



November 10, 2011

Lisa P. Jackson, Administrator
Environmental Protection Agency
Ariel Rios Building
1200 Pennsylvania Avenue, N.W.
Washington, DC 20460

RE: Petition to Revise Worker Protection Standard Under F.I.F.R.A.

Dear Ms. Jackson:

Earthjustice and Farmworker Justice submit this letter on behalf of United Farm Workers, Pesticide Action Network North America, Farm Worker Pesticide Project, California Rural Legal Assistance Foundation, Pineros y Campesinos Unidos del Noroeste, Farm Labor Organizing Committee, and Farmworker Association of Florida regarding the U.S. Environmental Protection Agency's ("EPA") long-overdue revisions to the Worker Protection Standard ("WPS") of the Federal Insecticide, Fungicide and Rodenticide Act¹ ("FIFRA"). We understand that EPA expects to publish proposed revisions to the WPS early next year. It is imperative that these revisions be proposed, issued and implemented without delay, and that they correct the dual standard that now penalizes farmworkers—the overwhelming majority of whom

¹ 7 U.S.C. § 136, *et seq.*

are Latino² and poor³ — who receive far weaker workplace protections than workers in better paid and predominantly white industrial sectors. As part of the expected revisions to the WPS, EPA must, at a minimum, bring the protections of the WPS up to the standards that safeguard workers in non-agricultural employment sectors whose safety is overseen by other federal agencies.

We write to lay out in writing the measures that we believe EPA must, at a minimum, include in its proposed rule in order to comply with its obligations under FIFRA and Executive Order 12898 (Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations).⁴

In sum, we ask that the WPS revisions require:

- expansion of training requirements for agricultural workers, including pesticide handlers;

² DANIEL CARROLL ET AL., OFFICE OF PROGRAMMATIC POLICY, U.S. DEP'T OF LABOR, RESEARCH REPORT NO. 9, FINDINGS FROM THE NATIONAL AGRICULTURAL WORKER SURVEY (NAWS) 2001-2002: A DEMOGRAPHIC AND EMPLOYMENT PROFILE OF UNITED STATES FARMWORKERS 3 (2005), *available at* http://www.doleta.gov/agworker/report9/naws_rpt9.pdf (78% of all U.S. farmworkers are foreign-born, with 75% of the farmworkers born in Mexico); Thomas A. Arcury et al., *Repeated Pesticide Exposure Among North Carolina Migrant and Seasonal Farmworkers*, 53 Am. J. Indus. Med. 802, 806 (2010) (89% of farmworkers in Eastern North Carolina did not speak English, with nearly 23% speaking an indigenous language).

³ CARROLL, *supra* note 2, at 47 (for the two calendar-year period 2000-2001, the average individual income range for farmworkers was \$10,000 - \$12,499; the average total family income range was \$15,000 - \$17,499).

⁴ Because we were advised during our July 19, 2011 meeting with Lisa H. Garcia, Sarah H. Pallone, Lawrence Elworth, William Jordan and others that all of the revisions we seek are on EPA's radar screen and are being considered for inclusion in the revisions to the WPS, this letter should do nothing to slow EPA's completion of the proposed rule. Moreover, because these matters were discussed at our July 19 meeting, we do not believe it is strictly necessary to submit a formal petition requesting these revisions. Nonetheless, please deem this letter to be a petition for issuance of a rule within the meaning of 5 U.S.C. § 553(e).

- improved hazard communications and direct worker notification regarding restricted entry intervals (REIs) and the pesticides they are being exposed to, including mandatory posting of fields under REIs;
- strict prohibitions on early entry prior to expiration of an REI;
- provision of areas for workers to change into work clothes, store their clean clothing, and shower at the end of the day so they do not bring pesticide residues home with them;
- pesticide labels to state clearly when a respirator is required;
- employers to fit-test respirators for each worker before they are used;
- buffers around fields where work is taking place;
- the creation of a confidential system for reporting unsafe working conditions;
- inspections to be conducted without advance notice;
- chemical resistant footwear for all or most pesticide handling jobs;
- development and implementation of requirements for preventing heat illness associated with wearing of PPE;
- protections specifically designed to protect youth workers and workers who are or could be pregnant;
- the creation of a national system to report incidents of pesticide-related illnesses and injuries, and an online database of reported illnesses; and
- employers to maintain contemporaneous records of pesticides used.

In addition, the proposed WPS revisions must include:

- medical monitoring of agricultural workers and handlers who regularly handle Toxicity Category I and II organophosphate and n-methyl carbamate pesticides to evaluate whether they are being exposed to high levels of these dangerous chemicals.

Finally, the proposed revisions must require use of engineering controls, which reduce exposure to pesticides through the use of engineered equipment or technology to create a physical barrier preventing pesticides from coming into direct contact with the bodies or clothing of pesticide

handlers, as a first line of protection against pesticide handlers' exposure. In particular, the WPS must require:

- closed mixing and loading systems for categories of particularly hazardous pesticides; and
- enclosed cab equipment equipped with a ventilation system that provides vapor and particulate filtration for workers using certain types of formulations and/or categories of particularly hazardous pesticides.

The suggested measures outlined in this letter are straightforward and many are routinely required by state and federal regulators (other than EPA) to ensure worker safety. Considering the severity and disproportionality of the health impacts of pesticide exposure on communities of color, we urge EPA to implement the recommended measures to fulfill its legal obligations under FIFRA and Executive Order 12898. EPA must take the steps necessary to protect the farmworkers who bear the brunt of the agriculture industry's reliance on highly toxic chemicals.

I. The Largely Poor and Minority Farmworkers Who Handle Pesticides Are Not Adequately Protected By the Worker Protection Standard

In 1992, when EPA last undertook to improve the safety of agricultural workers by revising the WPS, it estimated that farmworkers in this country experienced between 10,000 and 20,000 physician-diagnosed pesticide poisonings annually.⁵ While the 1992 WPS revisions led to some improvement in working conditions, the WPS remains grossly inadequate. Indeed, EPA's risk assessments assume that pesticide handlers will regularly suffer direct physical contact with toxic pesticides – both through dermal and inhalation exposures– even when wearing personal protective equipment (“PPE”) and complying with current safety standards.⁶

⁵ *Pesticide Illness & Injury Surveillance*, CENTERS FOR DISEASE CONTROL AND PREVENTION, available at <http://www.cdc.gov/niosh/topics/pesticides/>.

⁶ OFFICE OF PESTICIDE PROGRAMS, U.S. ENVTL. PROTECTION AGENCY, OCCUPATIONAL PESTICIDE HANDLER UNIT EXPOSURE SURROGATE REFERENCE TABLE (2011), available at <http://www.epa.gov/opp00001/science/handler-exposure-table.pdf> (EPA assumes that the skin of workers who mix and load pesticides will be exposed to up to 3,700 micrograms per pound of active pesticide ingredient, and that these workers will inhale up to 43.4 micrograms per pound of active pesticide ingredient). See also Arcury, *supra* note 2, at 808 (concludes that “most farmworkers are exposed to an

Given farmworkers' persistent exposure to harmful pesticides and ineffectual enforcement of the WPS, it is not surprising that an average of 57.6 out of every 100,000 agricultural workers experience acute pesticide poisoning, illness or injury each year.⁷ This number excludes the many workers who suffer chronic health problems such as cancer, infertility, and neurological disorders, including Parkinson's disease, as a result of these toxic exposures.⁸ Moreover, it is well-documented that piece-meal reporting systems attempting to quantify the number of workers sickened in the U.S. by pesticide exposures significantly understate the magnitude of the problem. Factors contributing to underreporting include language barriers, lack of access to medical care, lack of information for workers about hazards they face, workers' lack of awareness of poisoning symptoms, fear of retaliation, lack of pesticide illness reporting requirement in many states and nationally, and lack of health care professionals trained in diagnosis of pesticide illness.⁹ EPA has acknowledged that "cases of pesticide poisoning

array of pesticides across an agricultural season and that many farmworkers are repeatedly exposed to the same pesticides..."); Sara A. Quandt et al., *Cholinesterase Depression and Its Association with Pesticide Exposure Across the Agricultural Season Among Latino Farmworkers in North Carolina*, 118 *Envtl. Health Persp.* 635, 635-9 (2010).

⁷ Geoffrey M. Calvert et al., *Acute Pesticide Poisoning Among Agricultural Workers in the United States, 1998 – 2005*, 51 *AM. J. INDUS. MED.* 883, 890 (2008). To put this rate into context, it is in the same order of magnitude as the annual incidence rate of breast cancer in the United States. *See Age-Adjusted Breast Cancer Incidence and Mortality Rates for 2008 for 32 countries, Organized by Region of the World, Participating in the ICSN*, NATIONAL CANCER INSTITUTE (2008), available at <http://appliedresearch.cancer.gov/icsn/breast/mortality.html> (includes data showing that the breast cancer incidence rate in the U.S. is 76 per 100,000); *see also* Calvert, *supra*, at 894 (data from the 1999 National Agricultural Workers Survey conducted by the United States Department of Labor shows that, during a one-year period, over 3% of crop workers were directly exposed to pesticides being sprayed, blown or spilled on them, or were directly exposed to pesticides while cleaning or repairing equipment used for applying or storing these chemicals. Of those workers, over 43% reported getting sick or having a reaction such as numbness or tingling, eye problems, or nausea and vomiting.).

