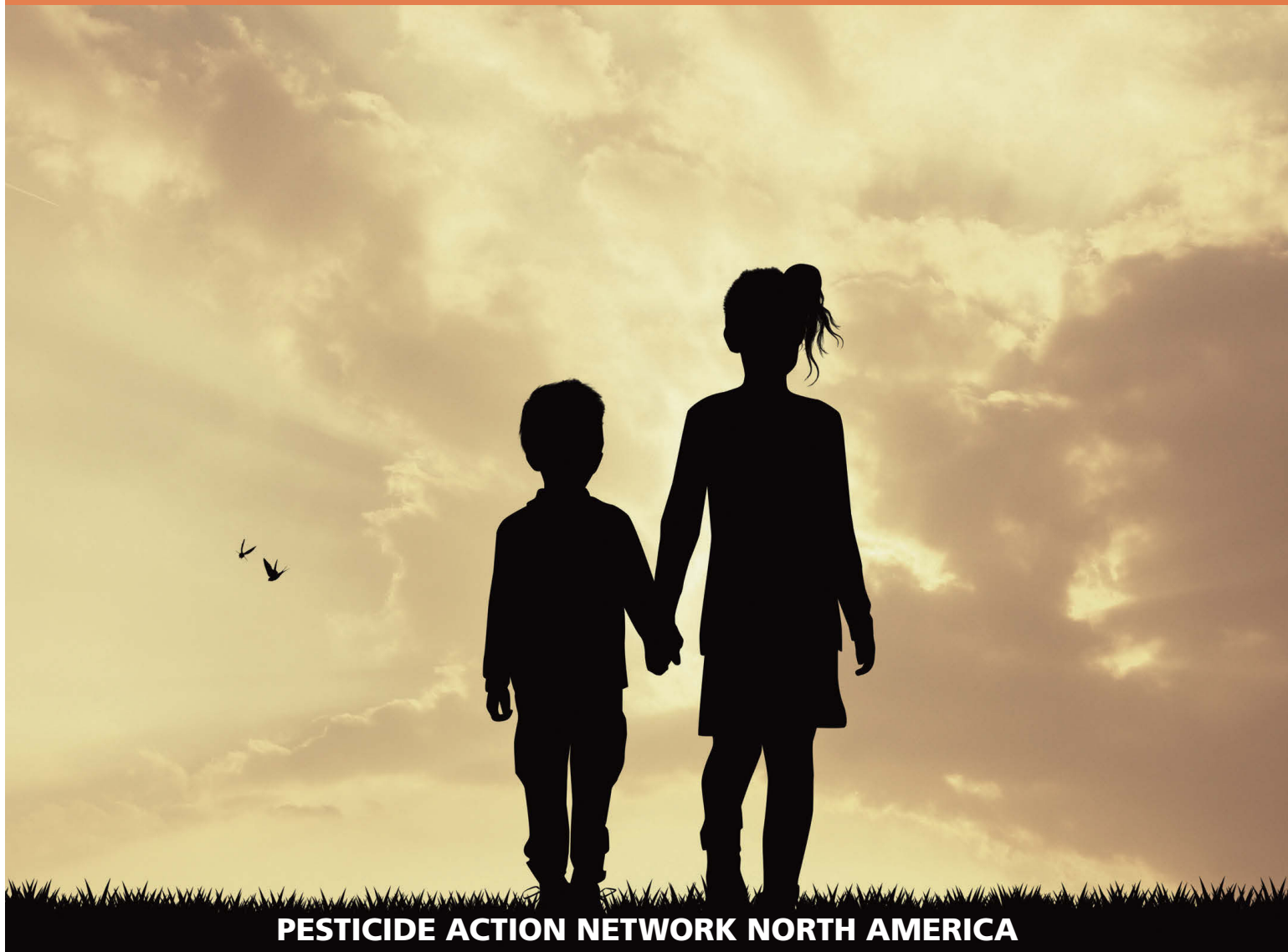


# Kids on the Frontline

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## Executive Summary



**PESTICIDE ACTION NETWORK NORTH AMERICA**

## Kids on the Frontline

# Executive Summary

A little over 100 years ago, Congress enacted the first U.S. pesticide law. The Insecticide Act of 1910 put labeling guidelines in place to protect farmers from unscrupulous vendors attempting to sell pesticide products that didn't perform as advertised.

