



January 27, 2014

Brian Leahy
Director
California Department of Pesticide Regulation
1001 I Street
Sacramento, CA 95814

Dear Director Leahy,

The undersigned 72 groups thank you for meeting in late 2013 with members of the Californians for Pesticide Reform coalition. We are writing since the U.S. EPA is starting the risk assessment process for chlorpyrifos, and we want to express our thoughts around the Department of Pesticide Regulation ("DPR")'s response to this process. We are highly concerned that DPR is not moving forward with its own risk assessment for chlorpyrifos, and instead is relying on the risk assessment process started by the U.S. EPA. DPR placed products containing the active ingredient chlorpyrifos into re-evaluation in 2004. According to law, DPR should have completed this re-evaluation within a two-year framework, and yet chlorpyrifos remains under re-evaluation today. Furthermore, the process has been suspended in favor of the U.S. EPA's risk assessment process. Past experience has shown that the U.S. EPA's process is routinely long and drawn-out, during which time countless Californians will continue to be exposed to chlorpyrifos.

Some of our concerns with EPA's risk assessment process are similar to those expressed by DPR and the Office of Environmental Health Hazards Assessments (OEHHA) in their comments on U.S. EPA's Preliminary Risk Assessment for chlorpyrifos, regarding the susceptibility of children to chlorpyrifos and the need, for example, to retain an extra "safety" factor of 10 for their protection. This position supports the argument that EPA's registration decisions based on its risk assessment may not adequately protect vulnerable populations in California. We urge DPR to move forward with its own risk assessment using the best available independent science to evaluate the health impacts of chlorpyrifos, and take swift action on the outcome of the assessment.

DPR's arguments in favor of deferring to U.S. EPA's risk assessment of chlorpyrifos -- in service of increased efficiency, reducing duplication of effort at state and U.S. EPA levels, and better use of state government resources -- are not relevant in this situation. The unique nature of agriculture in California, with a high proportion of labor intensive crops and an extensive ag-residential interface, requires assessments of human exposure to chlorpyrifos and other agricultural chemicals that are responsive to the context of agricultural pesticide use and exposure in the state. By not conducting its own risk assessment of chlorpyrifos, DPR will be doing a serious disservice to California's farm workers, farmers, and rural communities facing the dual risks of exposure through water and air, as well as to consumers exposed through food residues. California has always been a leader in the field of protecting the environment and its people from toxic chemical exposures, and we urge DPR to strive to higher standards of health protection.

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We are heartened by the information you provided at our recent meeting about DPR reviewing relevant use restrictions in California to reduce the contamination with chlorpyrifos of surface waters in the state. This is a good step and we hope you will keep us updated about this initiative.

While protecting the state's water from chlorpyrifos is a laudable goal, it does not go far enough in fully protecting the residents of the state from exposure to chlorpyrifos. Exposures through air-borne drift and to residues on food are significant sources of human exposure, and will continue to remain so. We therefore urge DPR to expand the focus of their action to include these exposure routes as well.

We are also encouraged to learn about DPR's review of application methods. We urge the Department to phase out aerial and air blast applications of chlorpyrifos, as this would reduce both drift and surface water exposure to chlorpyrifos. However, we believe that tightening application restrictions will not ultimately provide adequate protections against chlorpyrifos exposure to vulnerable populations in California because of the high volatility and toxicity of this pesticide. Furthermore, DPR should be sensitive to the very real danger of poor compliance with application requirements and the associated challenges with enforcement. Stricter application methods, while a good interim step, are insufficiently protective in the long run.

We believe there's enough evidence to cancel all uses of chlorpyrifos. We ask that:

- Cancellation of chlorpyrifos should be the Department's long-term goal, with a shorter-term goal to make it a restricted use pesticide to better protect the people and environment of California.
- DPR should resume work on the risk assessment of chlorpyrifos immediately, to be able to fully assess exposure levels and risk in the state in a timely manner.
- DPR should phase out aerial and air blast applications of chlorpyrifos in the interim and take other mitigation efforts, such as establishing large, protective buffer zones around sensitive sites to reduce both drift and surface water exposure for human populations in the state.
- DPR should work with the University of California Statewide Integrated Pest Management Program to identify effective alternatives to chlorpyrifos, including non-chemical alternatives for crops such as citrus, broccoli, alfalfa, almonds and cotton, where such alternatives are not yet identified.