⁸ *See* note 38, *infra*.

⁹ U.S. GENERAL ACCOUNTING OFFICE, PESTICIDES ON FARMS: LIMITED CAPABILITY EXISTS TO MONITOR OCCUPATIONAL ILLNESSES AND INJURIES 9 (1993), available at <http://archive.gao.gov/t2pbat4/150612.pdf>; *see also* Calvert, *supra* note 7, at 894-95 (discussing reasons why agricultural workers are deterred from seeking health care and why health care professionals misdiagnose acute pesticide poisonings).

incidents among the agricultural work force are likely to be significantly more numerous than those that are reported.”¹⁰

The shortcomings of the WPS are particularly pronounced when it comes to agricultural workers who directly handle pesticides by mixing, loading, or applying the chemicals; these workers represent a significant proportion of all pesticide-related illnesses and injuries. A study by the Washington Department of Health (funded by the National Institute for Occupational Safety and Health [“NIOSH”]) (the “Washington NIOSH Study”) concluded that between 2003 and 2008, nearly one-half of the agricultural workers in Washington State with an illness or injury related to occupational pesticide exposure, were pesticide handlers. In addition, the pesticide handler group showed a higher percentage of moderate to severe outcomes (14%) compared to other workers (10%).¹¹ A study of teen-aged agricultural workers who suffered acute pesticide-related illnesses showed that 21% were exposed while directly handling pesticides.¹²

Most significant here is the fact that a large percentage of pesticide handlers who are sickened by exposures to pesticides are, in fact, *complying with the current version of the Worker Protection Standard*. EPA itself recognized this problem over ten years ago, acknowledging that “even with maximum feasible personal protective equipment and engineering controls, including all provisions required by the Worker Protection Standard (WPS), risks to workers still

¹⁰ *Response to Public Comments on the Draft Pesticide Registration Notice on Worker Risk Mitigation for Organophosphate Pesticides*, U.S. ENVTL. PROTECTION AGENCY, available at http://www.epa.gov/PR_Notices/draftprworker-response.htm.

¹¹ PESTICIDE INCIDENT REPORTING AND TRACKING REVIEW PANEL, WASHINGTON STATE DEPARTMENT OF HEALTH, 2009 ANNUAL REPORT 4 (2010) available at <http://www.doh.wa.gov/ehp/PIRT/2009report.pdf>; see also Geoffrey M. Calvert et al., *Acute Occupational Pesticide-Related Illness in the U.S., 1998-1999: Surveillance Findings from the SENSOR-Pesticides Program*, 45 *Am. J. Indus. Med.* 14, 20 (2004), available at http://www.dhh.la.gov/offices/publications/pubs-205/Acute_OCC.pdf (in a study of reported pesticide exposures in 1998 and 1999, 33% of the agricultural workers who developed a pesticide-related illness were exposed during the pesticide application process).

¹² Geoffrey M. Calvert et al., *Acute Pesticide-Related Illnesses Among Working Youths, 1988-99*, 93 *AM. J. PUB. HEALTH* 605, 607 (2003).

exceed EPA's levels of concern.”¹³ EPA’s acknowledgement – while shocking given its decade-long failure to rectify the situation – is well-founded. The Washington NIOSH Study determined that approximately one-third of the pesticide handlers who became ill due to occupational pesticide exposure “appeared to have complied with the PPE requirements but were still over-exposed with resulting injury.”¹⁴ Moreover, a recent study analyzing poisonings of pesticide workers between 1998 and 2005 concluded that in 30% of the cases of high levels of pesticide exposure, all labeling requirements, including those involving re-entry and PPE had been followed, clearly indicating that the WPS and/or labeling requirements are not adequate.¹⁵ Another study found that 79% of agricultural pesticide applicators who experienced a pesticide-related illness between 1998 and 1999 were wearing PPE.¹⁶ Given that workers continue to suffer poisonings despite complying with the current version of the WPS, the WPS – by definition – does not adequately protect the health of pesticide handlers.

In sum, EPA has failed in its duty to protect farmworkers from being exposed to significant levels of toxic pesticides on the job. Over a decade ago, EPA stated that it is “particularly concerned for workers and handlers because of the relatively high risks indicated by current assessments” and “the acute toxicity” of the pesticides.¹⁷ EPA must stop merely expressing its concern, and take meaningful steps to protect agricultural workers from the pesticides they handle, including, at a minimum, adopting the safeguards listed on pages 2-4 above, some of which are discussed in more detail below.¹⁸

¹³ *Pesticide Registration Notice 2000-9*, U.S. ENVTL. PROTECTION AGENCY, at 3, (Sept. 29, 2000), available at http://www.epa.gov/PR_Notices/pr2000-9.pdf.

¹⁴ PESTICIDE INCIDENT REPORTING AND TRACKING REVIEW PANEL, *supra* note 11, at 5.

¹⁵ Calvert, *supra* note 7, at 891-892.

¹⁶ Calvert, *supra* note 11, at 20. The researchers acknowledged that they could not be sure if the PPE was being used correctly.

¹⁷ *Pesticide Registration Notice 2000-9*, *supra* note 13, at 4.

¹⁸ While all of the provisions we have outlined above are critically necessary, the remainder of this letter will focus on the need for medical monitoring and engineering controls.

II. EPA Is Legally Obligated To Strengthen The Worker Protection Standard

FIFRA mandates that EPA protect the health of farmworkers. Indeed, the “entire purpose of the [1970 revisions to FIFRA, known as the Federal Environmental Pesticide Control Act (“FEPCA”)] is to protect man and the environment,” and farmers and farmworkers are “the most obvious object of th[at] bill’s protection.”¹⁹ At the time of FEPCA’s passage, one Senate Committee asserted that FEPCA “provides complete safeguards to protect farmers and others coming into contact with pesticides or residues.”²⁰ Given that farmworkers routinely suffer from serious illnesses (chronic and acute) and other health effects due to their occupational exposures to pesticides notwithstanding WPS compliance, EPA has fundamentally failed to comply with its obligations under FEPCA to provide farmworkers with complete safeguards against pesticide exposure.

In addition, EPA has violated its legal – and moral – duties to farmworkers by not ensuring equal protection from pesticide exposures as is afforded non-agricultural workers who use toxic chemicals on the job.²¹ Executive Order 12898 requires EPA to “achiev[e] environmental justice . . . by . . . addressing . . . [the] disproportionately high and adverse human health or environmental effects of its programs [and] policies . . . on minority populations and low-income populations.”²² And EPA has affirmatively committed to integrating environmental

¹⁹ *Organized Migrants in Community Action, Inc. v. Brennan*, 520 F.2d 1161, 1168-69 (D.C. Cir. 1975), quoting S. Rep. No. 92-838, at 43, 44 (1972), reprinted in 1972 U.S.C.C.A.N. at 4063..

²⁰ *Id.* at 1168, quoting S. Rep. No. 92-838, at 43-44 (1972), reprinted in 1972 U.S.C.C.A.N. at 4063. See also *id.* at 1169 (“If there is any question as to whether [farmers and farmworkers] are fully protected, we do not know what it could be.”), quoting S. Rep. No. 92-838, at 44 (1972), reprinted in 1972 U.S.C.C.A.N. at 4063.

²¹ See, e.g., discussion of Occupational Safety and Health Administration and U.S. Department of Agriculture regulations and programs to protect workers handling pesticides at pages 9 & note 29, 15 & note 45, 22 & note 75, *infra*.

²² Exec. Order No. 12898 (Feb. 11, 1994), at 1. This obligation was recently reaffirmed by EPA. Mem. of Understanding on Environmental Justice and Exec. Order 12898 (Aug. 4, 2011), at 3 (EPA agreed that it will “identify and address . . . disproportionately high and adverse human health or environmental effects of it programs [and] policies . . . on minority populations and low-income populations.”).

justice into the Agency's programs, policies and activities, including its rulemaking.²³ The disparate treatment of farmworkers -- who are predominantly Latino and poor²⁴-- who work with pesticides as compared to predominantly middle class, white non-agricultural workers who handle the same or similarly toxic chemicals, runs afoul of EPA's obligations and commitments.

To correct these defects, EPA's WPS revisions must take into account the occupational safeguards farmworkers would receive if authority for their workplace health and safety fell under the purview of the Occupational Safety and Health Administration ("OSHA"). Pursuant to the Occupational Health and Safety Act of 1970 (the "OSH Act"),²⁵ OSHA has broad authority to set mandatory occupational safety and health standards that apply nationwide.²⁶ The underlying purpose of the OSH Act is "to provide for the establishment of minimum . . . occupational safety and health standards throughout the country."²⁷ To fulfill this purpose, OSHA's mandatory standards for "toxic materials" are required to

most adequately assure[], to the extent feasible, on the basis of the best available evidence, that no employee will suffer material impairment of health or functional capacity even if such employee has regular exposure to the hazard dealt with by such standard for the period of his working life.²⁸

To comply with this mandate, OSHA has promulgated detailed regulations requiring that workers be protected from toxic chemicals on the job.²⁹

²³ See OFFICE OF ENVIRONMENTAL JUSTICE, U.S. ENVTL. PROTECTION AGENCY, PLAN EJ 2014: INCORPORATING ENVIRONMENTAL JUSTICE INTO RULEMAKING (Sept. 2011), *available at* <http://www.epa.gov/compliance/ej/resources/policy/plan-ej-2014/plan-ej-rulemaking-2011-09.pdf>.

