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EPA's Controversial Pesticide Rule Sparks Health Concerns

Analysis by Dr. Joseph Mercola | December 26, 2024

STORY AT-A-GLANCE

- Despite its known risks, chlorpyrifos (CPF), a pesticide linked to neurodevelopmental harm in children, is still permitted for use on 11 crops under a recently proposed rule by the U.S. Environmental Agency (EPA)
- The EPA's decision follows a court ruling that overturned a complete ban on chlorpyrifos, allowing its use on crops like apples, citrus, and soybeans until at least 2026
- Scientific studies consistently show that even small exposures to chlorpyrifos during pregnancy cause irreversible brain damage, decreased IQ, autism and hyperactivity in children
- Chlorpyrifos is part of the organophosphate family, which includes substances similar to nerve gas, highlighting its link to severe neurotoxic effects
- The continued use of chlorpyrifos raises significant concerns about public health, particularly for children, and underscores the need for stricter regulatory measures and comprehensive environmental policies

Chlorpyrifos (CPF), a widely used organophosphate pesticide, was banned for domestic use in 2001, yet the U.S. Environmental Protection Agency's (EPA) recent proposed rule will allow its continued use on 11 agricultural crops. This decision comes despite overwhelming evidence that exposure to this pesticide has been linked to significant delays in early childhood neurodevelopment.

According to earlier research, high prenatal exposure to chlorpyrifos is associated with decreases in both psychomotor and mental development scores among children.[1] This means that exposure to even low levels of chlorpyrifos before birth puts children at risk of irreversible brain damage, affecting their cognitive and motor skills long into their lives.

Chlorpyrifos Is Pervasive in Our Environment

Chlorpyrifos, a pesticide with a notorious reputation, is at the center of a heated debate due to its neurotoxic effects, especially in children. Exposure to this chemical occurs through various means, including food, air and water, making it a pervasive threat.

The underlying causes of chlorpyrifos-related health issues are rooted in its chemical structure and mode of action. As part of the organophosphate family, chlorpyrifos functions like nerve gas, inhibiting acetylcholinesterase, an enzyme crucial for nerve function. When acetylcholinesterase is inhibited, acetylcholine accumulates in the synapses, causing continuous nerve stimulation.

This disruption in normal nerve signaling leads to a cascade of neurodevelopmental problems, and overstimulation damages developing brains, particularly in fetuses and young children, whose nervous systems are still forming.

This resulting neurodevelopmental harm manifests as cognitive and motor skill deficits, leading to long-term implications for learning and behavior. Scientific studies have consistently linked even small exposures during pregnancy to irreversible brain damage, decreased IQ, autism and hyperactivity in children.

But despite its known risks, regulatory measures on chlorpyrifos have been inconsistent, leading to ongoing concerns about its risks particularly to the most vulnerable populations. The EPA's recently proposed rule not only undermines the future of our children but also ignores the clear scientific consensus on the harmful effects of this chemical.

EPA's Continued Use of Chlorpyrifos Poses Significant Risks to Children's Health

A recent Earthjustice news article investigated the EPA's proposed rule allowing the continued use of chlorpyrifos on 11 specific crops, while banning its use on all other food products. This decision comes despite substantial evidence linking chlorpyrifos to severe and irreversible harm in children.[2]

> *"Chlorpyrifos will be allowed on alfalfa, apple, asparagus, cherry, citrus, cotton, peach, soybean, strawberry, sugar beet and wheat. This proposed rule follows a 2023 decision by the 8th Circuit Court of Appeals that overturned EPA's full ban on chlorpyrifos,"* Earthjustice reported.[3]

Chlorpyrifos has been widely used on crops such as soybeans, apples, citrus, broccoli and cherries for decades. However, scientific studies have consistently linked exposure to chlorpyrifos with neurodevelopmental harm in children, showing that even minimal exposures during pregnancy cause irreversible brain damage, leading to decreased IQ, autism and hyperactivity.[4]

The EPA acknowledges these risks but has chosen to allow chlorpyrifos to remain in use on a significant number of food crops, which represent about one-third of the pesticide's previous use on food crops.[5] The proposed partial ban will eliminate chlorpyrifos from all other food uses, although its application on the remaining 11 crops will continue until at least 2026.

During this period, the agency does not plan to determine the safety of these uses, effectively delaying any comprehensive assessment of chlorpyrifos's risks.[6] This delay highlights a significant gap in safety assurances for the public and underscores the ongoing regulatory struggle over the pesticide's use.

