

New Information and Insights on Pesticide Exposures and Risks: An EcoFarm Update

Dr. Charles Benbrook
Chief Scientist, The Organic Center



"Successes and Lost Opportunities to Reduce Children's Exposure to Pesticides Since the Mid-1990s," Organic Center Critical Issue Report, August 2006

We compared the impacts of new pesticide chemistry, Integrated Pest Management (IPM), ecolabels, organic farming, and regulation – in particular, the Food Quality Protection Act (FQPA) -- on pesticide dietary risks to children. Risk reduction impacts of the FQPA and IPM have been modest. New pesticide chemistry has significantly reduced risks, but organic farming is shown to be the most reliable way to dramatically reduce pesticide dietary risks. Access the 41-page report, and a two-page summary at – http://www.organic-center.org/science.pest.php?action=view&report_id=55

"Impact of Prenatal Chlorpyrifos Exposure on Neurodevelopment in the First 3 Years of Life Among Inner-City Children," *Pediatrics*, November 2006

A summary of this important Columbia University study is posted at – http://www.organic-center.org/science.pest.php?action=view&report_id=74

In previous work by the team led by Dr. Robin Whyatt, significant impacts of chlorpyrifos exposures on birth weight and length were found. The new research focuses on the neurological development of the children at 12, 24, and 36 months of age.

At 36 months of age, children in the high exposure group were 4.9 times as likely to display mild to significant psychomotor skill developmental delays, compared to the low exposure group of children. Highly-exposed children were also 2.4 times more likely to have impaired mental abilities, five-times more likely to develop attention-deficit/hyperactivity disorder (ADHD), and were almost ten-times more likely to have attention problems. (Email cbenbrook@organic-center.org for a pdf copy of the study).

"Update on Chlorpyrifos Use, Exposures, and Risk"

By the end of 2001 almost all indoor uses of chlorpyrifos had stopped, but significant agricultural use continues. In order to demonstrate that significant dietary exposures are ongoing, the Center posted a chlorpyrifos use and exposure update at – http://www.organic-center.org/science.pest.php?action=view&report_id=75

One table shows major crop uses in 2001, prior to EPA actions, and again in 2005. Total agricultural use on 20 major crops actually went up by 1%, to 4,937,00 pounds in 2005.

A second table reports residues in four foods from USDA “Pesticide Data Program” (PDP) testing in 2004. The frequency of residues and mean residue levels are compared for domestic grown and imported strawberries, tomatoes, grapes, and bell peppers. The differences are striking – imported produce was, on average, 16-times more likely to contain residues, and the mean levels were 2.8 times higher. Results from 2005 PDP testing found chlorpyrifos residues in 13 out of 17 foods tested.

“Organophosphate Insecticides Target the Serotonergic System in Developing Rat Brain Regions: Disparate Effects of Diazinon and Parathion at Doses Spanning the Threshold for Cholinesterase Inhibition,” *Environmental Health Perspectives*, October 2006

Slotkin et al. found that some OPs impair neurological development at doses four to five-times lower than the doses causing detected levels of acetyl cholinesterase inhibition. Also, different OPs impair development through different mechanisms. These findings undermine the scientific basis for the just-completed ten-year review of the OPs under the Food Quality Protection Act. Access a summary and the full article at -- http://www.organic-center.org/science.hot.php?action=view&report_id=70

“Pesticides in Milk FAQs”

In response to media and other inquiries about new USDA data showing a sharp increase in pesticide residues in milk between 1996-1998 and 2004, the Center developed a set of Frequently Asked Questions about pesticides in milk. In 2005 testing, the USDA found a synthetic pyrethroid insecticide residue in about 45% of the samples of conventional milk, and on average, about 2.5 residues per sample. Access the FAQs at -- http://www.organic-center.org/science.pest.php?action=view&report_id=79

“Pesticides in the Nation’s Streams and Ground Water, 1992-2001,” USGS Circular 1291, 2006

The USGS reports that pesticides have become ubiquitous contaminants throughout the hydrogeological cycle. Every stream sampled contained one or more positive sample and in agricultural areas, 97 percent of the samples had one or more pesticides. Over 90 percent of fish in farming regions had detectable levels of pesticides. Plus, just under 10 percent of all stream water samples in agricultural areas contained pesticides above “human-health benchmarks,”

http://www.organic-center.org/science.hot.php?action=view&report_id=47

A Pesticide Use and Risk “Science Map”

The Center develops detailed bibliographies of studies in key areas of science relevant to our work. The pesticide bibliography is extensive: 214 references, 82 pages, access at -- http://www.organic-center.org/science.pest.php?action=view&report_id=80