To this day, we control pesticides through a system of registration and labeling, with a primary goal of getting products to market. The result? Each year, more than 680 million pounds of pesticides are applied to agricultural fields across the country. This 2007 figure—the most recent government estimates available—climbs to more than a billion when common non-agricultural pesticide uses are included.

We believe this is too much. Ever-stronger science shows that even at low levels of exposure, many of these chemicals are harmful to human health—and children's developing minds and bodies are particularly vulnerable. It is also increasingly clear that alternative, less chemical-intensive approaches to farming are not only viable, but would strengthen the resilience of agricultural production.

Put simply, there is no need for our food and farming system to put our children's health at risk from chemical exposure.

*Kids on the Frontline* builds on the findings of *A Generation in Jeopardy*, our 2012 report summarizing the state of the science linking pesticide exposure and children's health harms. In addition to highlighting the latest scientific findings, this new report focuses in on the particular health risks pesticides pose to children in rural agricultural communities.

Rural children experience the same chemical exposures faced by children in communities across the country from pesticide residues on food and applications in schools, parks and homes. They face additional exposures when agricultural chemicals contaminate water supplies or drift from nearby fields. These rural exposures and their impacts on children's health are the primary focus of this report. We examine the particular vulnerabilities of children in rural communities, highlight the results of studies in rural and agricultural areas, and present specific data on four agricultural states—California, Hawai'i, Iowa and Minnesota—that tell distinct stories of pesticide exposure in rural communities.

### Key findings

Scientists have understood for decades that children are particularly vulnerable to the harms of pesticide exposure. Quickly growing bodies take in more of everything; they eat, breathe and drink more, pound for pound, than adults. As physiological systems undergo rapid changes from the womb through adolescence, interference from pesticides and



Ever-stronger science shows that even at very low levels of exposure, pesticides are harming children's health.

industrial chemicals—even at very low levels—can derail the process in ways that lead to significant health harms.

For children, the timing of these exposures is often particularly important. At critical moments of development, even very low levels of pesticide exposure can derail biological processes in ways that have harmful, potentially lifelong effects.

In our review of government health trend data and recent academic research, we found the following:

**Overall, childhood health problems continue to climb.** Childhood cancer incidence continues to rise (see Figure A), as do rates of autism spectrum disorder, attention deficit hyperactivity disorder and other developmental disabilities. Some birth defects are also on the rise.

**Fast-rising childhood cancers have strong links to pesticides.** Evidence linking pesticide exposure to increased risk of leukemia and brain tumors continues to mount, with new “meta-analysis” studies pointing to higher risks among children in rural agricultural areas. Incidence of these two cancers is rising more quickly than other types of childhood cancer.

**More science links pesticides and neurodevelopmental harms.** The body of evidence linking prenatal pesticide exposure to childhood brain and nervous system harms was already very strong in 2012, and it has gotten stronger. New studies link increased risk of developmental disorders and delays—including autism spectrum disorder—to prenatal proximity to agricultural fields where pesticides are sprayed.

**Rural children’s “double dose” of pesticide exposure is cause for concern.** Children in agricultural communities are exposed to pesticides above and beyond the widely shared exposures from food residues and applications in schools, parks, homes and gardens. In some cases, these children also experience economic and social stressors that can exacerbate the health harms of agricultural chemicals. Across the country, rural children are on the frontlines of pesticide exposure.