²⁴ See notes 2-3, *supra*.

²⁵ 29 U.S.C. § 651, *et seq.*

²⁶ 29 U.S.C. § 651(b)(3); 29 U.S.C. § 655(a).

²⁷ *Associated Industries of Mass. v. Snow*, 898 F.2d 274, 283 (1st Cir. 1990).

²⁸ 29 U.S.C. § 655(b)(5).

²⁹ See, e.g., 29 C.F.R. § 1910.1000 (limiting hours employees can work with toxic air contaminants); 29 C.F.R. § 1910.1003 (calling for detailed safeguards against exposures, including closed systems, in workplaces where a range of carcinogens are used); 29 C.F.R. § 1910.134 (requiring respiratory protection by means of engineering controls and substitution of less toxic chemicals).

The U.S. Court of Appeals for the District of Columbia has ruled, however, that OSHA’s health and safety standards do not apply to farmworkers because OSHA’s role is preempted by EPA’s authority to protect farmworkers. Specifically, the Court ruled that because EPA has “ample statutory authority to promulgate and enforce occupational health and safety standards for farmworkers,” and “comprehensive authority to ensure that pesticides are properly used,”³⁰ OSHA cannot regulate in this area because the OSH Act’s “negative preemption clause” provides that “working conditions of employees with respect to which other Federal agencies ... exercise statutory authority to prescribe or enforce standards or regulations affecting occupational safety or health” cannot be regulated by OSHA.³¹ In other words, OSHA does not protect farmworkers because of the legal assumption (which in reality is a legal fiction) that EPA will use its authority to fully protect farmworkers.

However, the OSH Act’s “negative preemption” provision is not without limits. “Preemption is appropriate only if a federal agency implements the regulatory apparatus necessary to *replace* those safeguards required by the [OSH] Act.”³² This is because the OSH Act’s preemption provision was designed to reduce duplicative agency action³³—not to lower the level of protection afforded workers. In addition, the preemption clause must be read in the context of the purpose of the OSH Act – which is to establish minimum occupational safety and health standards nationwide, and the legislative history of OSHA –which shows that “one of the major concerns that prompted OSHA's enactment in 1970 was the occupational hazard presented

³⁰ *Organized Migrants in Community Action, Inc. v. Brennan*, 520 F.2d at 1166, 1169.

³¹ 29 U.S.C. § 653(b)(1).

³² *Ensign-Bickford Co. v. Occupational Safety and Health Review Comm'n*, 717 F.2d 1419, 1421 (D.C. Cir. 1983) (emphasis added).

³³ *Reich v. Muth*, 34 F.3d 240, 243 (4th Cir. 1994) (the purpose of OSH Act’s negative preemption provision is to avoid duplicative regulation by “ceding responsibility for occupational standards in particularized fields to the regulatory bodies specifically tasked with their oversight and control, while leaving to OSHA the remaining general field of regulation outside specialized areas demanding specialized expertise”).

by the misuse of pesticides.³⁴ Given this legal framework and legislative history, OSHA standards cannot be preempted by FIFRA is read to require EPA to provide equivalent protection to farmworkers as they would receive under the OSH Act.

For these reasons, FIFRA’s requirement that pesticide registration/re-registration decisions avoid causing “any unreasonable risk to man or the environment,”³⁵ must be understood through the lens of the OSHA protections given other types of workers who handle toxic chemicals, including workers who manufacture pesticides. In particular, EPA’s “unreasonable risk” analysis under FIFRA must conclude that the risk is “unreasonable” unless the protections of the WPS are as protective as the OSH Act’s requirement that workplace protections “most adequately assure[], to the extent feasible, on the basis of the best available evidence, that no employee will suffer material impairment of health or functional capacity,”³⁶ as a result of exposure. Moreover, when EPA considers “unreasonable risk,” it must take into account the risks of “regular exposure” to pesticides “for the period of [the worker’s] working life,” not just immediate, acute effects, as OSHA must do.³⁷ Specifically, EPA’s risk-benefit analysis under FIFRA must consider that the cumulative exposures to pesticides – even at low levels – can lead to severe chronic health effects such as, among others: cancer (including childhood acute lymphoblastic leukemia); birth defects; lowered IQ of children exposed in utero; neurological damage; autism spectrum disorders; and Parkinson’s disease.³⁸

³⁴ *Organized Migrants in Community Action, Inc. v. Brennan*, 520 F.2d at 1167, citing 116 Cong. Rec. 37,628 (1970) (statement of Sen. Nelson); *id.* at 37,325 (statement of Sen. Williams).

³⁵ 7 U.S.C.A. § 136(bb) (defining the term “unreasonable adverse effects on the environment,” as it appears in 7 U.S.C. §§ 136a(c)(5)(C), 136a(c)(5)(D), which set the parameters for pesticide registration).

³⁶ 29 U.S.C. § 655(b)(5) (standard that OSHA must apply when promulgating standards for “toxic materials” such as pesticides).

³⁷ *Id.*

³⁸ Paul K. Mills & Sandy Kwong, *Cancer Incidence in the United Farmworkers of America 1987-1997*, 40 AM J. INDUS. MED. 596, 599 (Nov. 2001) (finding that compared to the general population, farmworkers had a 59% higher rate of leukemia, a 69% higher rate of stomach cancer, a 63% higher rate of uterine/cervical cancer, and a 68% higher rate of uterine corpus cancer); Vincent F. Garry et al., *Pesticide Appliers, Biocides and Birth Defects in Rural Minnesota*, 104 ENVTL. HEALTH PERSP. 394, 395-

Finally, in order for EPA to meet its legal obligation to farmworkers, it cannot continue its current practice of assessing fundamental aspects of workplace safety such as whether to require medical monitoring, closed systems and enclosed cabs on a case-by-case -- sometimes even crop by crop, or state by state -- basis as part of the piecemeal registration or re-registration of pesticides. When it comes to safeguarding farmworker health, the re-registration process is not an adequate substitute for regulation. Unlike notice and comment rulemaking, the re-registration process is opaque in that some of the critical data and other assumptions that EPA relies on in making its determinations are not publicly available. In addition, the chemical by chemical re-registration process that can go on for decades is, as a practical matter, not open to public input from affected communities of farmworkers.

398 (April 1996), available at

<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1469337/pdf/envhper00335-0054.pdf> (birth defect rate was significantly increased in children born to pesticide applicators); Elizabeth Grossman, *From the Fields to Inner City, Pesticides Affect Children's IQ*, YALE ENV'T. 360 (May 16, 2011), available at

http://e360.yale.edu/feature/from_the_fields_to_inner_city_pesticides_affect_childrens_iq/2404/ (babies exposed to high levels of common pesticides in utero have lower I.Q. scores than their peers by the time they reach school age, according to three new studies); Freya Kamel, *Association of Pesticide Exposure with Neurologic Dysfunction and Disease*, 112 ENVTL. HEALTH PERSP. 950, 950 (June 2004), available at

<http://ehp03.niehs.nih.gov/article/fetchArticle.action?articleURI=info%3Adoi%2F10.1289%2Fehp.7135> (poisoning by acute high-level exposure to certain pesticides has well-known neurotoxic effects; most studies of moderate pesticide exposure have found increased prevalence of neurologic symptoms and changes in neurobehavioral performance, reflecting cognitive and psychomotor dysfunction); Victoria McGovern, *Autism and Agricultural Pesticides: Integrating Data to Track Trends*, 115 ENVTL. HEALTH PERSP. A504, A504 (Oct. 2007), available at

<http://ehp03.niehs.nih.gov/article/fetchArticle.action?articleURI=info%3Adoi%2F10.1289%2Fehp.115-a504a> (finding an association between autism spectrum disorders and prenatal exposure to organochlorine pesticides); Caroline M. Tanner et al., *Rotenone, Paraquat, and Parkinson's Disease*, 119 ENVTL. HEALTH PERSP. 866, 868-869 (June 2011), available at

<http://ehp03.niehs.nih.gov/article/info%3Adoi%2F10.1289%2Fehp.1002839> (finding that Parkinson's Disease is positively associated with two classes of pesticides).

