



# PESTICIDES AND CHILDREN'S HEALTH

Children and other sensitive populations have no choice but to live and work in close proximity to areas where restricted use pesticides are being sprayed. Of greatest concern are restricted use pesticides, many of which scientists have definitively linked to developmental delays in children as well as long-term health effects, including cancer and other serious diseases, decreased cognitive function, and behavioral problems. Buffer zones, or designated no spray areas, provide common sense solutions for protecting children from exposure to toxic pesticides.

## IMPACT OF PESTICIDES ON CHILDREN'S HEALTH

- Early life pesticide exposure has been linked to long-term health effects including cancer,<sup>1</sup> decreased cognitive function,<sup>2</sup> behavior problems,<sup>3</sup> birth defects and other adverse birth outcomes,<sup>4</sup> and asthma.<sup>5</sup>
- Toxic exposure to pesticides during fetal, neonatal, and infant life can disrupt critical developmental processes.<sup>6</sup>
- Exposure to pesticide drift causes numerous short-term impacts that include headaches, dizziness, difficulty breathing, nausea, vomiting, weakness, chest pain, fatigue, rashes, and eye ailments.<sup>7</sup>
- Longer-term exposure to drift is also hazardous. Epidemiological studies show greater risk of diseases such as autism,<sup>8</sup> Parkinson's disease,<sup>9</sup> and childhood leukemia<sup>10</sup> for people living near agricultural fields sprayed with pesticides, suggesting that exposure via drift is responsible.
- Scientists have found increased rates of depression and impaired cognitive functioning in people exposed acutely to certain toxic pesticides.<sup>11</sup>

## INCIDENTS OF EXPOSURE

- In Hawaii, there have been at least six episodes of pesticide-induced illness at schools since just 2006. Teachers and schoolchildren in Waimea on Kaua'i have reported becoming sick on three separate occasions following chemical applications to a nearby seed corn plot.<sup>12</sup>
- In a 2008 episode, 60 children and at least two teachers experienced headaches, dizziness, nausea and/or vomiting; 10 or more children were treated at an emergency room; several were put on a nebulizer to relieve respiratory distress; and one was given an anti-vomiting medication intravenously.
- In 2014, 31 students and staff at Kahaluu Elementary School experienced nausea, burning eyes, shortness of breath, dizziness, sore throat and coughing, and 26 were evacuated to and treated at nearby hospitals, due to a strong chemical odor that the Fire Department linked to reports of pesticide spraying in the area.

- These incidents likely represent a small fraction of actual pesticide poisoning cases. As acknowledged by our EPA, "many [pesticide drift] incidents are unreported."<sup>14</sup>
- Often victims of pesticide poisoning do not seek medical attention and California officials have found that "[p]hysicians often do not report potential pesticide illnesses,"<sup>15</sup> because many physicians are unaware of the effects of pesticide poisoning.
- Hawai'i does not have a "pesticide poisoning surveillance program" of the sort established in 11 other states – California, Florida, Iowa, Louisiana, Michigan, Nebraska, New York, North Carolina, Oregon, Texas and Washington. Such a program, if established in Hawaii, would likely capture many more pesticide-induced illnesses.

## WHY THE STATE NEEDS TO SUPPORT PROTECTIONS AGAINST PESTICIDES

- A buffer zone establishes a designated area where pesticides cannot be directly applied, thereby providing a common sense solution for communities who are increasingly concerned about pesticide drift from large agricultural operations in their community.
- Due to Hawaii's population density and the islands' relatively small land size, restricted use pesticides are applied in close proximity to populated areas, which means people in both rural and urban areas are at risk of drift exposure to toxic pesticides.
- The American Academy of Pediatrics and other medical scientists recognize pesticide drift as a health threat to

children and recommend no-spray zones for schools.<sup>16</sup> There are at least 25 schools in Hawaii that are within one mile or less of large agricultural operations using heavy amounts of restricted use pesticides annually.

- Such regulations are in line with 31 other states who understand that it is vital to protect children and sensitive populations from the toxic impacts of pesticide use by regulating their use on or around schools.

