



Center for Worker Health

Wake Forest School of Medicine

POLICY BRIEF

Residential Pesticide Exposure in North Carolina Migrant Farmworker Camps

Summary

Farmworkers are exposed to a broad range of agricultural pesticides. Exposure to these increases their risk for immediate and long-term illness. Farmworkers are also exposed to pesticides where they live, adding to their risk of illness.

Researchers at Wake Forest School of Medicine collected floor-wipe samples in farmworker houses at 176 migrant farmworker camps in east-central North Carolina. They also interviewed workers and completed housing assessments at the camps. They found a large number of pesticides in the floor-wipes samples from the migrant farmworker houses. These pesticides were often at high levels. The researchers found higher levels of pesticides when migrant farmworker housing quality was low.

What did the researchers do?

From June through October, 2010, the researchers studied 186 migrant farmworker camps in 16 east-central North Carolina counties. They collected floor-wipe samples in 176 of these camps. The study had several components, including:

1. Floor-wipe samples collected in two bedrooms and in a common living area for each of the 176 camps. The samples were frozen and shipped to a laboratory for analysis. The laboratory used gas chromatography–mass spectrometry to test for the presence and concentrations of 15 organophosphorous (OP) and 15 pyrethroid pesticides.
2. Interviews conducted with two farmworkers in each camp about housing conditions.
3. Housing assessments completed in each camp using NC Department of Labor guidelines.

What did the researchers find?

Eleven different OP pesticides and 14 different pyrethroid pesticides were found in the migrant farmworker houses (Figures a-c). On average, 6.7 different pesticides were found in each migrant farmworker house: 2.4 different OP pesticides and 4.3 different pyrethroid pesticides were found in each migrant farmworker house. Only one migrant farmworker house was found to contain no pesticides. Concentrations for many of the pesticides were high.



Bedrooms in a North Carolina Migrant Farmworker Camp

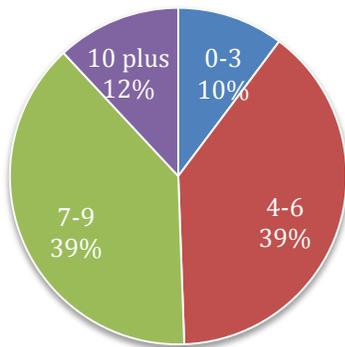
Residential Pesticide Exposure in NC Migrant Farmworker Camps

Research for this Policy Brief is reported in: Arcury TA et al. Pesticides Present in Migrant Farmworker Housing in North Carolina. American Journal of Industrial Medicine, in press

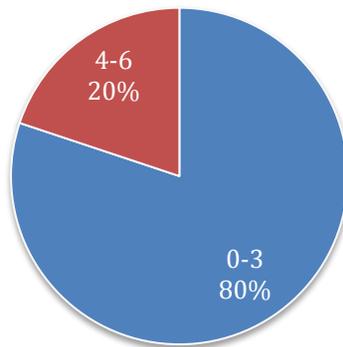
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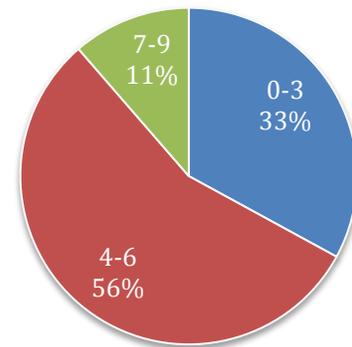
a. Total Pesticides



b. OPs



c. Pyrethroids



Figures a – c: Number and percent of camps in which pesticides were detected.

The researchers found that housing inspected by the NC Department of Labor had fewer pyrethroid pesticides. Researchers also determined that camps with housing violations, such as crowding and poor flooring conditions, had greater numbers and higher levels of pesticides. Finally, researchers observed that poor housing conditions that may result in rat or cockroach infestations contribute to increased pesticides in the housing.

Why does it matter?

Farmworkers are regularly exposed to dangerous pesticides at work. Poor housing quality increases the number and levels of pesticides found in migrant farmworker housing. The presence of pesticides in the home means that workers are exposed around the clock. This increases the risk for immediate and long-term illness among farmworkers.

Recommendations

In order to improve health and safety of migrant farmworker housing, the researchers make three recommendations:

1. The NC Department of Labor should inspect more farmworker camps. They may need to employ more inspectors and increase fines to motivate employers to fix housing problems.
2. Inspection of migrant farmworker camps should be expanded to include testing for pesticides. Programs should be implemented to reduce the presence of pesticides in migrant farmworker houses.
3. A program of residential integrated pest management should be implemented for migrant farmworker camps to prevent pest infestation and reduce the use of pesticides.

Further Reading

Previous studies have documented pesticides in farmworker housing and the risks to the health of the workers and their family members:

Quandt SA et al. 2004. Agricultural and residential pesticides in wipe samples from farmworker family residences in North Carolina. *Environmental Health Perspectives* 112: 382-387.

Quandt SA et al. 2006. Workplace, household, and personal predictors of pesticide exposure and health outcomes for farmworkers. *Environmental Health Perspectives* 114: 943-952.

Definition of Terms:

Organophosphate (OP) pesticide – A group of pesticides that kill pests by damaging the nervous system. The use of OPs in the United States is mostly limited to commercial applications.

Pyrethroid pesticide – A group of pesticides used to control insects. These pesticides are similar to the natural pesticide pyrethrum. Pyrethroids are used in household products as well as having commercial applications.

Exposure – Contact with something by swallowing, breathing, or touching the skin or eyes. Exposure may be short-term or long-term.

Integrated Pest Management (IPM) – IPM uses prevention to manage pest populations. When pest outbreaks occur, the least-toxic and lowest risk tools are selected. IPM reduces the use of toxic pesticides. IPM also minimizes the risk for human or environmental pesticide exposures.

Migrant farmworker – An individual, and his/her dependents, who is employed in agricultural employment of a seasonal or other temporary nature, and who is required to be absent overnight from his/her permanent place of residence for work.

NC Department of Labor – The state agency that is responsible for enforcing labor regulations in North Carolina, including those for migrant farmworker housing.