Moreover, pesticide labels already contain a significant amount of important information in small fonts and are difficult to read (even assuming the reader is fluent in English).³⁹ Any additional information on the label setting forth limits on how the chemical can be used could well be missed. Given the current piecemeal requirements for closed systems and enclosed cabs, there is no straightforward way for enforcers to determine if chemical by chemical labeling mandates are being complied with. A uniform approach to regulating categories of pesticides (e.g., Toxicity Category I and II pesticides, or organophosphate and n-methyl carbamate pesticides) would simplify implementation and enforcement, leading to greater safety. Accordingly, in order to meet FIFRA's pledge of "provid[ing] complete safeguards"⁴⁰ to protect farmers and others coming into contact with pesticides, EPA must use its "comprehensive authority"⁴¹ under FIFRA to provide worker protections through regulations rather than as conditions on registration.

In sum, understanding EPA's authority and obligations under FIFRA through the lens of the legislative history of FEPCA, Executive Order 12898 and the OSHA standards and authority EPA preempted by regulating in this area, EPA must revise the grossly inadequate WPS as soon as possible to "provide[] complete safeguards" to "protect farmers, farmworkers, and others coming into contact with pesticides or pesticide residues," as Congress intended when it passed FEPCA.⁴² And it must do so in a way that provides at least as much protection to farmworkers as they would receive if OSHA were permitted to regulate their safety, meaning at least as much

³⁹ See Letter from Amy K. Liebman, MPA, Migrant Clinicians Network, et al. to Debra Edwards, PhD, Director, Office of Pesticide Programs, U.S. EPA (Dec. 15, 2009) (petitioning agency to require bilingual pesticide labels).

⁴⁰ *Organized Migrants in Community Action, Inc.*, 520 F.2d at 1168, quoting S. Rep. No. 92-838, at 43-44 (1972), reprinted in 1972 U.S.C.C.A.N. at 4063; see also *id.* at 1169 ("If there is any question as to whether [farmers and farmworkers] are fully protected, we do not know what it could be."), quoting S. Rep. No. 92-838, at 44 (1972), reprinted in 1972 U.S.C.C.A.N. at 4063.

⁴¹ *Organized Migrants in Community Action, Inc.*, 520 F.2d at 1169.

⁴² *Organized Migrants in Community Action, Inc.*, 520 F.2d at 1168, quoting S. Rep. No. 92-838, at 43-44 (1972), reprinted in 1972 U.S.C.C.A.N. at 4063.

protection as is the norm in non-agricultural industries where employees handle toxic chemicals, including all of the protections outlined in this letter.

III. Medical Monitoring Is Necessary to Ensure that Workers Are Not Being Exposed to High Levels of Some of the Most Dangerous Pesticides

Based on these legal principles, the revisions to the WPS must include a requirement that employers offer medical monitoring of workers who handle Toxicity Category I and II organophosphate and n-methyl carbamate pesticides. These pesticides are among the most toxic substances produced by modern chemical technology. They cause toxicity both to “pests” and humans by inhibiting enzymes that are necessary to the functioning of the nervous system. When enzyme activity is reduced below a certain level, nerve impulses to the muscles can no longer be controlled, causing an array of serious neurotoxic effects, including nausea, dizziness, seizures, coma, respiratory paralysis and death. The enzyme cholinesterase acts as a blood biomarker reflecting the activity of the critical neurotransmitter enzymes in the nervous system.⁴³ By periodically comparing measurements of cholinesterase activity to a subject’s established baseline (prior to pesticide exposure), excessive levels of exposure to organophosphate and n-methyl carbamate pesticides can be detected before the occurrence of clinical illness.⁴⁴

Medical monitoring protects workers who handle organophosphate and n-methyl carbamate pesticides in multiple ways: it alerts employees to overexposure before overt symptoms are noticeable (and hopefully before permanent harm results); it alerts employers to unsafe working practices, conditions or equipment that could be affecting other employees as well; and in two states it has led to substantially fewer pesticide poisonings, and likely to reduced use of these highly toxic pesticides. Because the benefits of medical monitoring are so great, and the drawbacks so slight, there is no doubt that it should be required by EPA.

⁴³ Extension Toxicology Network, *Toxicology Information Brief: Cholinesterase Inhibition* (Sept. 1993), <http://pmep.cce.cornell.edu/profiles/extoxnet/TIB/cholinesterase.html>.

⁴⁴ *Id.*

A. Medical Monitoring is Understood As the Recognized Standard of Care

In employment sectors other than production agriculture, medical monitoring of workers who handle organophosphate and n-methyl carbamate pesticides is routine, recommended, and often mandatory.⁴⁵ For example, the USDA has a cholinesterase health monitoring program that is mandatory for all employees of the Animal and Plant Health Inspection Service (“APHIS”) whose responsibilities include “possible or potential exposure to organophosphate and carbamate pesticides.”⁴⁶ According to the USDA, this program “reduces overexposure to cholinesterase inhibiting compounds such as carbamate and organophosphate pesticides.”⁴⁷ Likewise, as part of its field investigations of possible health hazards in the workplace, NIOSH has recommended that baseline red blood cell cholinesterase activity be measured, and periodic follow-up testing be conducted, on all employees at risk of exposure to organophosphorus and carbamate pesticides.⁴⁸ Many private companies also maintain a cholinesterase monitoring program for workers who handle cholinesterase-inhibiting pesticides,⁴⁹ and the World Health Organization advises that when organophosphate pesticides are sprayed to control malaria or other pest-spread diseases,

⁴⁵ In addition, OSHA requires medical surveillance of employees who handle a wide range of toxic substances on the job. *See* 29 CFR §§ 1910.1001-1910.1017. These provisions require employers to establish, at no cost to the employee, a program of medical surveillance for employees exposed to toxic substances. The medical surveillance must consist of a pre-assignment physical examination by a physician followed by periodic follow-up examinations. *See generally* OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION, U.S. DEP’T OF LABOR, SCREENING AND SURVEILLANCE: A GUIDE TO OSHA STANDARDS, *available at* <http://www.osha.gov/Publications/osha3162.pdf>.

⁴⁶ *Cholinesterase Testing Program*, U.S. DEP’T OF AGRIC., *available at* http://www.aphis.usda.gov/emergency_response/downloads/health/Appendix%206%20B%20cholinesterase%20teating%20program.pdf, at 7-5-2.

⁴⁷ *Id.* at 7-5-1.

⁴⁸ TERESA A. SEITZ, U.S. DEP’T OF THE INTERIOR, HEALTH HAZARD EVALUATION REPORT 95–0074, 95–0080–2599 6 (1996), *available at* <http://www.cdc.gov/niosh/hhe/reports/pdfs/1995-0080-2599.pdf>.

⁴⁹ *See, e.g., Secretary of Labor v. Drexel Chemical Co.*, OSHRC Docket No. 94-1460, 1995 WL 474130 (Aug. 14, 1995 Occup. Safety Health Rev. Comm’n) (noting that Drexel Chemical Company requires its workers who handle the organophosphates malathion and diazinon to have their blood tested for cholinesterase depression every six weeks).

the blood cholinesterase levels of the sprayers should be monitored.⁵⁰ And, indeed, EPA itself has stated that monitoring employee exposures to organophosphate pesticides through cholinesterase monitoring “is a prudent occupational health practice.”⁵¹

In addition, two states mandate blood monitoring for agricultural workers who regularly handle cholinesterase-depressing pesticides. Since 1974, California has required that employers of all agricultural workers who regularly handle (mix, load or apply) an organophosphate or carbamate pesticide provide employees with “medical supervision” that includes cholinesterase monitoring.⁵² In Washington State, medical monitoring is required as a result of a 2002 ruling by the Washington Supreme Court, which found that it was “arbitrary” and “unreasonable” that the Washington Department of Labor and Industries (DLI) did not require farmworkers who handle toxicity class I or II organophosphate or N-methyl-carbamate pesticides to be given the option of medical monitoring of their blood cholinesterase levels.⁵³ Notably, in both California and Washington, cholinesterase monitoring appears to be reducing the use of organophosphate and carbamate pesticides and reducing worker exposures by making employers and workers more aware of the effects of these pesticides.⁵⁴

⁵⁰ ROLL BACK MALARIA DEP'T, WORLD HEALTH ORG., MALARIA CONTROL TODAY: CURRENT WHO RECOMMENDATIONS 33 (2005), *available at* http://www.who.int/malaria/publications/mct_workingpaper.pdf (spraying of the organophosphate fenitrothion “requires protective clothing and regular monitoring of cholinesterase activity in the spraymen”); WORLD HEALTH ORGANIZATION, DENGUE HAEMORRHAGIC FEVER: DIAGNOSIS, TREATMENT, PREVENTION AND CONTROL 57 (2nd ed. 1997), *available at* <http://www.who.int/csr/resources/publications/dengue/048-59.pdf> (states that “blood cholinesterase levels should be monitored if organophosphate insecticides are used” in efforts to control disease spread).

⁵¹ Worker Protection Standard, 57 Fed. Reg. 38102-01, 38131 (Aug. 21, 1992).

⁵² Cal. Code Regs. tit. 3, § 6728.

⁵³ *Rios v. Washington Dep't of Labor & Indus.*, 39 P.3d 961, 973, 974 (Wash. 2002).