## LACK OF EPA REGULATION

- We would all like to believe that EPA protects us from pesticide harms. But sadly, this is often not the case.
- One clear example of EPA's deficient regulation is chlorpyrifos, the organophosphate (OP) insecticide used heavily in Hawaii, and implicated in many of the serious health threats described above. EPA knows that chlorpyrifos is toxic, which explains why it began a phase-out of residential uses of the insecticide in the year 2000 (but not agricultural uses), specifically to protect children.<sup>17</sup>

Full citations available upon request. Please email: [hioffice@centerforfoodsafety.org](mailto:hioffice@centerforfoodsafety.org).

## WHAT YOU CAN DO

View our Full Pesticide Report Online and Join Our True Food Network:  
[www.centerforfoodsafety.org](http://www.centerforfoodsafety.org)

<sup>1</sup> Infante-Rivard C, Labuda D, Krajcinovic M, Sinnett D. 1999. Risk of childhood leukemia associated with exposure to pesticides and with gene polymorphisms. *Epidemiology*, 10(5): 481-487.

<sup>2</sup> Rauh V, Arunajadai S, Horton M, et al. 2011. Seven-year neurodevelopmental scores and prenatal exposure to chlorpyrifos, a common agricultural pesticide. *Environ Health Perspect*, 119(8): 1196-1201.

<sup>3</sup> Roberts EM, English PB, Grether JK, Windham GC, Somberg L, and Wolf C. 2007. Maternal Residence near Agricultural Pesticide Applications and Autism Spectrum Disorder among Children in the California Central Valley. *Environmental Health Perspectives*, 115(10): 1482-1489.

<sup>4</sup> Garry VF, Harkins ME, Erickson LL, Long-Simpson LK et al. 2002. Birth Defects, Season of Conception, and Sex of Children Born to Pesticide Applicators Living in the Red River Valley of Minnesota, USA. *Environmental Health Perspectives*, 110 (Suppl. 3): 441-449.

<sup>5</sup> Salam MT, Li YF, Langholz B, Gilliland FD; Children's Health Study. 2004. Early-life environmental risk factors for asthma: findings from the Children's Health Study. *Environmental Health Perspectives*, 112(6): 760-765.

<sup>6</sup> Shelton, JF et al. 2014. Neurodevelopmental Disorders and Prenatal Residential Proximity to Agricultural Pesticides: The CHARGE Study. *Environmental Health Perspectives*, 122(10): 1103-1110.

<sup>7</sup> CA PISP. (1992-2011). Based on symptoms reported in records obtained from a search of agricultural drift episodes in California from 1992-2011. CA Pesticide Illness Surveillance Program Illness Query database, search conducted 7/12/14. <http://www.cdpr.ca.gov/docs/whs/pisp.htm>.

<sup>8</sup> Ibid.

<sup>9</sup> Costello, S. (2009). "Parkinson's disease and residential exposure to maneb and paraquat from agricultural applications in the central valley of California." *American Journal of Epidemiology*, 169(8): 919-926.

<sup>10</sup> Rull RR, Gunier R, Von Behren J, Hertz A, Crouse V, Buffler PA, and Reynolds P. 2009. Residential Proximity to Agricultural Pesticide Applications and Childhood Acute Lymphoblastic Leukemia. *Environmental Research*, 109(7): 891-899.

<sup>11</sup> Stallones, L. & C. Beseler. (2002). "Pesticide poisoning and depressive symptoms among farm residents." *Annals of Epidemiology*, 12: 389-394.

<sup>12</sup> Leone, D. (2008). "Odor that got kids sick debated." Honolulu Advertiser, February 24, 2008. Available at: <http://the.honoluluadvertiser.com/article/2008/Feb/24/In/hawaii802240350.html>.

<sup>13</sup> Alarcon WA et al. 2005. Acute illnesses associated with pesticide exposure at schools. *Journal of the American Medical Association*, 294(4): 455-465.

<sup>14</sup> EPA (2001). "Pesticide Registration (PR) Notice 2001-X Draft: Spray and Dust Drift Label Statements for Pesticide Products." Office of Pesticide Programs, Environmental Protection Agency, 2001.

<sup>15</sup> Roberts, J. R. & C. J. Karr. (2012). "Pesticide Exposure in Children." Council on Environmental Health. *Pediatrics*, 130(6): e1757-e1763. Available at: <http://pediatrics.aappublications.org/content/130/6/e1757.full.html>

<sup>16</sup> Ibid.