The growing weight of evidence against chlorpyrifos

Exposure to chlorpyrifos—whether through pesticide drift, contaminated water, diet, or workers taking home contamination—is especially harmful for children and fetuses. 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 higher than adults.ⁱ Children also have lower levels of enzymes that detoxify certain organophosphate (OP) pesticides.ⁱⁱ The withdrawal of home uses of chlorpyrifos in 2001 was based largely on the then-current known harm to children's neurological systems.

Between 2006 and 2010, more than 1.45 million pounds of chlorpyrifos (as an active ingredient) were used annually in California.ⁱⁱⁱ Due to this significant agricultural use of chlorpyrifos, children in rural areas living near agricultural fields continue to experience chronic, low-level exposure.^{iv} Children living near farms have higher levels of OP breakdown products in their urine during active crop-spraying periods and from living with a pesticide applicator.^v Children

are also exposed to OP pesticides through food residues,^{vi} through residues in dust within the home, and other take-home routes.

Exposure to chlorpyrifos can have significant health impacts. Recent studies, several of them conducted in California, have shown:

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

Dietary intake represents the major source of exposure to OP pesticides among most children; chlorpyrifos contributes measurably to children's overall pesticide exposure from foods.^{xv} Furthermore, OP pesticide exposure through dietary sources, at levels common among US children, may contribute to Attention Deficit Hyperactivity Disorder (ADHD) prevalence.^{xvi} The neurodevelopmental effects of chlorpyrifos on children—documented at very low levels of exposure—are sufficient to warrant rapid phase-out.

The effect of OPs on health is influenced by the activity of the key PON1 enzyme involved in the detoxification of OP pesticides. The activity of PON1 varies across individuals, with lower levels associated with longer elimination rates and therefore higher OP levels in the body.^{xvii} In a study comparing 130 Latina mothers and their newborns in California, newborns were 131 to 164 times more sensitive to chlorpyrifos than adults.^{xviii} Susceptibility to chlorpyrifos was found to vary significantly among adults and children, sometimes 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 the mothers, making them about four times more sensitive, on average. This wide range of susceptibility, especially between adults and children, must be taken into consideration to better protect children and fetuses in the interim while the pesticide is being phased out.

Existing law compels DPR to take action

Chlorpyrifos has been found at levels of concern across the state. The Pesticide Action Network conducted air monitoring in Lindsay, in California's San Joaquin Valley, using a 'drift catcher' device in 2004 and 2005 and added a biomonitoring component in 2006 to this air monitoring.^{xix} In 2004, 104 samples were collected across five different sites during July and August. Chlorpyrifos was found in 76% of the samples, and 11% had levels exceeding the Level of Concern (LOC) for infants. The next year sampling continued at 4 sites, with 108 samples collected. Eighty percent contained chlorpyrifos, and the LOC was exceeded 23% of the time. In 2006, 28% of the 116 samples collected from 6 sites contained chlorpyrifos at levels exceeding the LOC. That year, urine samples were also collected from 12 residents and tested for the TCPy metabolite of chlorpyrifos. The metabolite was found in everyone's urine, and all but one person tested had levels above the national average and above the level EPA says is "acceptable."

DPR's own recent air-monitoring data shows the frequent detection of chlorpyrifos in the air in agricultural areas of California. It was the pesticide with the highest number of detections (32%) in 2011 Air Monitoring Network data.^{xx} DPR's water monitoring data from 2011^{xxi} showed that chlorpyrifos was detected in 441 (17.7%) of 2,495 water samples collected, with 248 samples exceeding the target concentration used of 0.04 ug/L. Santa Maria Valley had the most frequent detections and exceedances with chlorpyrifos detected in 79.8% of the samples, among which 57% exceeded the U.S. EPA benchmark of 0.04 ug/L. Regions in the Central Coast and Imperial Valley had higher detection and exceedance frequencies than the Central Valley.