⁵⁴ PESTICIDE INCIDENT REPORTING AND TRACKING REVIEW PANEL, *supra* note 11, at 77 & Table 35 (describing impact of Washington program); *Rios*, 39 P.3d at 972-73 (noting that implementation of California’s cholinesterase monitoring program reduced exposures to organophosphate and carbamate pesticides).

B. EPA Has Acknowledged the Benefits of Cholinesterase Monitoring

Like the Washington DLI,⁵⁵ EPA has long-recognized the benefits of monitoring workers who handle cholinesterase-lowering pesticides. In 1988, when EPA published a notice of proposed rulemaking for what ultimately became the 1992 revisions to the WPS, it proposed to add a requirement that commercial handlers of organophosphate pesticides be medically monitored for decreases in cholinesterase.⁵⁶ EPA explained that organophosphate and carbamate pesticides “are more acutely toxic to humans than previous pesticides in common use in agriculture.”⁵⁷ It cited and relied on studies showing that “significant or prolonged exposure of workers to organophosphate pesticides can result in ...systemic illness and other adverse health effects.”⁵⁸ Cholinesterase monitoring was proposed as a way to minimize the adverse impacts of these pesticides.

However, when EPA published the Final Rule, it failed to include a cholinesterase monitoring requirement.⁵⁹ EPA explained that this decision was based primarily on the “practical difficulties associated with a nationwide program.”⁶⁰ Notably, EPA reiterated that “the monitoring of employee exposure is a prudent occupational health practice” and it stated its intent to

⁵⁵ One of the grounds the Washington Supreme Court gave for its *Rios* decision was that the DLI had already made cholinesterase monitoring enough of a priority to draft non-mandatory guidelines for medical monitoring and to convene a team of experts to outline the essential components of a monitoring program – showing that DLI was well-aware that cholinesterase monitoring had meaningful health benefits for workers. *Rios*, 39 P.3d at 974.

⁵⁶ Notice of Proposed Rulemaking, Worker Protection Standards for Agricultural Pesticides, 53 Fed. Reg. 25970-02, 25996-25998, 26015 (July 8, 1988). The proposed rule would have required that any worker who handles any organophosphate pesticide on 3 consecutive days or any 6 days in a 21-day period must be monitored for cholinesterase inhibition.

⁵⁷ *Id.*

⁵⁸ *Id.*

⁵⁹ Worker Protection Standard, *supra* note 51, at 38102-01, 38130

⁶⁰ *Id.* at 38131.

reconsider the need for and the appropriate form of exposure monitoring for pesticide handlers after this final Worker Protection Standard has been implemented. This will give the Agency the opportunity to evaluate more thoroughly the ongoing research in this area and the results of new or existing exposure monitoring programs. The Agency expects to issue a proposed rule in this area *in about 3 years*.⁶¹

Nearly twenty years have now elapsed and EPA has not proposed a new rule requiring the “prudent occupational health practice”⁶² of medical monitoring of cholinesterase depression, or any new rules to protect pesticide handlers from exposure to pesticides on the job.

C. There Are Now No Significant Practical Obstacles to a National Medical Monitoring Program

Even if EPA’s concerns about the “practical difficulties” of a nationwide medical monitoring program for cholinesterase-inhibiting pesticides were valid in 1992, such concerns are no longer defensible as two states have already demonstrated the feasibility of implementing such a program. As discussed above, California requires employers of all agricultural workers who regularly handle (mix, load or apply) an organophosphate or carbamate pesticide to provide “medical supervision” through a physician to the employee, and the supervision must include cholinesterase monitoring.⁶³ In addition, Washington State requires employers of agricultural pesticide handlers who use toxicity class I or II organophosphate or N-methyl-carbamate pesticides to implement a medical monitoring program for workers who could meet or exceed the handling threshold for these pesticides of thirty or more hours in any consecutive thirty-day

⁶¹ *Id.* (emphasis added).

⁶² *Id.*

⁶³ Cal. Code Regs. tit. 3, § 6728. Medical supervision must include baseline testing of blood cholinesterase levels, followed by additional blood cholinesterase level determinations within three working days after the conclusion of each 30-day period in which organophosphate and/or carbamate pesticides are regularly handled. *Id.*, § 6728(c). If an employee’s cholinesterase levels fall below 80% of the baseline, the employer must investigate the employee’s work practices, including a review of the safety equipment used and its condition. If an employee’s levels fall more than thirty percent below the baseline, the employer must temporarily remove the employee from occupational exposure to these pesticides until his cholinesterase levels go up to at least 20% of baseline. All medical tests must be performed by a clinical laboratory approved by the State Department of Health Services to perform these tests. *Id.*, §§ 6728(c) and (d).

period.⁶⁴ The same considerations that make cholinesterase monitoring feasible and appropriate in California and Washington apply nationwide. Moreover, these state-wide programs establish models for a nationwide medical monitoring program.⁶⁵ There is no reason that what is now done in California and Washington cannot be replicated in all states where organophosphate and n-methyl carbamate pesticides are used.⁶⁶

⁶⁴ The regulations adopted in compliance with *Rios* require that cholinesterase monitoring be offered to all employees who “handle or will be expected to handle category I or II organophosphate or N-methyl-carbamate pesticides for thirty or more hours in any consecutive thirty-day period.” Wash. Admin. Code § 296-307-148. Washington’s regulations require employers to provide baseline and periodic cholinesterase testing through a department of health public health laboratory or a laboratory approved by the DLI, at no cost to the employee. Periodic testing must be provided within three days after the end of each thirty-day period where the employee meets the handling hour threshold. If an employee’s levels fall more than twenty percent below the baseline, the employer must evaluate the workplace and identify and correct potential sources of pesticide exposure. If an employee’s levels fall more than thirty percent below the baseline, the employer must temporarily remove the employee from occupational exposure to these pesticides until his cholinesterase levels go up to at least 20% of baseline. Wash. Admin. Code §§ 296-307-14815 and 296-307-14825.

⁶⁵ In addition, to these statewide medical monitoring programs, as part of EPA’s reregistration of pesticides, it required worker biomonitoring studies of cholinesterase depression for three pesticides: ethoprop, tribufos, and phosmet. See OFFICE OF PESTICIDE PROGRAMS, U.S. ENVTL. PROTECTION AGENCY, ADDENDUM TO THE 2001 ETHOPROP INTERIM REREGISTRATION ELIGIBILITY DECISION (IRED): REGULATORY DECISION ON THE EMULSIFIABLE CONCENTRATE (EC) FORMULATION OF ETHOPROP 4 (2006), available at http://www.epa.gov/oppsrrd1/reregistration/REDS/ethoprop_red.pdf; OFFICE OF PESTICIDE PROGRAMS, U.S. ENVTL. PROTECTION AGENCY, INTERIM REREGISTRATION ELIGIBILITY DECISION FOR TRIBUFOS 4 (2000), available at http://www.epa.gov/oppsrrd1/reregistration/REDS/tribufos_red.pdf; OFFICE OF PESTICIDE PROGRAMS, U.S. ENVTL. PROTECTION AGENCY, INTERIM REREGISTRATION ELIGIBILITY DECISION FOR PHOSMET 95 (2001), available at http://www.epa.gov/oppsrrd1/reregistration/REDS/phosmet_red.pdf.

⁶⁶ Also, in 1988, as part of the Notice of Proposed Rulemaking for the 1992 WPS revisions, EPA reported that:

. . . at least one national lawn-care company, and at least two major Florida agricultural producers have had cholinesterase monitoring programs in operation for 8 to 12 years. Experts associated with these programs believe that cholinesterase monitoring has been successful in reducing worker exposure to pesticides and identifying workplace situations which require modification. . . . Some commercial applicator firms find cholinesterase monitoring an effective means for

Cost of program implementation should not excuse EPA from failing to require medical monitoring on a national level. EPA acknowledged during the 1988-1992 rulemaking process that cost is not a factor in deciding whether to require cholinesterase monitoring. It stated:

Major agricultural producers with cholinesterase monitoring programs have reported that monitoring of their field workers and handlers has been significant from a profit and loss standpoint. They claim that the cost of their liability insurance premiums (purchasing high deductible policies), plus the cost of their payouts for accidents not covered by insurance (deductible not reached), plus the cost of cholinesterase monitoring, is less than the cost of the liability insurance with low deductible policies.⁶⁷

Given the serious health impacts of continued exposure to organophosphates and n-methyl carbamates, and the fact that employees who handle these chemicals in non-agricultural sectors routinely receive the protection of medical monitoring, the benefits of such a limited program (applicable to only a subset of the most toxic pesticides) must be found to outweigh its costs.

D. EPA Is Legally Obligated to Require Medical Monitoring of Agricultural Workers Who Handle Organophosphates and N-Methyl Carbamates

Given that medical monitoring of pesticide handlers exposed to organophosphates and n-methyl carbamates has clear benefits for workers, and is the standard of care for workers in non-agricultural settings, EPA cannot fulfill its duty to ensure that the use of organophosphate and carbamate pesticides will not cause “unreasonable risk[s]”⁶⁸ to farmworkers unless it mandates this “prudent occupational health practice”⁶⁹ in the WPS.⁷⁰

improved supervision and education of employees who handle pesticides and as a result employees are less likely to experience adverse effects from exposure....