Environmental and health advocates also view the EPA's partial ban as insufficient. Patti Goldman, an attorney at Earthjustice, said, "The newly proposed restrictions are a step forward, but they fall short of fully protecting children, farmworkers and our food supply."[7]

Mothers and Newborns Study Highlights Environmental Exposure Risks

The Mothers and Newborns Study, conducted by the Columbia University's Center for Children's Environmental Health, sought to understand how exposure to various environmental pollutants during pregnancy impacts a child's development.

Focusing on a group of 725 African-American and Latino pregnant women and their children living in Northern Manhattan and the South Bronx, areas with high levels of environmental pollution, the research aimed to uncover the effects of pollutants like chlorpyrifos on fetal growth and neurodevelopment.[8]

The study found that prenatal exposure to chlorpyrifos and other chemicals significantly affects children's development. Specifically, these toxic chemicals are linked to reduced birth weight and developmental issues in children as they grew. Exposure to pesticides has the same damaging effects as smoking during pregnancy:

> *"Prenatal exposure to two household pesticides, chlorpyrifos and diazinon, which transfer easily from the mother to her fetus, reduced birth weight by an average of 6.6 ounces — the equivalent of weight reduction seen in babies born to women who smoked."*[9]

The researchers also found that high levels of chlorpyrifos exposure were associated with lower IQ scores and noticeable developmental delays, highlighting the severe impact of these substances on young minds.[10]

> *"Chlorpyrifos is a toxic pesticide that can be inhaled following the use of spray pesticides indoors, and young children have greater exposure because they spend more time on the floor where pesticides are commonly applied,"* the Center for Children's Environment Health website stated.
>
> *"[Three]-year-old children prenatally exposed to high levels of chlorpyrifos were significantly more likely to experience delay in both psychomotor and cognitive*

development, show symptoms of attentional disorders, Attention-Deficit/Hyperactivity Disorder (ADHD), and pervasive personality disorder."[11]

According to the study, 3-year-olds who were exposed to these pesticides had a 6.5-point decrease in the Psychomotor Development Index and a 3.3-point decrease in the Mental Development Index.[12] By the time the children were 7 years old, their IQ was "negatively affected with respect to working memory." This highlights the enduring, long-term educational implications of pesticide exposure.[13]

More Damaging Effects Linked to Toxic Chemicals Exposed

The Mothers and Newborns Study also investigated the effects of other toxic chemicals that young children are exposed to. Some of the chemicals they investigated include polycyclic aromatic hydrocarbons (PAHs), phthalates and bisphenol A (BPA).

The research highlights how exposure to multiple pollutants creates a complex challenge for ensuring healthy child development, especially in areas where such exposures are more common. For example, a staggering 40% of babies in the study were born with DNA damage associated with PAHs,[14] which are byproducts of burning fossil fuels and are pervasive in urban environments.

"Researchers found that within a sample of 215 children monitored from birth, those children with high levels of a pollution exposure marker in their cord blood had more symptoms of attention problems and anxiety/depression at ages 5 and 7 than did children with lower exposure.

Prenatal exposure to PAH, pesticides, secondhand smoke, and PBDEs are linked to reduced fetal growth and developmental problems in young children."[15]

Another specific chemical that was scrutinized was di(2-ethylhexyl) phthalate, or DEHP. Prenatal exposure to this common plasticizer was associated with shorter gestation, meaning it heightens the risk of preterm births. Phthalates also led to impairments in motor skills and behavioral problems. The researchers said:

> *"Higher prenatal exposures to two types of phthalates significantly increased the odds of motor delay, an indication of potential future problems with fine and gross motor coordination.*
>
> *Prenatal exposures to three of the phthalates were also significantly associated with behavior problems including emotionally reactive behavior, anxiety/depression, somatic complaints and withdrawn behavior."*[16]

The study also highlighted the dangers of flame retardants, saying that children with higher concentrations of polybrominated diphenyl ethers (PBDEs) in their umbilical cord blood at birth scored lower on tests of mental and psychomotor development at 1 to 4 and 6 years.[17]

Chlorpyrifos Causes Widespread Environmental Impact as Well

A 2022 study published in the International Journal of Environmental Research and Public Health also investigated the prevalence of chlorpyrifos in various environmental mediums and its toxic effects on both humans and ecosystems.[18]

The study encompassed diverse populations exposed to chlorpyrifos through different pathways. Findings revealed that chlorpyrifos residues are commonly found in soil, food and water sources, posing significant health risks to consumers, farmers and animals alike.[19]

> *"The negative effects caused by CPF [chlorpyrifos] in the environment are mainly confined to changes in the soil microflora population, which may result in, among others, inhibition of nitrogen fixation, changes in the activity of soil enzymes such as phosphatase and beta-glucosidase, and changes in the migration of antibiotic resistance genes.*
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> *On the other hand, in the aquatic environment, genotoxic and neurotoxic effects have been observed, and an increased level of oxidative stress in freshwater organisms has also been detected. Therefore, it seems crucial and justified to introduce modern bioremediation methods that include selected*

microorganisms, including endophytes, and use nano-materials that support processes that reduce the risk of CPF in the environment."