## Recommendations

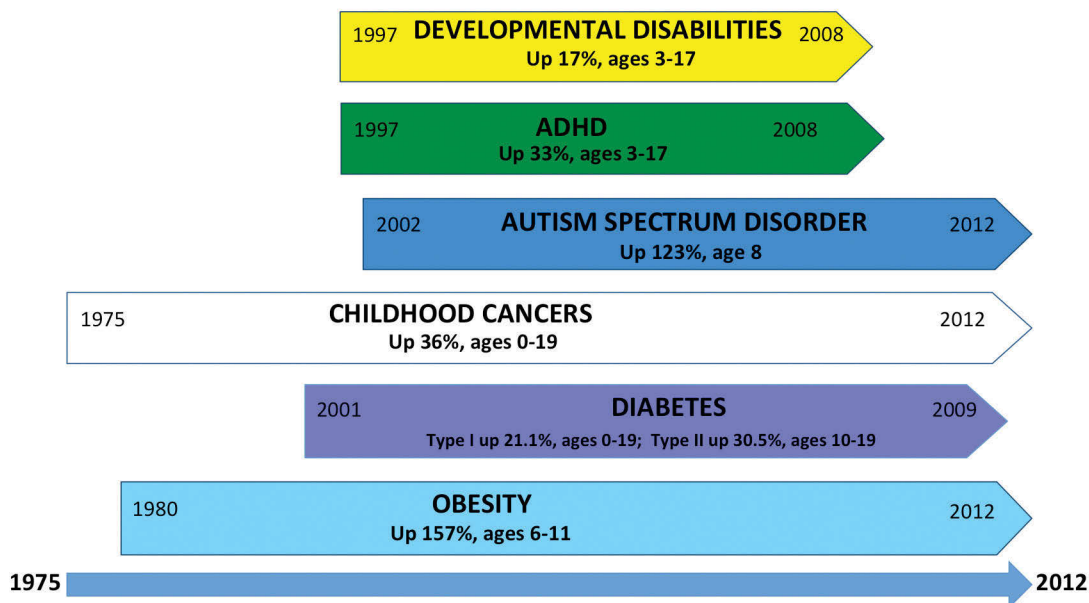
The best way to protect children from pesticide harms is to dramatically reduce the volume of use nationwide. We believe this shift is both achievable and long overdue.

The burden of protecting children from dangerous chemicals cannot rest with individual families; policy change is required. Our recommendations below reflect both the current momentum toward building a healthier national system of food and farming, and the growing urgency of the pesticide problem. Though non-farm pesticide applications can also put children in harm’s way, these recommendations

focus specifically on protecting children from exposure to agricultural pesticides.

- 1. Reduce overall pesticide use.** It’s time to set an ambitious national use reduction goal for agricultural pesticides. Once this goal is in place, policymakers at all levels should act quickly to implement strong policies and programs to reach the goal—including, among other measures, publicly accessible use reporting systems to track progress.
- 2. Protect children first.** Our national use reduction goals should prioritize action on those pesticides most harmful to children. In addition, protective pesticide-free buffer zones should be established around schools, daycare centers and other sensitive sites in rural agricultural areas across the country.
- 3. Invest in healthy, innovative farming.** We need to provide significant and meaningful support, incentives and recognition for farmers stepping

**Figure A: Childhood Health Harms on the Rise, 1975–2012**



Public health statistics show steady increases in many childhood diseases and disorders over the past 30 years. Those highlighted are just some of the health harms on the rise.

Sources: SEER Cancer Statistics Review 1975-2012, National Cancer Institute; Boyle, Coleen A., et al. "Trends in the Prevalence of Developmental Disabilities in US Children, 1997–2008." *Pediatrics* 127, no. 6 (June 2011): 1034–42. doi:10.1542/peds.2010–2989; Ogden, Cynthia L., et al. "Prevalence of Childhood and Adult Obesity in the United States, 2011–2012." *JAMA* 311, no. 8 (February 26, 2014): 806. doi:10.1001/jama.2014; Dabelea, Dana, et al. "Prevalence of Type 1 and Type 2 Diabetes Among Children and Adolescents From 2001 to 2009." *JAMA* 311, no. 17 (May 7, 2014): 1778. doi:10.1001/jama.2014.3201.

off the pesticide treadmill. National and state programs must prioritize investment in healthy, sustainable and resilient agricultural production.

These commonsense measures are both ambitious and achievable. The current, continuous increase in pesticide use ignores accumulating scientific evidence of human health harms. This is unacceptable.

### What's standing in the way?

Our current system of industrial agriculture and pest control relies on chemical inputs sold by a handful of corporations. These multinational entities wield tremendous control over how we grow our food, from setting research agendas in public institutions to production and sale of farm inputs including seeds, fertilizers and pest management products.