Notice of Proposed Rulemaking, Worker Protection Standards for Agricultural Pesticides, *supra* note 56, at 25970-02, 25996.

⁶⁷ *Id.*

⁶⁸ 7 U.S.C. § 136(bb)(1).

⁶⁹ Worker Protection Standard, *supra* note 51.

⁷⁰ The medical monitoring program adopted by EPA must include, at a minimum the following features: education of workers about the purpose of the monitoring program and how it works; baseline testing of all workers who may be exposed to organophosphate or n-methyl carbamate pesticides each season before any pesticide exposures; follow-up testing at regular intervals for workers who are exposed to these pesticides on more than 3 consecutive days *or* for 30 or more hours within any 30-day period;

IV. The WPS Must Require Closed Systems to Adequately Protect the Health of Pesticide Handlers

FIFRA and Executive Order 12898 also require EPA to amend the WPS to require that closed mixing and loading systems⁷¹ be used when handling a) all pesticide products in toxicity category I or II; b) all pesticides for which the active ingredient is classified by the National Toxicology Program as either known to be carcinogenic to humans or reasonably anticipated to be carcinogenic to humans;⁷² and c) all pesticides for which the active ingredient is classified as a reproductive and/or developmental toxin by EPA or the California Office of Environmental Health Hazard Assessment.⁷³ Pesticide handlers who mix and load toxicity category I and II liquids and wettable powders are often injured due to spills, splashes and blowing powder. It is generally understood that the proper use of closed transfer systems for mixing and loading

confidential notification to workers of the results of their blood tests in English and Spanish within 3 days of the test; requirement that employer maintain the records of blood tests confidentially; clear protection of workers against any form of retaliation if their blood test indicates cholinesterase depression; examination of work practices by the employer if any worker's cholinesterase level falls below 80% of baseline, including a written record of the examination that must be kept on file for 7 years; and temporary removal of workers from exposure in cases where a worker's cholinesterase level falls to 70% or less of baseline, with no loss of pay.

⁷¹ A closed system is a system that “encloses the pesticide to prevent it from contacting handlers or other persons.” 40 C.F.R. § 170.240(d)(4). Some aspects of closed systems include: a mechanical transfer system for liquid formulations in which a probe is inserted into, and seals tightly to, the pesticide container to prevent liquid (but not necessarily vapor) from contacting handlers; a dry-disconnect system involving fittings that minimize leakage at hose disconnect points; and water soluble packaging in which wettable powder formulations and some liquid formulations packaged as gels are packed in water soluble packets that can be placed into the mixing container without opening the package or pouring the pesticide out of its packaging. Pesticide Registration Notice 2000-9, *supra* note 13, at 6-7.

⁷² NATIONAL TOXICOLOGY PROGRAM, U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES, REPORT ON CARCINOGENS (12th ed. 2011), *available at* <http://ntp.niehs.nih.gov/ntp/roc/twelfth/roc12.pdf>.

⁷³ *See* chemicals identified as reproductive toxins in: Proposed Rules, Addition of Certain Chemicals; Toxic Chemical Release Reporting; Community Right-to-Know, 59 Fed. Reg. 1788 (Jan. 12, 1994); Proposed Rules, Addition of Certain Chemicals; Toxic Chemical Release Reporting; Community Right-to-Know, 59 Fed. Reg. 61432 (Nov. 30, 1994); OFFICE OF ENVTL. HEALTH HAZARD ASSESSMENT, STATE OF CA ENVTL. PROTECTION AGENCY, CHEMICALS KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER OR REPRODUCTIVE TOXICITY (2011), *available at* http://www.oehha.ca.gov/prop65/prop65_list/files/P65single072911.pdf.

pesticides reduces the potential for human exposure from spills, splashes and blowing, and that this type of system – rather than PPE -- should be the first line of defense against pesticide exposure.⁷⁴ For this reason, OSHA requires engineering controls — or substitution of less toxic materials — to be implemented whenever feasible, rather than PPE.⁷⁵ Farmworkers should receive no less protection.

A. Compared to PPE, Closed Mixing and Loading Systems Significantly Reduce Handler Exposures

Studies of agricultural workers who have been injured or made ill from pesticide exposures demonstrate that relying on PPE to ensure protection from pesticides is inherently inadequate. For example, although the WPS permits the use of safety glasses to satisfy the requirements for eye protections, the Washington State study found that safety glasses “were not effective in protecting against splashes or wind-blown spray mist.”⁷⁶ In addition, it is well recognized that a full set of protective clothing is “cumbersome and can be very uncomfortable in hot weather, causing workers to shed their protective gear.”⁷⁷ Indeed, an analysis performed

⁷⁴ Roy Rutz, *Closed System Acceptance and Use in California*, in PESTICIDE FORMULATION AND APPLICATION SYSTEMS: SEVENTH VOL. ASTM STP 968. 29 (G.B. Beestman & D.I.B. Vander Hooven eds.1987) (“General industrial hygiene practice prefers that engineering measures be taken to increase the safety of the workplace before resorting to body protection.”); HARVARD R. FONG, AN OVERVIEW OF CLOSED SYSTEM USE IN CALIFORNIA 2001-2002, HEALTH AND SAFETY REPORT: HS-1849 4 (2003), available at <http://www.cdpr.ca.gov/docs/whs/pdf/hs1849.pdf> (“engineering controls should be the first line of defense whenever feasible”; protective systems “should be designed to prevent human exposure and should not require human intervention to eliminate exposure”).

⁷⁵ See, e.g., 29 C.F.R. § 1926.55 (to prevent employee inhalation, ingestion, skin absorption or contact with substances above levels specified by American Conference of Governmental Industrial Hygienists, “engineering controls must first be implemented whenever feasible; when such controls are not feasible to achieve full compliance, protective equipment or other protective measures shall be used....”); 29 C.F.R. § 1910.134(a)(1) (describing “substitution of less toxic materials” as a required engineering control).

⁷⁶ Pesticide Incident Reporting and Tracking Review Panel, *supra* note 11, at 64.

⁷⁷ William W. Jacobs, *CLOSED MIXING AND LOADING SYSTEMS AND PESTICIDE CONTAINERS*, IN PESTICIDE TANK MIX APPLICATIONS: FIRST CONFERENCE 58, 61 (John F. Wright et al. eds., 1982). See also Rutz, *supra* note 74, at 28-34 (“[t]here is an inherent difficulty in wearing increased amounts of protective clothing due to the warm temperatures that are prevalent . . . during much of the time of the year when pesticide use is highest”).

by EPA scientists concluded that wearing a full body Tyvek coverall over a shirt and pants would likely produce an internal body temperature of 38.3 degrees centigrade (or 100.94 degrees Fahrenheit), at the cusp of the body temperature that is considered a sign of heat stress.⁷⁸ Thus, even if a pesticide handler wore full PPE while mixing and loading pesticides, there would be a real risk that heat stress symptoms would reduce his alertness, creating a potential hazard.⁷⁹

Moreover, many employers do not provide adequate PPE to their employees. Among the Washington State pesticide handlers who suffered an acute pesticide related illness in 2008, 56% were missing at least one piece of required PPE; and the most common reason was that the employer did not provide it.⁸⁰ In this circumstance, some farmworkers may be reluctant to request the missing PPE for fear of retaliation; other farmworkers may not make this request because they do not know they are entitled to PPE, or that it is needed. In other instances, the PPE provided by the employer was in poor repair or did not fit well – problems that were especially prevalent with respirators and goggles.⁸¹

Numerous studies have confirmed that, as compared even to properly used PPE, closed systems significantly reduce workers' exposures. The EPA's own Pesticide Handler Unit Exposure Data dramatically illustrates this point. The most recent Occupational Pesticide Handler Unit Exposure Surrogate Reference Table assumes that a pesticide handler mixing and loading wettable powder pesticides would have a dermal exposure of between 130 and 3700 micrograms per pound of active ingredient if he relied on PPE, but only 9.8 micrograms per pound of active ingredient using a closed loading system.⁸² In other words, workers who do not

⁷⁸ Curt Lunchick et al., *Engineering Controls and Protective Clothing in the Reduction of Pesticide Exposure to Tractor Drivers*, in PERFORMANCE OF PROTECTIVE CLOTHING: SECOND SYMPOSIUM, ASTM STP 989 605, 608 (Seymour Zack Mansdorf et al., eds. 1988). An internal body temperature in excess of 38.3 degrees centigrade is a sign of heat stress in which excessive fatigue, physical exhaustion, and dizziness can occur. *Id.*

⁷⁹ *Id.*

⁸⁰ Pesticide Incident Reporting and Tracking Review Panel, *supra* note 11, at 61.

⁸¹ Pesticide Incident Reporting and Tracking Review Panel, *supra* note 11, at 62.

⁸² OFFICE OF PESTICIDE PROGRAMS, *supra* note 6, at 1.

use closed mixing and loading systems are potentially exposed to over 375 times as much of the active ingredient in a pesticide compared to the exposures if closed systems were in place.