Continuous monitoring and research are essential to fully understand the long-term health impacts of chlorpyrifos exposure. The study highlights that current monitoring efforts are insufficient, especially in regions where chlorpyrifos is still actively used. Enhanced surveillance helps in early detection of chlorpyrifos residues in the environment, allowing for timely interventions to protect the public and the environment.[20]

Moreover, the research calls for stricter controls on the use of chlorpyrifos and the implementation of safer agricultural practices. Reducing reliance on such harmful pesticides not only safeguards human health but also preserves soil quality and biodiversity. The degradation of soil microflora by chlorpyrifos impairs nutrient cycling, which is vital for healthy plant growth and ecosystem stability.[21]

Take Action Against Harmful Pesticide Exposure

The EPA's continued allowance of chlorpyrifos on major crops necessitates immediate action to safeguard your health and that of your loved ones. While policy changes lag, I recommend implementing these strategies to reduce your exposure to this dangerous neurotoxic pesticide, as well as other harmful agricultural chemicals.

1. **Choose organic foods —** Prioritize organic versions of the most heavily sprayed crops, particularly apples, citrus fruits, strawberries, peaches and wheat products.

2. **Engage with local, organic food systems —** Participate in community-supported agriculture (CSA) programs and frequent farmers markets where you can directly engage with growers about their crops. Support local farmers who eschew synthetic pesticides and encourage their adoption of organic methods through your purchasing decisions.

3. **Optimize your diet for cellular health —** Maintain a carbohydrate intake of 250 to 300 grams daily, adjusting based on your microbiome and physical activity levels,

with higher intake for more active individuals. Aim for approximately 0.8 grams of protein per pound of lean body mass, ensuring that one-third of your daily protein intake comes from collagen-rich sources.

Avoid high-fiber diets to prevent increased endotoxin levels, especially if your gut microbiome is already compromised. Replace vegetable oils, seeds and nuts with healthier fat sources such as tallow, ghee or grass fed butter to reduce **linoleic acid** consumption and support optimal cellular function.

4. **Enhance cellular energy production and protect mitochondrial health —** Support your cellular energy through targeted supplementation and lifestyle practices. Here are some guidelines to help boost your body's cellular energy systems, promoting long-term health and resilience against environmental toxins.

    - **Supplementation —** Take methylene blue, which helps boost cellular energy production. It acts as a powerful electron acceptor that temporarily removes the bottleneck created by faulty metabolism so it can function again and continue producing cellular energy.

      Use only pharmaceutical-grade methylene blue in capsule or tablet form, obtained from a compounding pharmacy, at a prescribed dose of 5 milligrams once daily to aid mitochondrial function.

      You should also get enough magnesium, as it helps boost energy and prevent accelerated cellular aging intake. Use magnesium threonate supplement and adjust it based on tolerance to avoid gastrointestinal discomfort.

    - **Physical activity —** Incorporate regular physical exercise to improve your mitochondrial health and overall energy production. Exercise enhances insulin sensitivity, supports metabolic health and promotes efficient energy utilization.

    - **Sun exposure —** Spend time in the sun to promote cellular energy production and support mitochondrial function. There's a biological mechanism in your body that transforms sunlight into cellular energy.

When the sun's rays touch your skin, your body captures the red and near-infrared light and converts them into electrons. Your body then uses these electrons to feed the electron transport chain (ETC) and create adenosine triphosphate (ATP) in your mitochondria.

However, remember to avoid harsh sunlight until you've eliminated vegetable oils from your diet for at least four to six months to prevent oxidative stress.

- **Grounding —** Engage in grounding practices by spending time in the ocean to alleviate reductive stress, as land-based grounding in North America exposes you to contaminated environments.
- **Dietary adjustments —** Eliminate vegetable oils and replace them with healthier fat sources to support mitochondrial function and reduce oxidative stress. Maintain a balanced intake of essential nutrients to foster optimal cellular energy production.

Sources and References

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