Not surprisingly, these same corporations also hold significant sway in the policy arena, investing millions of dollars every year to influence voters and policy-makers at the local, state and federal levels. Their aim is to protect the market for pesticides, seeds and other agrichemicals. As public concern about the health impacts of pesticide products has grown in recent years, the pesticide industry has also invested heavily in public relations campaigns to influence the national conversation about food and farming.

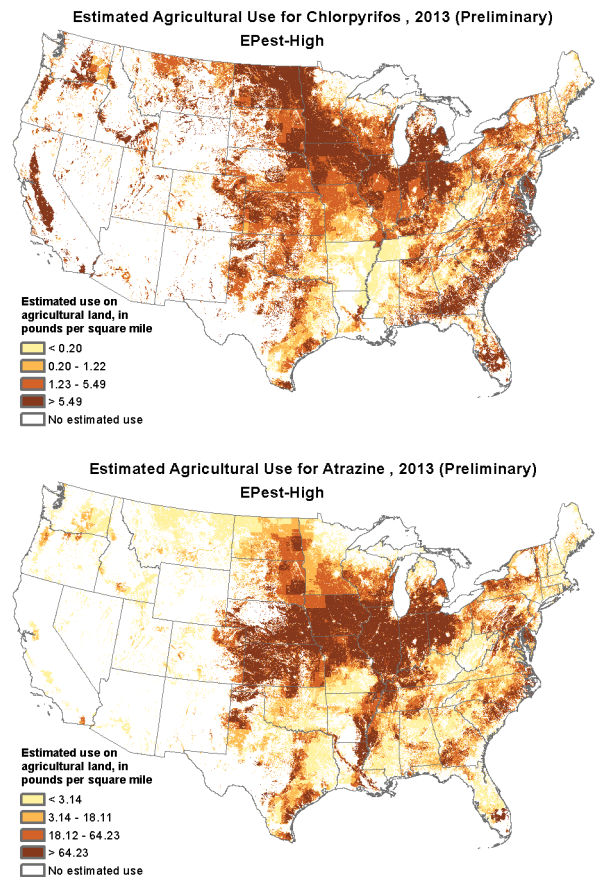
The result is a system of food and farming that serves the interests of these corporations well.

It does not, however, adequately protect public health or serve the common good. Farmers, farmworkers and their families are regularly exposed to chemicals known to harm human health. The health of children in rural communities is compromised by near continuous exposure to pesticides where they live, learn and play.

We are increasingly optimistic that the commonsense changes we propose are within reach. As the science linking pesticides with children's health harms grows ever stronger, awareness of the problem, as well as support for real solutions, continues to grow. In addition, on-the-ground evidence from the U.S. and around the world shows us that implementing our recommendations would boost—rather than undermine—the quality and quantity of food available.

We can and must fix this broken system. It's time to support farming practices that sustain our agricultural economy and produce abundant, healthy food that is accessible to all.

**Figure B: Estimated Agricultural Use for Two Pesticides, 2013**



These maps from the U.S. Geological Service (USGS) show national use patterns for two widely used pesticides, out of more than 1,200 currently registered for use in the United States. Chlorpyrifos is an insecticide used on a wide range of crops across the country; atrazine is an herbicide heavily used on corn, soy and other row crops.

Sources: Thelin, G.P., and W.W. Stone. "Estimation of Annual Agricultural Pesticide Use for Counties of the Conterminous United States, 1992–2009." U.S. Geological Survey Scientific Investigations Report, 2013–5009. USGS, 2013; "U.S. Geological Survey, National Water-Quality Assessment (NAWQA) Program." *Pesticide National Synthesis Project*, April 14, 2016. <http://water.usgs.gov/nawqa/pnsp/usage/maps/about.php#limitations>.

Note: USGS estimates use of about 480 pesticides based on a combination of use data compiled by proprietary surveys of farms and county-reported harvested acreage. Estimations based on neighboring counties were used for areas that did not report harvested acreage. The reliability of these estimates generally decreases with the scale of use. These maps reflect the higher end of these estimates for use in 2013.