

Reproductive Health Effects of Pesticide Exposure: Issues for Farmworker Health Service Providers

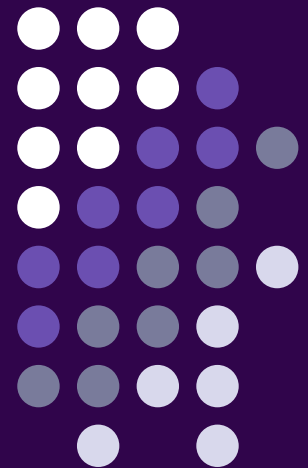
Pamela Rao, PhD
Farmworker Justice

1126 16th St NW, Suite 270

Washington, DC 20036

202-293-5420

prao@farmworkerjustice.org



Pesticides used in agriculture



- Insecticides: neurotoxins
 - Organochlorines: bioaccumulative and persistent in environment; now generally banned in US
 - Example: dichlorodiphenyl trichloroethane (DDT)
 - Organophosphates, carbamates: less persistent than OCs
 - Pyrethroids: synthetic forms of naturally occurring plant pesticides; considered less toxic
- Herbicides, fungicides, soil fumigants, growth regulators: varying modes of action

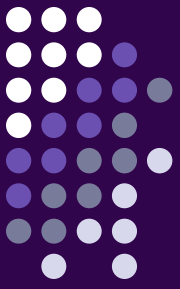
Human health effects of pesticide exposure



Exposure to pesticides at any point in the life cycle can have health effects that are:

- Acute: short duration
- Chronic: ongoing
- Short-term: immediate
- Long-term: latent

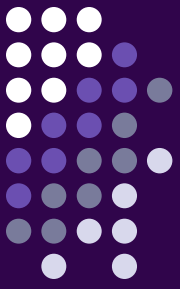
Reproductive health effects are commonly *long-term*.



Exposure pathways

- Sources
 - residential
 - community, e.g., schools, public areas
 - agricultural
 - occupational
- Types
 - ingestion in food or water
 - inhalation
 - contact with skin or eyes
- Take-home pathway: issue for farmworkers

Pesticide exposure during the reproductive cycle



This presentation will review the implications for birth outcomes and infant health of maternal exposure to pesticides during the following periods in the reproductive cycle:

- Preconception: 3 months preceding to 1 month following last menstrual period
- Prenatal: *in utero*
- Neonatal: breast feeding

Note: This presentation will *not* address direct pesticide exposure or postnatal child development



Preconception exposure

Defined as 3 months preceding to 1 month following last menstrual period:

- Important for farmworker women
 - spontaneous abortion
 - neural tube defects
- Also an issue for farmworker men
 - reduced sperm count, quality
 - fertility problems (due to interference with thyroid function)
 - associated with
 - birth anomalies, miscarriage
 - lower-than-expected male-to-female sex ratio (due to interference with testosterone)



Prenatal (*in utero*) exposure

- congenital anomalies
- lower birth weight, smaller head circumference, shorter birth length
- problems with brain development (due to endocrine disruption)
- spontaneous abortion, stillbirth

Example: AgMart Farms, Florida and North Carolina, late 2004



Neonatal & breast feeding

- Especially vulnerable until biological protective features are in place, e.g., enzymes, blood-brain barrier
- Shorter period of lactation
- Pesticides may pass through breast milk, but--

the known benefits of breast feeding still far outweigh any potential risks

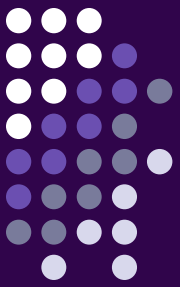
Clinical recommendations:

Patient education



- Inform women who are pregnant or planning a pregnancy of the implications of exposure before, during and after pregnancy
- Encourage women to avoid dietary and other forms of exposure to pesticides along with smoking and alcohol during pregnancy and lactation
- Offer or arrange patient education for women in farmworker households on reducing take-home exposure; farmworkers should:
 - remove work clothes and shoes before entering the home
 - shower or bath upon returning home and before touching other people
 - store and launder dirty work clothes separately from other clothing

Clinical recommendations: Office visit



- Obtain an environmental history:
 - residential and employment histories
 - types of work activities performed currently and in the relevant past
 - other possible sources of exposure to biological or chemical agents
- For each exposure source identified, ask about:
 - frequency
 - duration
 - intensity
- Strongly encourage continued breast feeding

For more information



- Wake Forest University School of Medicine, Department of Family & Community Medicine. *Immigrant Worker Research Projects: Research and Educational Materials*. Winston-Salem, NC: WFUSM, 2008. Available at: http://www1.wfubmc.edu/fam_med/Research/Educational
- National Environmental Education & Training Foundation. *Implementation Plan for the National Strategies for Health Care Providers: Pesticides Initiative*. Washington DC: NEETF, 2002. Available at <http://www.neefusa.org/health/pesticides/index.htm>
- National Environmental Education & Training Foundation. *National Pesticide Practice Skills: Guidelines for Medical & Nursing Practice*. Washington DC: NEETF, 2003. Available at <http://www.neefusa.org/health/pesticides/PesticidesGuidelinePublications/Practice.htm>
- Additional NEETF pesticide-related links and documents for health care providers available at <http://www.neefusa.org/health/Resources/healthcare.htm>
- Physicians for Social Responsibility. *Pesticides and Human Health: A Resource for Health Professionals*. Santa Monica, CA: PSR, 2000. Available at <http://www.psrla.org/resources.htm>
- International Conference on Fetal Programming and Developmental Toxicity. *The Faroes Statement: Human Health Effects of Developmental Exposure to Chemicals in Our Environment* (international consensus statement of the knowledge state of the art). Available online at <http://www.pptox.dk/Consensus/tabid/72/Default.aspx>
- Reigart J Routt, Roberts James R. *Recognition and Management of Pesticide Poisonings, Fifth Edition* (English and Spanish). Washington DC: US Environmental Protection Agency, Office of Pesticide Programs, 1999. Available at <http://www.epa.gov/oppfead1/safety/healthcare/handbook/handbook.htm>
- Moses, Marion. *Health Impacts of Pesticides: Acute and Chronic. A Guide for Health Care Providers*, forthcoming (will be posted at <http://www.farmworkerjustice.org/resources1.htm> when available).

Acknowledgements



- This presentation is a joint project of Farmworker Justice and Migrant Clinicians Network, supported by the Health Resources and Services Administration's Bureau of Primary Health Care.
- *The contents of this presentation are solely the responsibility of Farmworker Justice and do not necessarily reflect the official views of the Bureau of Primary Health Care or the Health Resources and Services Administration.*