Given the strong weight of evidence demonstrating the high possibilities of reduced IQ, permanent neurodevelopmental impacts, reduced birth weight and compromised mental capacity in children due to exposure to chlorpyrifos, as well as the data on detection of chlorpyrifos in California's air and water, the California Birth Defects Prevention Act (Food and Ag Code)^{xxii} becomes applicable. Under this law if a pesticide product containing the active ingredient presents significant adverse health effects, including reproductive effects, birth defects, or infertility abnormalities, the department must take cancellation or suspension action against the product pursuant to Section 12825 or 12826 of the Act. We urge that this law be fully considered and actions taken in accordance with its requirements.

Tighter regulation of chlorpyrifos already has had positive health outcomes, as seen from the federal EPA's ban of home uses of chlorpyrifos in 2001. Levels of metabolites in children's bodies dropped significantly after the 2001 ban and chlorpyrifos-induced reduction in head circumference at birth disappeared in urban children subsequent to this ban.^{xxiii} Data also show that switching to organic diets for even a short duration can dramatically reduce dietary exposures to OP pesticides, including chlorpyrifos.^{xxiv} These results strengthen the case for rapid adoption of stronger protections against chlorpyrifos exposure for vulnerable groups.

It is an environmental injustice to continue to use this pesticide in agriculture, subjecting farmworkers and their families to the highest levels of exposure.

Growers need support

Alternatives to chlorpyrifos exist, and can be employed with great success by farmers in California. Use of pheromones for insect mating disruption has led to dramatic reduction of use of chlorpyrifos in some crops. However, there are some concerns in California around the current lack of effective alternatives to chlorpyrifos for certain specific pests on some crops such as alfalfa, broccoli, citrus and cotton.

The University of California Statewide Integrated Pest Management Program has a stellar reputation for research and innovation. We urge DPR to work in collaboration with these departments to fine-tune effective alternatives to chlorpyrifos for these crop-pest combinations and help California farmers to transition away from chlorpyrifos.

Other synthetic chemical insecticides on the market that may be suggested as alternatives to chlorpyrifos have a range of adverse health and environmental effects, such as endocrine disruption, cancer, neurological damage, surface and groundwater contamination, toxicity to beneficial insects, persistence, etc. Hence, their use is not recommended to replace chlorpyrifos.

Agroecology is the preferred agricultural approach for replacing a pesticide like chlorpyrifos. It is a highly productive and sustainable agricultural approach, endorsed by various key

international bodies such as the Food and Agriculture Organization (FAO);^{xxv} the International Assessment of Agricultural Knowledge, Science and Technology for Development (IAASTD);^{xxvi} the UN Special Rapporteur on the Right to Food^{xxvii} and the International Code of Conduct on the Distribution and Use of Pesticides.^{xxviii} Long-term successes with agroecological pest management have been documented here in the U.S. and on many innovative farms across California.

Agroecological pest management focuses on sustainable ecological solutions that prevent pest build up. It takes a holistic approach to crop management that recognizes pests as an integral part of the whole agroecosystem, forming a complex with beneficial insects, weeds, diseases and crops. The self-regulatory mechanisms of a highly biodiverse farming system help keep pest species in balance. A healthy soil with a rich diversity of biota and a high content of organic matter is key to sustainable management of pests and diseases. California's farmers deserve strong support to transition from hazardous pesticides like chlorpyrifos towards agroecological farming. The innovation and knowledge of farmers in California deserve support from the state government.

In conclusion

We urge DPR to act now on the overwhelming scientific evidence of health harms of chlorpyrifos for children and fetuses. Reviewing regulations designed to protect surface waters in California from chlorpyrifos exposure is a good step, but we believe there's enough evidence to support cancellation of all uses of this pesticide. The risk assessment process should be resumed immediately to move down that path.

In the meantime, interim steps should be taken to protect the health of all Californians, including:

- making chlorpyrifos a restricted use pesticide,
- adding mitigations such as prohibiting hazardous application methods such as orchard blaster and aerial applications, and
- requiring protective buffer zones around sensitive sites such as schools.

We also urge DPR to work with other state government departments to ensure that farmers in California are given adequate support to transition away from chlorpyrifos and move towards agroecological pest management.

Sincerely,

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