EPA's exposure assumptions for mixing and loading both liquid and dry flowable pesticides similarly demonstrate that use of closed systems dramatically reduces worker exposures. A pesticide handler mixing and loading liquid pesticides would have a dermal exposure of between 29.1 and 220 micrograms per pound of active ingredient if he relied on PPE, but only 8.6 micrograms per pound of active ingredient using a closed loading system. A pesticide handler mixing and loading dry flowable pesticides would have a dermal exposure of between 41.2 and 227 micrograms per pound of active ingredient if he relied on PPE, but only 9.8 micrograms per pound of active ingredient using the closed system of water soluble packaging. In both cases, use of closed systems would reduce exposures by over twenty-fold compared to the most basic PPE level.⁸³ Older studies too showed dramatic safety benefits to using closed systems rather than relying exclusively on PPE.⁸⁴

⁸³ *Id.*

⁸⁴ Rutz, *et al.* analyzed nearly 20 years of exposure monitoring data collected by California agencies. They concluded that "when compatible formulation and packaging are available, using a closed system over open pouring (even with practical PPE) can reduce exposure when mixing/loading common liquid formulations." Rutz, *supra* note 74. Likewise, in 1980, researchers in California monitored mixer-loaders and mixer-loader-applicators working with a prototype closed transfer system over a period of 18 weeks. The researchers measured the workers' exposures to organophosphates and n-methyl carbamates using blood and urine biomarkers and by checking pesticide residues on clothes. They found significantly greater exposures among those workers who failed to use the closed system:

On the basis of the pesticides found in air and on clothing, the closed transfer system used in this study was found to be effective in reducing exposure. These results combined with those for blood cholinesterase [and urine biomarkers] indicate that the closed liquid-transfer system studied was substantially better than systems that require pesticides to be hand poured into the mix or vehicle tank.

According to the researchers, "[t]he effect of not using the closed system . . . was dramatic." James B. Knaak, et al., *Safety and Effectiveness in Preventing Exposure to Pesticides*, 24 ARCHIVES OF ENVTL. CONTAMINATION AND TOXICOLOGY 231, 244-245 (1980).

B. Experience Demonstrates The Feasibility of Closed Mixing and Loading Systems

Closed mixing and loading systems are already in wide, though not universal, use around the country, proving the feasibility of requiring this safeguard for pesticide handlers. Since 1974, the State of California has prohibited transferring, mixing or loading liquid pesticides in toxicity category I or diluted liquid mixes derived from dry pesticides in toxicity category I except through a closed system that must be provided by the employer.⁸⁵ In addition, recognizing that closed systems mitigate worker exposures to pesticides, EPA too has required closed mixing and loading systems for certain pesticides. For instance, the reregistration eligibility decisions for the organophosphate pesticides naled, profenofos and dicrotophos require closed mixing and loading systems for all agricultural uses.⁸⁶ For other pesticides, EPA has limited its requirement of closed mixing and loading systems to some contexts. For example, the reregistration eligibility decision for the pesticide oxamyl calls for closed mixing and loading systems, but only when used on cotton in California and Arizona; workers who work in other states or on other crops are not similarly protected.⁸⁷ And for certain pesticides, EPA

⁸⁵ Cal. Code Regs. tit. 3, § 6746(a). California law defines a closed system as “a procedure for removing a pesticide from its original container, rinsing the emptied container and transferring the pesticide product, mixtures and dilutions and rinse solutions through connecting hoses, pipes and couplings that are sufficiently tight to prevent exposure of any person to the pesticide or rinse solution.” Cal. Code Regs. tit. 3, § 6000.

⁸⁶ OFFICE OF PESTICIDE PROGRAMS, U.S. ENVTL. PROTECTION AGENCY, INTERIM REREGISTRATION ELIGIBILITY DECISION FOR NALED 2 (2002), *available at* http://www.epa.gov/oppsrrd1/reregistration/REDs/naled_red.pdf; OFFICE OF PESTICIDE PROGRAMS, U.S. ENVTL. PROTECTION AGENCY, INTERIM REREGISTRATION ELIGIBILITY DECISION FOR PROFENOFOS 3 (2000), *available at* http://www.epa.gov/oppsrrd1/reregistration/REDs/profenofos_red.pdf; OFFICE OF PESTICIDE PROGRAMS, U.S. ENVTL. PROTECTION AGENCY, INTERIM REREGISTRATION ELIGIBILITY DECISION FOR DICROTOPHOS 2 (2002), *available at* http://www.epa.gov/oppsrrd1/reregistration/REDs/dicrotophos_red.pdf.

⁸⁷ OFFICE OF PESTICIDE PROGRAMS, U.S. ENVTL. PROTECTION AGENCY, INTERIM REREGISTRATION ELIGIBILITY DECISION FOR OXAMYL 3 (2000), *available at* http://www.epa.gov/oppsrrd1/reregistration/REDs/oxamyl_red.pdf. *See also* OFFICE OF PESTICIDE PROGRAMS, U.S. ENVTL. PROTECTION AGENCY, INTERIM REREGISTRATION ELIGIBILITY DECISION FOR PIRIMIPHOS-METHYL 22 (2001), *available at* http://www.epa.gov/oppsrrd1/reregistration/REDs/pirimiphos-methyl_ired.pdf (Re-registration Eligibility

merely gives growers the option of closed mixing and loading systems, but does not mandate it.⁸⁸ The fact that EPA mandates closed systems in some circumstances shows that it is certainly feasible to implement this protection more broadly. Furthermore, current use of closed mixing and loading systems in a variety of non-agricultural contexts as required by OSHA⁸⁹ demonstrates that this type of engineering control can be implemented without undue burden or expense.

C. EPA Must Mandate Closed Mixing and Loading Systems

FIFRA requires EPA to protect farmworkers from “unreasonable risks.”⁹⁰ Considering that closed systems for mixing and loading pesticides dramatically decrease pesticide handler exposure and are feasible, failure to require closed systems for mixing and loading the highly toxic pesticide categories set forth above violates FIFRA by imposing “unreasonable risk[s]”⁹¹ on farmworkers. Closed systems are already used extensively in California, and for some pesticides and some uses across the country. There is no reasonable rationale for the continued overexposure of pesticide handlers to high levels of toxic and/or carcinogenic pesticides when the means of protection readily exist.⁹²

Decision for pirimiphos-methyl, calling for closed mixing and loading systems for corn and sorghum, but not other uses).

⁸⁸ See, e.g., OFFICE OF PESTICIDE PROGRAMS, U.S. ENVTL. PROTECTION AGENCY, REREGISTRATION ELIGIBILITY DECISION: THIODICARB 92 (1998), *available at* <http://www.epa.gov/oppsrrd1/REDS/2675red.pdf> (Reregistration Eligibility Decision for thiodicarb, which requires either PPE or the use of engineering controls).

⁸⁹ See note 75, *supra*.

⁹⁰ 7 U.S.C. § 136(bb) (defining the term “unreasonable adverse effects on the environment,” as it appears in 7 U.S.C. § 136a(c)(5) (C) and (D)).

⁹¹ 7 U.S.C. § 136(bb)(1).

⁹² When EPA adopts a nationwide closed mixing and loading system requirement, it should also establish a nationwide interface requirement for pesticide containers so that all containers can work well using the existing designs for closed systems. See AN OVERVIEW OF CLOSED SYSTEM USE IN CALIFORNIA 2001-2002, *supra* note 74, at 18 (identifying as one problem with implementing California’s closed system requirement that container interfaces are non-standardized). The design of pesticide containers is the province of EPA under FIFRA. 7 U.S.C. § 136q(e).

V. The WPS Must Require Enclosed Cabs to Adequately Protect the Health of Pesticide Handlers

The revisions to the WPS must also require that when pesticides are applied by tractor, drivers utilize an enclosed cab equipped with a ventilation system that provides particulate and vapor filtration whenever the application involves: a) any pesticide product in toxicity category I or II; b) any pesticide for which the active ingredient is classified by the National Toxicology Program as either known to be carcinogenic to humans or reasonably anticipated to be carcinogenic to humans⁹³; and c) any pesticide for which the active ingredient is classified as a reproductive and/or developmental toxin by EPA or the California Office of Environmental Health Hazard Assessment.⁹⁴

It is well-known that workers who drive open tractors pulling an airblast sprayer⁹⁵ are at risk of exposure to significantly greater amounts of pesticides than workers applying pesticides in other manners. Indeed, a recent study found that pesticides were “detected significantly more frequently” in air and hand rinse samples from applicators who airblasted than those who hand sprayed, and for all biological exposure measures, pesticides or their metabolites were detected more frequently among air blast applicators than among hand spray applicators.⁹⁶ Likewise in Washington State, the majority of workers who experienced significant cholinesterase depression

⁹³ National Toxicology Program, *supra* note 72.

