

THE EFFECT OF PESTICIDES ON CHILDREN'S COGNITIVE DEVELOPMENT

What are pesticides?

Pesticides are chemical substances one uses to kill, repel, or control animals or plants that are considered pests. Also, **insecticides** and **fungicides** are included in the group of pesticide substances. Fungicides used as disinfectants used to stop the spread of bacteria, the growth of mold and mildew, and to control rodents like mice and rats. Insecticides substances are applied to control insects on crops or in buildings including homes.

The History of pesticides: DDT

It was discovered that DDT was a substance that would effectively defer the death rates from diseases like lice-born Typhus, during the end of World War II. DDT was the key for other scientists to create a multitude of other chemical substances to be used in agriculture. In later years, environmental activists highlighted how the substance **DDT have created deaths indirectly to other organisms that are important to our ecosystem**. Additionally, they brought to light the implications the great use of pesticides has, in turn, **inflicted harm onto our health**. Now annually, over **1 billion pounds of pesticides** are put on to U.S farms, forest, and lawns.

Populations at risk: Farmworkers, children, pregnant women

Farm-workers and their children are at risk because they are in close vicinity of the pesticide application. However, the CDC shows that **we carry pesticides within all of us**. A lot of school and parks are heavily sprayed with pesticides. The chemical doesn't just stay at the targeted location, it also drifts through the wind to other fields and into our streams, contaminating our drinking water.

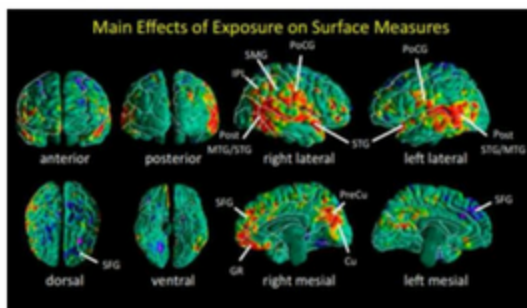
Children and pregnant women are the populations that are the most vulnerable. During fetal development exposure to pesticides show the great effect on the intellectual ability and decreases their child's IQ. Children are very susceptible to exposure to the harmful chemicals. They are closer to the ground where most of the spread of pesticides lurk, they eat and breathe more than adults, and learn through touch and hand and mouth behavior.

Even low levels of toxicity, show immense effects on children's brain development that are often irreversible.



Chlorpyrifos: The Neurotoxicant

It is a neurotoxicant pesticide that is used to treat pests on cropland and is often seen in conventional foods/produce. A **neurotoxicant is a substance that causing harmful effects in the central and peripheral nervous system, and in sense organs**. Exposure to the commonly used insecticide shows structural evidence of harm during fetal development.



The warm colors (red, orange, yellow) represent the abnormal enlargements on the brain's surface in comparison to groups of children with high vs low exposure to Chlorpyrifos. The cool colors (blue and purple) showcase the thinning and inner deformations on the brain's surface.

The Phasing out of Chlorpyrifos and other Pesticides

Costco has updated their pollinator policy on the pesticides that they sell at their chains and they have decided to phase out Chlorpyrifos. **Hawaii has now become the first state to ban the use of the neurotoxicant!** The state has been subject to a lot of pesticide testing for decades to their fields that have destroyed their ecosystems and the health of their residents. The people of the **Aloha state has taken their environments and health into their hands and you can do the same!**