

# TWO PESTICIDES CAUSE INFERTILITY LASTING FOUR GENERATIONS

It seems like it could be a great beginning scene in the screenplay for a science fiction horror film, but it's actually serious research. Biologists at Washington State University exposed pregnant laboratory animals to two pesticides that are known to cause sperm problems and infertility. Unexpectedly, the sperm and infertility problems were passed on to subsequent generations, animals that had never been exposed to the chemicals, for up to four generations.

The two pesticides used in this study were vinclozolin, a fungicide, and methoxychlor, an insecticide chemically related to DDT. In some earlier research, the Washington biologists had shown that exposure of pregnant animals to these chemicals reduces both the number of sperm their male offspring later produce and the ability of these sperm to swim.

In the new experiment, biologist Michael Skinner and his colleagues

looked at what happened to the second, third, and fourth generation of male offspring. Offspring of the original vinclozolin-exposed mother produced about 20 percent less sperm than did the offspring of unexposed animals. Ability of sperm to swim was also reduced in all four generations between 25 and 35 percent. About 90 percent of the animals in all four generations were affected. In addition, almost 10 percent of the offspring of exposed animals were completely infertile, while none of the offspring of unexposed animals was infertile.

When the researchers repeated the experiments with methoxychlor, they found similar results.

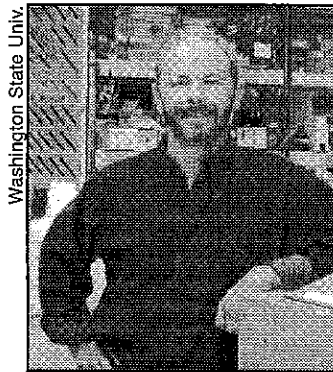
In addition, the researchers

showed that the sperm problems are passed from generation to generation through males. If female offspring of animals exposed during pregnancy to vinclozolin were mated to males from unexposed mothers, they produced normal offspring.

Skinner and his coworkers were also interested in how vinclozolin and methoxychlor impact sperm production across so many generations. Typical mutations would not affect as many as 90 percent of male offspring. Instead, the researchers present data showing that vinclozolin and methoxychlor change the way that certain small

molecules attach to genes and modify how the genes work. —*Caroline Cox*

Anway, M.D. et al. 2005. Epigenetic transgenerational actions of endocrine disruptors and male fertility. *Science* 308:1466-1469.



Washington State Univ.

Michael Skinner

Caroline Cox is JPR's editor.