

OUR REGION

MONDAY

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OUR REGION **B2**
FUN & GAMES **B4**
REMEMBRANCES **B7**
WEATHER **B8**

Slaying victim identified
Authorities identify the Rancho Cordova man who was stabbed to death early Saturday. **Page B2**

B1

Pesticide regions linked to autism

STUDY: HIGHER RISK SEEN FOR PREGNANCIES THERE

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Pregnant women who live near areas where agricultural pesticides are applied experience a higher risk of delivering children with autism or other developmental delays, a UC Davis study has found.

The study, published today in the periodical *Environmental Health Perspectives*, found that mothers who lived within roughly one mile of where pesticides were applied were found to have a 60 percent higher risk of having children with any of the spectrum of autism disorders, such as Asperger's syndrome.

The study is the latest in a growing body of research exploring links between the environment and the development of autism.

The results are no small matter for the Central Valley, which receives most of the 200 million pounds of agricultural pesticides applied annually in California.

In Sacramento County, roughly 3,100 public school students have been diagnosed as autistic. The diagnosed autistic population in the county has risen sevenfold since 2000, according to the California Department of Education.

The study, conducted by a team of researchers at UC Davis' MIND Institute, is unique for its use of a large state case group of children confirmed as having autism spectrum disorder and developmental delays, said lead researcher Janie Shelton.

The subjects were part of research called the Childhood Autism Risks from Genetics and Environment study. A total of 970 participants were used in the study - with the emphasis on whether proximity to pesticide applications affected children before birth.

The study explored the geographic location of families that now have children between 2 and 5 years old who were diagnosed with autism or developmental delay. Children who have normal development also were included.

To do the study, researchers culled the addresses of the 970 mothers from preconception to full-term pregnancy and compared those to data from the California Pesticide Use Report.

A majority of the mothers in the study resided within two hours of Sacramento during their pregnancies.

Four pesticide groups were included in the study. The most commonly applied group in-

AUTISM | Page B2

Autism

FROM PAGE B1

involved 21 pesticides called organophosphates.

The pesticides are used widely in agriculture because of the way they block certain nerve function in insects. The chemicals can also curtail certain nerve function in humans.

"It's concerning that we found an association with these chemicals and autism spectrum disorder because they are in such widespread use," Shelton said.

Chlorpyrifos was the most commonly applied pesticide in the study.

"The chlorpyrifos applied over the course of pregnancy had the greatest association with an elevated risk of autism spectrum disorder in the second trimester," Shelton said.

The Environmental Protection Agency phased out home use of chlorpyrifos in 2000 because of its potential to trigger neurological effects.

EPA research has shown that unborn children and the

young are more susceptible than adults to adverse effects from exposure to chlorpyrifos.

The second most common pesticide applied in the study area involved pyrethroids, synthetic chemicals linked to respiratory ailments, heart palpitations and nausea in farmworkers. Pyrethroids have been identified as an endocrine disruptor in lab animals.

The study provides new evidence of a link between pyrethroids and autism disorders, Shelton said.

In the study, pyrethroids were most strongly linked to autism disorders during two periods among women in the study - immediately prior to conception and in the third trimester of pregnancy. Shelton said it is not yet understood why the third trimester shows the greatest exposure risk during a pregnancy.

"It does appear that later in the pregnancy is a more vulnerable period," said Irva Hertz-Piccioto, co-author of the study and professor of environmental epidemiology at

UC Davis.

The pesticides identified in the study are seen as predictors for developmental delays since exposure to them before birth may affect development of the brain when it is getting neurally organized, Hertz-Piccioto said.

"Among the different kinds of environmental chemicals we're interested in - pesticides are different because they're designed to kill," Hertz-Piccioto said. "This makes them more suspect as toxins."

The issue of a child's proximity to where pesticides are being applied has become a recent concern in other studies. Recently, the California Department of Health looked at 2,511 schools in 15 counties that had the highest overall farm pesticide use.

It found that 30 schools in Sacramento County and 18 in Yolo County were within a quarter-mile of where pesticides are applied.

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