⁹⁴ See chemicals identified as reproductive toxins in: Proposed Rules, Addition of Certain Chemicals; Toxic Chemical Release Reporting; Community Right-to-Know, 59 Fed. Reg. 1788 (Jan. 12, 1994); Proposed Rules, Addition of Certain Chemicals; Toxic Chemical Release Reporting; Community Right-to-Know, 59 Fed. Reg. 61432 (Nov. 30, 1994); OFFICE OF ENVTL. HEALTH HAZARD ASSESSMENT, STATE OF CA ENVTL. PROTECTION AGENCY, CHEMICALS KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER OR REPRODUCTIVE TOXICITY (2011), *available at* http://www.oehha.ca.gov/prop65/prop65_list/files/P65single072911.pdf.

⁹⁵ Air blast sprayers operate by injecting liquid pesticide into a fast-moving stream of air, thereby breaking down large droplets into smaller particles. *Pesticide Application*, WIKIPEDIA: THE FREE ENCYCLOPEDIA (SEPT. 8, 2011), http://en.wikipedia.org/wiki/Pesticide_application.

⁹⁶ Cynthia J. Hines et al., *Captan Exposure and Evaluation of a Pesticide Exposure Algorithm among Orchard Pesticide Applicators in the Agricultural Health Study*, 52 *Annals of Occupational Hygiene* 153, 157-161 (2008), *available at* <http://annhyg.oxfordjournals.org/content/52/3/153.full.pdf>

had applied the pesticides by airblast sprayer.⁹⁷ Furthermore, the California Department of Pesticide Regulation Pesticide Illness Query (CalPIQ) database includes several examples of pesticide illnesses where label-required PPE failed to protect applicators doing air-blast applications in open cabs.⁹⁸ These examples demonstrate the deficiencies of relying on PPE to protect sprayers during air blast applications.

Because workers who drive tractors with airblast pesticide sprayers are so vulnerable to high exposures to pesticides, EPA must take additional steps to protect them.

A. Enclosed Cabs Significantly Reduce Handler Exposures

As EPA's scientists have concluded, "it is clear that enclosed application vehicles offer a means of reducing applicator exposures to pesticides."⁹⁹ This is especially so for airblast applications. Indeed, the EPA's own Pesticide Handler Unit Exposure Data dramatically illustrates this point. The most recent Occupational Pesticide Handler Unit Exposure Surrogate

⁹⁷ WASHINGTON STATE DEPARTMENT OF LABOR & INDUSTRIES, CHOLINESTERASE MONITORING OF PESTICIDE HANDLERS IN AGRICULTURE: 2008 DRAFT REPORT 9 (Dec. 2008), ("[a]s in previous years, handlers with cholinesterase depression to the action level were generally . . . involved in airblast pesticide application").

⁹⁸ *California Pesticide Illness Inquiry*, CAL. DEP'T OF PESTICIDE REGULATION (1998), http://apps.cdpr.ca.gov/calpiq/calpiq_input.cfm. See Case No. 348 (Fresno 1998) (as an applicator made a turn at the end of a vineyard row, the wind blew the spray mist behind his safety glasses and into his eyes. His eyes began burning later that day and persisted for at least 3 days); Case No. 386 (Madera 1998) (While making an air blast application, a worker noticed his left eye tearing. He flushed the eye with eyewash but the irritation resumed. He thinks contaminated sweat ran behind his safety glasses); Case No. 980 (Stanislaus 1998) (A worker applied esfenvalerate to walnut trees with an air blast sprayer. The wind caught some spray mist and blew it underneath his face shield and into his eyes); Cases No. 50 to 54 and investigation 3-FRE-00 (Fresno 2000) (five workers spent 8 days mixing, loading, and applying esfenvalerate and crop oil to almond trees with open cab tractors pulling air blast sprayers. All reported skin irritation with little visible rash. All the workers reportedly were trained, experienced and used well maintained protective gear that exceeded requirements and had access to appropriate facilities); Case No. 289 (Kings 2001) (an applicator developed a rash while applying propargite to almond trees. He drove an open cab tractor with an air blast sprayer); and Case No. 483 (Fresno 2005) (while towing an airblast sprayer with an open-cab tractor, an applicator removed his safety glasses to improve his sight. He turned to check the spray pattern, and propargite hit him in the face. He was diagnosed with corneal abrasion).

⁹⁹ Lunchick, *supra* note 78, at 607.

Reference Table shows that a pesticide handler driving an open cab tractor with an airblast sprayer would be expected to have a dermal exposure of between 141 and 1770 micrograms per pound of active ingredient if he relied on PPE, but only 14.6 micrograms per pound of active ingredient if he were using an enclosed cab tractor.¹⁰⁰ In other words, workers driving open cabs during airblast pesticide applications risk over 100 times as much dermal exposure to pesticides as workers driving enclosed cabs. Likewise, a pesticide handler driving an open cab tractor with an airblast sprayer would have an inhalation exposure of between .471 and 4.71 micrograms per pound of active ingredient depending on whether he wore a respirator and if so, what type of respirator, but would have an inhalation exposure of only .068 micrograms per pound of active ingredient if he were using an enclosed cab tractor – a potential reduction in exposure of nearly 70-fold.¹⁰¹

B. It Is Feasible to Require Enclosed Cabs

Enclosed cabs are already used for some pesticides across the country.¹⁰² For example, in 2008, Washington State’s Department of Agriculture issued a bulletin requiring enclosed cabs for airblast applications of endosulfan pesticide products in cherries, apricots, nectarines and peaches, without exception, and for apples and pears unless it is not feasible.¹⁰³ In addition, EPA’s regulation of pesticides has recognized that enclosed cabs mitigate worker exposures to pesticides, and it has required this engineering control for certain pesticides. For example, the reregistration eligibility decision for the pesticide ethoprop requires use of enclosed cabs in all

¹⁰⁰ OFFICE OF PESTICIDE PROGRAMS, *supra* note 6, at 2; *see also* Lunchick, *supra* note 76, at 606-07 (summarizing studies finding far higher exposures to pesticides among workers in open cabs than in enclosed cabs).

¹⁰¹ OFFICE OF PESTICIDE PROGRAMS, *supra* note 6, at 2.

¹⁰² California regulations define an enclosed cab as “a chemical resistant barrier that completely surrounds the occupant(s) of the cab and meets those portions of the requirements in American Society of Agricultural Engineers Standard S-525 (Rev. 5/98) that pertain to dermal protection.” Cal. Code Regs. tit. 3, § 6000.

¹⁰³ *Enclosed Cabs Required for Airblast Applications of Endosulfan Products on Fruit Trees*, WASH. DEP’T OF AGRIC. (April 22, 2008), available at <http://agr.wa.gov/Pestfert/Pesticides/docs/Endosulfan.pdf>.

circumstances.¹⁰⁴ For other pesticides, EPA has limited its requirement of enclosed cabs to some contexts. For example, the reregistration eligibility decision for the pesticide formetanate hcl calls for enclosed cabs for applicators using airblast sprayers on orchard fruit.¹⁰⁵ The fact that enclosed cabs are required for some uses in California and Washington, as well as nationally, shows that this type of engineering control is available and is feasible to use.

C. EPA Must Mandate Enclosed Cabs for Airblast Spray Applications

Enclosed cabs dramatically decrease pesticide exposures for drivers of tractors with attached airblast sprayers. Because requiring this protection for all pesticides in the highly toxic categories identified above is entirely feasible as shown by the fact that enclosed cabs are already in use for some pesticides and some uses across the country, failure to require enclosed cabs violates FIFRA by imposing “unreasonable risk[s]”¹⁰⁶ on farmworkers. Accordingly, EPA must not delay in revising the WPS, and any revisions must include a requirement of enclosed cabs for the classes of pesticides described above.

¹⁰⁴ OFFICE OF PESTICIDE PROGRAMS, U.S. ENVTL. PROTECTION AGENCY, ADDENDUM TO THE 2001 ETHOPROP INTERIM REREGISTRATION ELIGIBILITY DECISION (IRED): REGULATORY DECISION ON THE EMULSIFIABLE CONCENTRATE (EC) FORMULATION OF ETHOPROP 3 (2006), *available at* http://www.epa.gov/oppsrrd1/reregistration/REDS/ethoprop_ired_combined.pdf.

¹⁰⁵ OFFICE OF PESTICIDE PROGRAMS, U.S. ENVTL. PROTECTION AGENCY, INTERIM REREGISTRATION ELIGIBILITY DECISION FOR FORMETANATE HYDROCHLORIDE 22 (2006), *available at* http://www.epa.gov/oppsrrd1/REDS/formetanatehcl_ired_mod.pdf.

¹⁰⁶ 7 U.S.C. § 136(bb)(1).

VI. Conclusion

For all of the reasons set forth above, we ask that EPA revise the WPS as soon as possible to include all of the protections set forth above. We would welcome the opportunity to meet with you at your convenience to discuss any aspect of this request.

Sincerely,



Patti Goldman
Eve C. Gartner
Earthjustice
pgoldman@earthjustice.org
egartner@earthjustice.org



Virginia Ruiz
Adriane Busby
Farmworker Justice
vruiz@farmworkerjustice.org
abusby@farmworkerjustice.org

cc: Lisa H. Garcia
Sarah H. Pallone
Steven Bradbury
Lawrence Elworth