

# Research Highlight

## Pesticide Exposure and Stillbirth Risk in Arizona

### The Issue

Pesticides are widely used in agriculture, landscaping, and public health settings to control pests, mosquitoes, and improve crop yields. However, exposure to pesticides poses significant risks to human health and the environment, particularly for highly exposed populations such as farmworkers, children, and low-income communities living near agricultural zones. Acute and chronic exposure to pesticides has been linked to respiratory issues, endocrine disruption, cancer, and neurological disorders.

### The Research

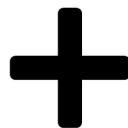
A research team led by **Melissa Furlong**, PhD, a SWEHSC faculty member, conducted the Arizona Pregnant Women's Environment and Reproductive Outcomes Study (AZ-PEARS) — the first study to link:



#### Statewide pesticide use reporting (PUR) -

Grower submitted info on pesticide application to AZ Department of Agriculture, which is entered into the AZ Pest Management Center's Pesticide Use Database

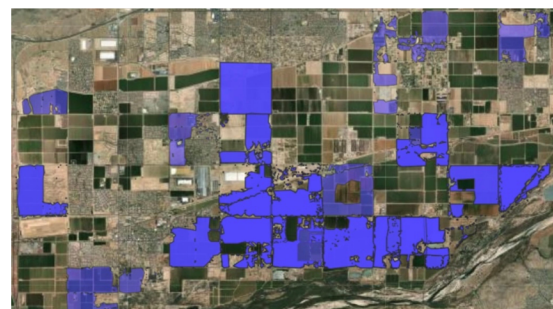
And



Every birth certificate in Arizona (2006–2020)



Melissa Furlong, PhD



This map is an example of data from the PUR - darker blue areas are where more applications of pesticides occurred

### What was Found?

**Significant associations** between **pesticide exposure** during **early pregnancy**, which includes preconception (the prior 3 months to pregnancy), and the 1st trimester and **stillbirth**.

### Why it is Important?

Farmworkers, many of whom are from historically marginalized communities, face disproportionate risks. Also, dust storms in the Southwest can reintroduce pesticide particles into the air.

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What are the Key Pesticides Identified?



Cyfluthrin (e.g.  
Baythroid)



Zeta-cypermethrin  
(e.g. Sevin)



Malathion



Acephate

Who is Most at Risk?

- **Pregnant people or people trying to conceive:** Greater sensitivity to toxic effects due to developmental vulnerability.
- **Children:** Higher exposure per body weight and behaviors that increase risk (e.g., playing on treated lawns), as well as developing bodies that take longer to metabolize and eliminate pesticides from their bodies.
- **Pesticide applicators:** Often exposed during mixing, spraying, and cleanup.
- **Farmworkers:** Significant exposure occurs not just from spraying, but from contact with crops that have been recently treated.
- **Elderly and immunocompromised individuals:** Lower resilience to toxic effects.
- **Communities near agricultural zones:** Increased risk of exposure through drift, resuspended soil, and water contamination.

## Ongoing Research

Dr. Furlong and her team are continuing to investigate:

- Other health outcomes
- Additional exposure windows
- Protective strategies for vulnerable populations



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## Paper Citation

Furlong MA, Paul KC, Parra KL, Fournier AJ, Ellsworth PC, Cockburn MG, Arellano AF, Bedrick EJ, Beamer PI, Ritz B. Preconception and first trimester exposure to pesticides and associations with stillbirth. *Am J Epidemiol.* 2025 Jan 8;194(1):44-55. doi: 10.1093/aje/kwae198. PMID: 39013781; PMCID: PMC12034837.