To: Pesticide Application Safety Workgroup Members  
From: Megan Dunn, Northwest Center for Alternatives to Pesticides (NCAP), mdunn@pesticide.org  
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RE: Benefits of Pesticide Use Reporting

The Northwest Center for Alternatives to Pesticides (NCAP) respectfully submits the following comments regarding the good neighbor practice of notifying adjacent properties when chemical pesticides are intended to be used and reporting pesticide use. We applaud the State of Washington’s recognition of the extent to which pesticides in agriculture impact our economic and public health. Pesticides are proven or suspected to exert neurological, psychiatric, developmental, hormonal, reproductive, and/or carcinogenic effects. Socially just worker protection regulation is a basic element of agricultural sustainability, along with environmental stewardship and economic viability.

NCAP has worked for over 40 years to reduce pesticides, especially in environments where vulnerable populations, such as school children and farm workers, are at increased risk of exposure. We focus on educating the public about pesticides and their impacts, developing and implementing effective policies and alternatives to pesticides, and involving people at all levels in actions that produce real change.

This document is a summary of studies that conducted based on pesticide use reporting. Below are examples of what Washington can learn from pesticide use reporting; this can lead to informing legislation for protecting community and environmental health.

Over a billion pounds of pesticides are sold every year in the US, but the total millions of pounds that are used in Washington is unknown. Washington does not require reporting of chemical pesticides. Other states, including California, Arizona and New York, require pesticides use reporting and applicators must track and report pesticide use, including how much or how frequently chemicals are applied, where they are applied and when. Oregon passed Pesticide Use Reporting in 1999 but the program was suspended in 2009 due to lack of funds.

Accident reports from the Washington Department of Health provide some data on what pesticide chemicals have been applied (see Appendix for the most recent data from 2011-2012 and health impacts and symptoms). This information provides a limited understanding of pesticide use and acute exposure as well as worker exposure.

Following are links to studies that resulted from the California Pesticide Use Reporting (PUR) data. Having information on what types of pesticides are used, where, and when have been
important for the medical community, environmental justice and human rights community to understand the connections between pesticide exposure and health, including developmental delays in children. These tools have supported public health research and analyses, increased public awareness of pesticides and health (including advocacy efforts and media coverage), and policy changes at the state and county levels.

This is a summary of how the data is accessed in CA:
http://www.cdpr.ca.gov/docs/pur/purmain.htm

One of the most important studies as a result of the California PUR is the CHARGE study, which studied developmental delays and pesticide exposure with proximity to agricultural areas. This study resulted in numerous peer-reviewed articles quantifying the increase of neurodevelopmental disorders in relation to residing near an agricultural area.

California farmers have been required to report pesticide use and the data has helped scientist understand the connections between pesticide exposure and health. One example is the CHARGE study\textsuperscript{ii} on developmental delays and pesticides (the closer you live to agriculture, the higher the likelihood of developmental delays). This important research quantified the increase in Neurodevelopmental Disorders (including autism spectrum disorder) as mothers reside closer to agricultural areas\textsuperscript{iii}. One study found the proximity to organophosphates at some point during gestation was associated with a 60% increased risk for Autism (ASD), higher for third-trimester exposures.

A summary of findings from the CHARGE study on developmental delays and pesticides:
https://ehp.niehs.nih.gov/122-a280/

"Pesticides and Autism Spectrum Disorders: New Findings from the CHARGE Study" Important research that quantified the increase in Neurodevelopmental Disorders as mothers reside closer to agricultural areas: https://ehp.niehs.nih.gov/1307044/

"Neurodevelopmental Disorders and Prenatal Residential Proximity to Agricultural Pesticides: The CHARGE Study." This study found that, "Proximity to organophosphates at some point during gestation was associated with a 60% increased risk for Autism (ASD), higher for third-trimester exposures."

Studies have found that screening tools, such as PUR and the environmental justice screening tool CalEnviroScreen 1.1, can be used to prioritize areas disproportionately burdened by environmental health hazards for action. This analysis found the unadjusted odds of living in one of the 10% most affected zip codes were greater for Hispanics (6.2), African Americans (5.8), Native Americans (1.9), Asian/Pacific Islanders (1.8), and other or multiracial individuals (1.6) than for non-Hispanic Whites. "Environmental hazards were more regressively distributed with respect to race/ethnicity than poverty, with pesticide use and toxic chemical releases being the most unequal."\textsuperscript{iv}
**Pesticides and Schools**

An analysis of pesticide use around 2,511 identified schools found that Hispanic children were 91% more likely than non-Hispanic white children to attend a school near the highest agricultural pesticide use. This study is important for understanding the needs of environmental justice and the disproportionate health hazards for Hispanic communities. These findings supported the development of buffers around school and incentivizing organic agricultural or ‘Agricultural Innovation Zones” near schools or other policy solutions. Researchers assessed public schools in the 15 counties with the highest total reported agricultural pesticide use in 2010, and they linked geographic school data to over 2.3 million pesticide use records. "The top 5% of schools with any pesticide use nearby (45 schools attended by over 35,000 students) had amounts of pesticides applied within 1/4 mile ranging from 2,635-28,979 lb."

