

Pesticide Re-evaluation Division
Office of Pesticide Programs
Environmental Protection Agency
1200 Pennsylvania Ave., NW
Washington, DC 20460-0001

Re: docket #: EPA-HQ-OPP-2008-0850.

Oct 6, 2011

Dear members of the chlorpyrifos review team,

The undersigned health professionals and health advocacy groups are pleased to submit this letter to EPA as comments for the public docket EPA-HQ-OPP-2008-0850 *Registration Review of Chlorpyrifos: Preliminary Human Health Risk Assessment*.

We are encouraged that EPA is re-examining the safety of chlorpyrifos. As the current review focuses on the human health impacts of this widely used pesticide, we urge that the best available independent science be used to evaluate these health impacts and that swift action be taken on the outcome of the assessment.

Children are uniquely vulnerable to the impacts of pesticides, including chlorpyrifos, since their developing brains are more susceptible to neurotoxicants and the dose of pesticides per body weight is likely to be higher.ⁱ Children also have lower levels of enzymes that detoxify certain organophosphate (OP) pesticides such as chlorpyrifos.ⁱⁱ As you know, the withdrawal of home uses of chlorpyrifos in 2001 was based largely on the known harms at that time of chlorpyrifos to children's neurological systems.

Since agricultural uses of chlorpyrifos are still permitted, children in rural areas continue to experience chronic, low level exposure to this pesticide due to living near agricultural fields.ⁱⁱⁱ Children living near farms and/or living with a pesticide applicator have higher levels of OP breakdown products, including those of chlorpyrifos, in their urine during active crop-spraying periods.^{iv} Children are also exposed to OP pesticides, including chlorpyrifos, through food residues^v, and through previous home uses of OPs.^{vi}

Several recent studies provide new evidence of the specific serious health impacts of exposure to chlorpyrifos on children and fetuses. These studies show that:

- Prenatal exposure to organophosphate pesticides, including chlorpyrifos, have negative impacts on neurodevelopment^{vii}, including perceptual reasoning^{viii}, working memory^{ix} and poorer intellectual development in 7-year-old children.^x Higher blood chlorpyrifos concentrations during pregnancy were found to be associated with poorer mental and motor development at three years of age.^{xi}
- OP pesticide exposure, including chlorpyrifos, is linked to low birth weights^{xii} and reduced head circumference of newborns^{xiii}, a factor related to children's subsequent cognitive abilities.
- Chlorpyrifos is a suspected endocrine disruptor and has profound impacts on the neuro-endocrine systems.^{xiv}

Furthermore, available data do not support EPA's proposal to lower the FQPA safety factor for children, as is proposed in this preliminary human health risk assessment. Research shows that models of adult toxicity do not extrapolate to fetuses and would not predict the vulnerability of the embryo to chlorpyrifos.^{xv} The neurodevelopment effects of chlorpyrifos on children, before

and after birth, have been documented at very low levels of exposure and are sufficient to warrant extreme caution and special consideration.

Scientific evidence shows that dietary intake represents the major source of exposure to OP pesticides among children and that chlorpyrifos contributes measurably to children's overall pesticide exposure from foods.^{xvi} OP pesticide exposure through dietary sources, at levels common among US children, has also been associated with Attention Deficit Hyperactivity Disorder (ADHD).^{xvii} Furthermore, the influence of OPs such as chlorpyrifos on health is dependent on the activity of the key enzyme- PON1- that normally helps detoxify OP pesticides. The activity of PON1 varies across individuals, and people with lower PON1 activity are likely to have longer elimination rates and therefore higher OP levels in the body.^{xviii} In a study comparing 130 Latina mothers and their newborns in California^{xix}, the newborns classified as most sensitive in the study were 131 to 164 times more sensitive to chlorpyrifos than the other newborns in the study. Susceptibility to chlorpyrifos was found to vary significantly even among adults and children, with a variation of as much as 35-fold among mothers, and as much as 65-fold among newborns. Newborns had consistently lower levels of the PON1 enzyme than their mothers, making them about four times more vulnerable, on average. Thus, not only are children significantly more vulnerable than adults on average, but that there are also a wide range of PON1 enzyme levels even among adults. Hence, this indicates a wide range in people's ability to detoxify chlorpyrifos. It is critical to take this into consideration when establishing safety factors. These facts together strengthen the argument for a stronger safety factor, not a weaker one. The proposed 1X FQPA factor would not be adequately health protective of children and fetuses, nor for the most susceptible adult populations.

The changes in regulations governing chlorpyrifos use that occurred in 2001, combined with the evidence from studies examining exposure through dietary routes, are positive and strong indicators that removing chlorpyrifos from environmental and dietary sources leads to reduced exposure. For example, it has been established that switching to organic diets for even a short duration can dramatically reduce children's exposure to OP pesticides, including chlorpyrifos.^{xx} Levels of metabolites in children's bodies dropped significantly after the EPA's 2001 ban of home uses of chlorpyrifos. In addition, chlorpyrifos-induced reduction in head circumference at birth disappeared in urban children subsequent to this ban.^{xxi} Thus reduction in exposure can have positive health protective outcomes for children and fetuses, strengthening the case for stronger protections against chlorpyrifos exposure for these groups.

We urge EPA to act now on the weight of scientific evidence of health harms of chlorpyrifos for children and fetuses. It is time that EPA take action to protect the public health and provide a healthy legacy for our children and for future generations. We call on EPA to cancel all uses of pesticide chlorpyrifos.

Sincerely,

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