

Pesticides Affecting Water Quality and Human Health.  
Recorded by Vrajesh Patel and CJ Botlinger  
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**Vrajesh Patel:** Hello everyone and welcome to the Water Byte Podcast. My name is Vrajesh Patel and today I am here to discuss pesticides in the water and their effects. Since the 1940's we have been using pesticides on our plants to keep them from being eaten from unwanted insects. They have helped out the farmers greatly by getting more crops per yield. However, most people do not know what happens when these pesticides get washed up by the rain and enter our streams. These effects have led to the depletion of oxygen in rivers, cancer in humans, and loss of fish. They have serious impacts on the rivers and streams as well as the health of many animals.

According to the United States Geographical Survey, 97% of our rivers contain pesticides. Most pesticides found in the water are caused by runoff from agricultural areas and nonpoint sources such as farmlands and urban areas. They are then carried to the delta region of a river connecting it to the ocean. Pesticides as well as other chemicals are dangerous to the aquatic life in these regions as well as the people who eat or drink the fish and water of the region. Most people do not think about where the fish come from or how many chemicals it has consumed. This leads to health problems as well as a tainted water supply.

Many people do not consider that our water can be dangerous to drink because it is purified. This does not mean that the purification process will eliminate all of the harmful chemicals that were put into our water in the first place. Most water purification plants eliminate the major pollutants in the water such as fecal matter, sediments, and most bacteria. Some toxins and pesticides can get through the purification process because

they might be undetectable until you test for the specific compound. This means that everyone is prone to have some pesticides in their systems causing adverse effects on the human body. The pesticides can also cause environmental problems also.

One of the environmental issues pesticides can cause is a hypoxic zone in rivers and streams. A hypoxic zone is a region in the water where the water is deprived of oxygen<sup>1</sup>. This means that many of the fish and animals that live in the bottom of the river will not receive oxygen and die out or move to another location. This hypoxic zone can also lead to an increase in algae due to the excess nitrogen and phosphorous in the water from farm runoff. The algae will consume most of the oxygen in the water leaving sea dwellers to suffocate<sup>1</sup>. Now I will turn it over to C.J. to tell you about the different types of pesticides that can be found in water and their effects on the human body.

**C.J.:** Hello everyone and thanks for having me. Now as Vraj has said earlier, pesticides have a serious risk to human health. One of the known pesticides, aldicarb, otherwise known as Temik is known to cause diarrhea, nausea, vomiting, abdominal pain, sweating, blurred vision and other symptoms. Another pesticide, atrazine, is known to cause mild irritation to your skin eyes, and upper respiratory tract<sup>2</sup>.

**Vrajesh Patel:** C.J. are pesticides known to cause cancer or other diseases?

**C.J.:** Well Vraj, According to the Agency of Toxic Substances and Disease Registry, they have found a link between pesticides and cancer in humans. Children are twice as likely to develop brain cancer or leukemia than adults. There may also be chronic birth defects in newborn children due to the mother's drinking water or consuming fish that may have contained harmful pesticides in them<sup>3</sup>. We are also able to see that children are

more prone to these pesticide effects due to their immune systems not being fully developed and they have no immunity to any harmful chemicals affecting their bodies.

Now Vrajesh, what areas do you see most pesticides used in?

**Vrajesh:** Well C.J., due to pesticide monitoring being very expensive, we are unable to access all of the streams and rivers, however from the data that we currently have, we have figured out that most of the pesticide concentration is on the Mississippi river and its major tributaries <sup>4</sup>. This is because the major rivers such as the Mississippi, Ohio, Colorado, Delaware, Missouri, etc. are where most of the agriculture in the United States is located.

**C.J.:** That is very interesting to know. According to the United States Geological Survey, we do know that 97% of streams by agricultural areas have at least one pesticide in them and at least 61% of the groundwater in that area also has one pesticide in them. What is interesting that you may not know is that 97% of stream water near urban areas such as cities have been known to contain more than one pesticide <sup>5</sup>. This is interesting because many of the cities do not want weeds and grass growing on the sidewalk so they continually spray chemicals and pesticides to keep the city looking clean causing all of the runoff of these chemicals into the streams

**Vrajesh:** Yes this is true, this will also have a severe impact on the wildlife in the region also. Many of the fish in the streams around the urban and agricultural areas exceeded FDA guidelines for pesticides in their systems <sup>6</sup>. As the fish kept eating other fish and plants, the pesticides kept on building into their bodies. This causes degradation into their

bodies making their lifespan shorter than their predecessors. They also kill the fish species if there are enough pesticides within their system that their bodies cannot filter it out. The aquatic life then diminishes causing other effects in the food chain.

**C.J:** Yes Pesticides are a dangerous factor to water pollution. It can lead to many adverse effects on all of human health as well as animals. The use of pesticides is a growing issue in the United States. We must find alternatives to their use

**Vrajesh:** Now that we see the health effects pesticide have on us and the amount of them being found in our streams and rivers, it is getting harder to get clean water. This will eventually lead us to putting more chemicals in our water to clean it enough for it to be safe for us to drink. The effect of pesticides on our water is great so we must do as much as we can to ban the use of pesticides on our crops thereby protecting aquatic life and our precious water. I'm Vrajesh Patel

CJ: And I'm CJ

Both: Thanks for listening.

## References

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