

**Hazard to Children:** derailed development, brain damage, impaired immune function, endocrine disruptor; obesity diabetes, cancer, reproductive problems later in life



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## **A PANAP Factsheet Series** **Highly Hazardous Pesticides** **Chlorpyrifos**

**Uses:** organophosphate insecticide

**Bans:** Yemen

**Residues:** widespread contamination of food, environment, and in breast milk, cord blood, newborn infants meconium (first faeces)

**Acute toxicity:** neurotoxic: depressed motor function and respiration; headaches, seizures, coma, death. Poisonings have occurred in many countries, including India, Iran, Nepal, Sri Lanka, Taiwan.

**Chronic toxicity:**  
**Neurological:** potent developmental neurotoxin at low levels of exposure, causing delayed cognitive and motor development, reduced IQ, attention-deficit/hyperactivity disorder (ADHD), pervasive developmental disorder, smaller head circumference, and altered brain structure, long-term consequences for social adjustment and academic achievement.

**Cancer:** associated with lung, rectal, breast and prostate cancer.

**Genotoxicity:** mutagenic or genotoxic in human and animal cells.

**Endocrine disruption:** inhibits testosterone synthesis and metabolism of testosterone and oestradiol; affects thyroid hormones.

**Reproduction:** causes birth defects in animals and humans.

**Immune:** toxic to immune system.

**Metabolic:** early life exposure may predispose a person to obesity, diabetes, and cardiovascular problems.

**Environmental effects:**  
**Aquatic:** very toxic to fish, amphibia, aquatic invertebrates; causes endocrine disruption, behavioural changes, deformities, mutagenicity. Can accumulate in areas of intense biological activity; poses long-term threat to aquatic community structure.

**Terrestrial:** very toxic to birds. Extremely toxic to bees and beneficial insects; inhibits soil microbial functional diversity and nitrogen mineralisation; incompatible with IPM.

**Resistance:** reported for at least 65 pest species in 47 countries.

**Environmental fate:** Persistence under some circumstances, and bioaccumulation in some species; found in rain fog, air, Arctic.

**Further information and references: see PANAP's Chlorpyrifos Factsheet and Monograph**