

Drift endangers school children and residents

For the second year in row, pesticides have been found in the air near a Florida elementary school. Children are routinely exposed to a toxic mix of pesticides, including endosulfan, a dangerous nerve poison banned in many parts of the world. Karl Tupper of PAN North America reports.

In 2006, two high school students in St. Augustine, Florida, made national headlines when they measured potentially harmful levels of pesticides in the air near South Woods Elementary School in nearby Hastings. Now, new air-monitoring results from the same site reveal that the problem is more extensive than previously thought. PAN North America released the latest results in September 2008, and in October formally submitted the study to the United States Environmental Protection Agency (EPA) for consideration in the Agency's ongoing review of endosulfan.

The new data show that in October, November, and December 2007, the air was contaminated with four pesticides: endosulfan, diazinon, trifluralin, and chlorothalonil. The first two are neurotoxins; the last two are suspected carcinogens. Endosulfan, the pesticide of greatest concern, was found in 87% of samples, and in amounts that exceeded levels of concern on several days.

Both years, local residents collected air samples at a home near the school, surrounded by fields of Chinese cabbage. They used PAN's Drift Catcher, a simple air-sampling system that works like a vacuum cleaner, sucking air through tubes packed with an absorbent resin that traps chemical residues. In 2006, eight samples were collected from from 6-14 December, and in 2007, 39 samples were collected between 1 October and 6 December. Sampling began when pesticide applications were observed in adjacent fields.

Exposure to multiple pesticides

The 2006 monitoring detected three pesticides, endosulfan, diazinon, and trifluralin. The amounts of endosulfan and diazinon exceeded infant levels of concern in 38% and

63% of samples, respectively. Results from the 2007 tests also detected the fungicide chlorothalonil, a probable carcinogen. All samples in the 2007 tests contained at least one pesticide. Three or more pesticides were found in 74% of the 39 samples.

These results may only be the tip of the iceberg, since sampling only took place for part of the year and only a fraction of the more than 1,000 active ingredients approved for use can be detected by these methods.

Potential health risks from the pesticide levels in Hastings remain unknown since few studies have directly quantified the effects of pesticides on humans. EPA scientists use animal tests to set 'acceptable' levels of exposure for humans. Using data and methodologies from the EPA and California's Office of Environmental Health Hazard Assessment, PAN has derived 'levels of concern' for the four pesticides. These levels assume exposure to one chemical at a time. They do not account for synergistic effects from simultaneous exposure to multiple pesticides or cumulative effects of repeated exposure.

The infant level of concern for endosulfan (340 ng/m³) was exceeded in 23% of most recent samples, and 21% exceeded the level of concern (500 ng/m³) for seven-year-olds. Endosulfan levels exceeded 1,000 ng/m³ on three days.

Diazinon was found in 21% of the samples. Four samples exceeded the infant level of concern of (145 ng/m³), two samples exceeded the seven-year-old level of concern (220 ng/m³), and one sample exceeded the level of concern for adults of (335 ng/m³).

Trifluralin (a herbicide) and chlorothalonil (a fungicide) were found in 92% and 85% of samples, respectively, but not in amounts that

exceeded acute levels of concern.

Endosulfan, a nerve poison that is extremely toxic to humans, is banned in many parts of the world including the European Union (EU). Large doses can cause nausea, tremors, convulsions, loss of coordination and breathing difficulty. In severe cases, seizures, brain damage and death can occur. In the US, home and garden products containing endosulfan were banned in 2000 but the pesticide is still allowed in agriculture under strict regulations. The EPA is currently considering an outright ban. Meanwhile, a global ban is being negotiated under the Stockholm Convention (see page 18).

Diazinon is banned in the EU but it is still used in the US. It was the country's most popular home and garden insecticide until the EPA cancelled these uses in 2004 because of the exposure risks to children. Acute poisoning can cause headaches, nausea, vomiting, unconsciousness, seizures, and death. Diazinon may also trigger or exacerbate asthma. Women exposed to diazinon are at increased risk for gestational diabetes.

Around the world, farmers have successfully abandoned endosulfan. In the US, its use is declining as growers move to safer and more effective alternatives. Florida's tomato growers are an exception to this. Even though the EPA has estimated that cancelling endosulfan use would result in a loss of only 0.02-0.7% of the total value of the state's tomato crop Florida's growers have increased their endosulfan use 10-fold since 1998. Over the same period their counterparts in California have reduced their use 10-fold.

Chloropicrin found in California

In October, PAN also reported to the EPA the results of another air monitoring study conducted in rural Sisquoc on California's Central Coast. Sampling took place at two homes located across the street from a 40-acre pepper field. In April 2008, after the field was treated with two soil fumigants, chloropicrin and methyl bromide, concerned residents used two Drift Catchers to collect 57 air samples, which were then analyzed for chloropicrin (Unfortunately, testing for methyl bromide would have been too costly.)

The 16-day average chloropicrin level at one home exceeded the short-term level of concern (1,800 ng/m³) derived from EPA's most recent risk assessment of chloropicrin, and the average chloropicrin levels at both sites exceeded California's more stringent level of concern (400 ng/m³). Chloropicrin exposure can cause eye and respiratory tract irritation, vomiting, and diarrhea. As part of its ongoing reevaluation of all fumigants, EPA has recently proposed buffer zones for chloropicrin. However, these results show that the proposed buffer zones will not be big enough to adequately protect people living in farming communities like Sisquoc.

Download full reports at <http://www.panna.org/driftcatcher/results>

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South Woods Elementary School in Hastings, Florida is surrounded by fields of Chinese cabbage that are regularly sprayed
Photo: PAN North America