Alarcon et. al. analyzed data related to pesticide-related illness at schools from three sources: National Institute for Occupational Safety and Health’s Sentinel Event Notification System for Occupational Risk (SENSOR), California Department of Pesticide Regulation, and Association of Poison Control Center’s Toxic Exposure Surveillance System (TESS). Authors determined incidence rates and severity of acute pesticide-related illness among 2,593 students, parents, and school staff at daycares, elementary and secondary schools between 1998 and 2002. They found that an overall incidence rate of 7.4 cases per million children of acute pesticide-related illness. However, the authors note that these databases likely underreport cases of pesticide illness in children. Approximately 31% of cases were associated with pesticide drift from nearby agricultural land, and most of these cases resulted from insecticide and fumigant applications. A higher proportion of children were exposed from drift events as compared to adults (40% versus 25% respectively).

**Strong Evidence of Drift**

Drift is not legal but occurs as a matter of course, even when adhering to label instructions and best practices. In practice drift is very difficult to avoid. The Washington Aerial Drift study found “spray drift occurring despite adherence to general precautionary pesticide application guidelines.” This 2002 research analyzed a routinely scheduled aerial organophosphorus pesticide application of methamidophos in central Washington and tested the crops and surrounding rural agricultural community.

Additionally, the federal government uses standardized drift modeling in its risk assessment. Models used by the US government to estimate drift (Agdrift) yield estimated drift distances from aerial and airblast spraying in the neighborhood of 300 feet routinely. For example, the EPA’s recently completed biological evaluation for chlorpyrifos estimated 3-6% loss of pesticide from aerial application as far as 300 feet away. Another recently completed EPA risk assessment for imidacloprid estimates the drift fraction at 25 ft away from the spray to be approximately 3% and 1.5% for ground and air-blast applications, respectively.

According to departmental reports from Washington, drift is the most common source of acute illness related to agricultural use of pesticides. During 2005-2012, farm workers suffered 66% of all illnesses from drift, and fifty-six percent of these illnesses were the result
of off-target pesticide drift. It is widely believed that drift incidents are significantly underreported due to worker fears concerning retaliation and intimidation.\textsuperscript{x}

The report: *Effectiveness of Best Management Practices for Aerial Application of Forest Pesticides*, prepared by Washington State Department of Ecology and Timber, Fish and Wildlife from 1993 evaluated best management practices (BMP) effectiveness in meeting water quality standards, forest practice rules and agriculture regulations (including EPA approved pesticide labels requirements). BMPs were not effective at reducing drift and samples found pesticide contaminants in water samples and violations of the label requirements. Most alarming was the provision in Forest Practice Rules on avoiding drift causing direct entry into surface waters was not met in all seven sample cases\textsuperscript{xi}.

**Limitations of PUR**

PUR can provide valuable data to inform long term policy solutions to address drift, accidental exposure, agricultural innovation zones, and buffers zones to protect vulnerable communities, including pregnant women and children. When examining buffers zones around schools in agricultural areas, authors noted that estimating human exposure from Pesticide Use Reporting (PUR) data would likely underestimate exposure as it only includes "residential exposure and not the individual's cumulative exposure across multiple settings."\textsuperscript{xii} It’s important to consider that most cases of accidental exposure and reported pesticide poisonings are under-reported.\textsuperscript{xiii}

Prevention from harm should be the highest priority. We look forward to continuing to work along with concerned stakeholders, as we share the common goal of protecting community health and safeguarding our state agricultural economy, schools, farmworkers and neighbors. Simple rule changes would provide important and needed protections, while strengthening the health of our agricultural workforce and the economy they sustain.

\textsuperscript{i} Kroger, 2005 and Kerry & Kroger, 2012
\textsuperscript{ii} https://ehp.niehs.nih.gov/122-a280/
\textsuperscript{iii} https://ehp.niehs.nih.gov/1307044/


