

Letter to Governor Jerry Brown on health hazards of chlorpyrifos submitted as part of public comment to the Office of Environmental Health Hazard Assessment's hazard identification of the pesticide chlorpyrifos

Oct 24, 2017

Governor Jerry Brown
c/o State Capitol, Suite 1173
Sacramento, CA 95814

Dear Governor Brown,

We, the undersigned, urge you to take strong action based on the compelling body of science about the harms of the neurotoxic pesticide chlorpyrifos. We ask that you direct the California Department of Pesticide Regulations (DPR) to protect communities in California, and especially children, from the health harms associated with exposure to this pesticide through air, water and food residues.

In August 2017 DPR released its updated draft risk assessment of chlorpyrifos for public comment. We are deeply disturbed to see that DPR has chosen to ignore the compelling body of science regarding the neurodevelopmental toxicity of chlorpyrifos, and dangers of exposure to pregnant women and young children. DPR has instead limited its draft risk assessment to examining cholinesterase inhibition, which while certainly important, is by no means the only and the most critical health impact that needs to be taken into account. By focusing on cholinesterase inhibition with an uncertainty factor of 10 for "potential" neurodevelopmental effects¹, DPR is able to justify imposing only limited mitigations with respect to the pesticide. This falls far short of the full ban on chlorpyrifos that is need to protect children in agricultural communities in California from irreversible and significant brain harm and developmental delays.

Robust analysis of studies by the US EPA, and the conclusions of three meetings of the agency's Scientific Advisory Panels (SAP)s had led the US EPA to recommend in 2016 that the agency should revoke all food tolerances of chlorpyrifos, effectively banning its use in agriculture, due to children's increased risk of neurodevelopmental harm. Scientific evidence supporting the US EPA's own Scientific Advisory Panel statement comes from epidemiology, laboratory toxicology

¹ The levels of concern in the DPR draft risk assessment were estimated by first determining the level of exposure calculated to cause 10% inhibition of the nerve enzyme cholinesterase in lab animal tests. This was put into a model to predict human effects. Then this level is divided by an uncertainty factor of 10 for variability between people and another uncertainty factor of 10 for potential neurodevelopmental effects. No explanation was provided as to why an uncertainty factor of 10 would be adequately health protective.

studies, and mechanistic studies all demonstrating that chlorpyrifos is a powerful developmental neurotoxicant.

In support of the science documenting the hazards of chlorpyrifos the American Academy of Pediatrics stated in a January 2017 letter to the US EPA that “multiple epidemiological and toxicological studies indicate that children who have had in-utero exposure to organophosphate pesticides such as chlorpyrifos in both urban and agricultural settings are at increased risk for abnormal neurodevelopment with persistent loss of intelligence and abnormalities of behavior” (AAP 2017).

Exposures to low doses of chlorpyrifos during critical windows of vulnerability during pregnancy have been associated with lower birth weight and adverse neurodevelopmental effects to children including diminished cognitive ability (lowered IQ test scores) poorer working memory, and delays in motor development (Rauh et al, 2006, 2011; Whyatt et al 2005). Prenatal exposure to chlorpyrifos has also been associated with mild to moderate tremor in 11 year old children and with changes in brain structure in a pilot study using magnetic resonance imaging among children ages 6-11 (Rauh 2012; Rauh 2015).

Prenatal chlorpyrifos exposure from living in close proximity to agricultural fields is associated with autism spectrum disorders (Shelton et al, 2014). A recently published study of Costa Rican children living near banana and plantain farms showed higher exposures resulting in a dose-dependent adverse impairment of working memory in boys and an increased prevalence of parent-reported cognitive problems. Higher exposures to chlorpyrifos were associated with oppositional disorders, ADHD, and decreased ability to discriminate colors (van Wendel de Joode et al 2016).

Rural children and the children of farmworkers are exposed to chlorpyrifos through drift (Coronado et al 2011; Bradman et al, 2005; Thompson et al, 2014; Wofford et al, 2014; Calvert et al, 2008). Certain subpopulations demonstrate greater susceptibility due to genetic variability among individuals, such as those who have reduced capacity to detoxify organophosphate pesticides like chlorpyrifos (Engel et al, 2015).

These disruptions in children’s brain development appear to be permanent, irreversible and lifelong (Rauh et al 2015). The epidemiologic results are consistent with data from toxicological studies which found disruption in neuronal development, neurotransmitter systems and synaptic formation as well as behavioral and cognitive impairments in laboratory animals following low-dose perinatal chlorpyrifos exposure (Slotkin 2004; Aldridge et al 2004, 2005; Slotkin and Seidler, 2005; Levin et al 2001; Roy et al, 2004; Garcia et al, 2002).

California is one of the largest users of the pesticide chlorpyrifos in the country – averaging over 1 million pounds per year. Studies conducted in California have shown that this use results in elevated levels of chlorpyrifos in the air, water, homes and children in agricultural communities. (USEPA 2016; Harnly et al 2009 and Raanan et al 2016).

Despite compelling evidence and specific recommendations by the US EPA's scientists in 2016 to revoke all food tolerances of chlorpyrifos the Agency backtracked in this recommendation. The US EPA's unscientific and shocking reversal from its 2016 position asking for a ban on all food uses of chlorpyrifos should not be followed by California. In the absence of Federal action, California must step-in and provide protection for children in agricultural communities who face the greatest exposures, and risks of neurodevelopmental harm and other health impacts, by removing chlorpyrifos from California's fields and the food supply.

The USEPA Administrator's claim of "scientific uncertainty" about the harms of chlorpyrifos is inconsistent with the scientific literature and the assessment of medical professionals. The American Academy of Pediatrics has determined that a ban on chlorpyrifos is needed to protect children's health stating, "EPA's previous risk assessments and several consultations with EPA's Science Advisory Panel makes clear the potential for adverse health effects to children as a result of exposure to chlorpyrifos. The risk to infant and children's health and development is unambiguous" (AAP et al 2017). We know enough about the effects of chlorpyrifos to take action.

The legal basis of US EPA's March 2017 decision was challenged in June 2017 by the Attorneys General of seven states, including California. These Attorneys General said that Federal law requires the EPA to ban the pesticide unless it affirmatively concludes that the chemical is safe, a finding that US EPA's administrator Scott Pruitt and his staff have not issued. "The order is not authorized by (federal law) and is an improper exercise of the administrator's authority," said California Attorney General Xavier Becerra and his counterparts in New York, Massachusetts, Maine, Maryland, Vermont and Washington state. In a statement Becerra said Pruitt should "put the health of the American people ahead of profits for companies" (Schneiderman et al, 2017).

In the light of the heavy use of chlorpyrifos in the state and the compelling body of science that shows significant risks of neurodevelopmental harm for children due to exposure to chlorpyrifos, we urge you to not let DPR downplay the human health impacts of chlorpyrifos by limiting its analysis only to cholinesterase inhibition and consequently take only minor action towards reducing exposure to this pesticide. We urge you to direct DPR to follow the recommendation of the US EPA's scientists and the strong science they relied on to make the recommendation for a full ban on chlorpyrifos for all food uses.

With each year of delay in cancelling agricultural and other uses of chlorpyrifos in the state of California, more children are at elevated risk for problems in learning, social skills, motor function, and other developmental domains. Governor Brown, we strongly urge you to protect the health of California's children by directing DPR to cancel all remaining uses of chlorpyrifos in the state as expeditiously as possible.

Sincerely,
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