on Ecosystem Services and Biodiversity in Arid and Semi-Arid Zones* (pp. 291-302).

www.irma-international.org/chapter/relationships-between-climate-parameters-and-the-density-of-phlebotomus-papatasi-the-main-vector-of-zoonotic-cutaneous-leishmaniasis/223768

Study of Integrated Coastal Zone Management and Its Environmental Effects: A Case of Iran

Habibeh Karimi and Farid Gholamrezafahimi (2017). *Environmental Issues Surrounding Human Overpopulation* (pp. 64-88).

www.irma-international.org/chapter/study-of-integrated-coastal-zone-management-and-its-environmental-effects/173306

Heavy Metal Pollution of Soils and Their Ecological Risk in Suburban Areas: A Case Study From Eastern Africa

(2023). *Global Industrial Impacts of Heavy Metal Pollution in Sub-Saharan Africa* (pp. 141-160).

www.irma-international.org/chapter/heavy-metal-pollution-of-soils-and-their-ecological-risk-in-suburban-areas/328146