Unprecedented use of DDT concerns experts

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A panel of experts and citizens convened to review recent studies on the link between DDT and human health expressed concern that the current practice of spraying the pesticide indoors to fight malaria is leading to unprecedented - and insufficiently monitored - levels of exposure to it.

Although DDT has been largely abandoned as an agricultural pesticide worldwide, its use to combat malaria was endorsed in 2006 by the World Health Organization (WHO) and by officials in the President's Malaria Initiative, a program led by the U.S. Agency for International Development, which was launched by former President George W. Bush in 2005. According to WHO, in 2006 alone there were 247 million cases of and 880,000 deaths from malaria. Most of the deaths were of young children in Africa.

In regions where malaria is endemic, the organochlorine pesticide is now sprayed inside buildings and homes to repel and kill the mosquitoes that spread the disease. This is being done despite a paucity of data on the human health impacts of DDT exposure at such high levels in currently exposed populations, according to the experts from fields ranging from environmental health to cancer biology.

After a review of nearly 500 epidemiological studies, to be published online Monday, May 4, ahead of print in the journal *Environmental Health Perspectives*, the researchers developed a consensus statement calling for increased efforts to reduce exposure to DDT, to understand the health effects of exposure to DDT, and to develop alternatives to using DDT so that other methods could ultimately be relied upon for

malaria control.

Examples of non-chemical measures to control malaria include the use of bed nets, draining sources of standing water or filling them up with soil, and the rapid diagnosis and treatment of malaria cases.

"We have to put our concerns in the context of people dying of malaria," said lead author Brenda Eskenazi, UC Berkeley professor of epidemiology and of maternal and child health at the School of Public Health. "We know DDT can save lives by repelling and killing disease-spreading mosquitoes. But evidence suggests that people living in areas where DDT is used are exposed to very high levels of the pesticide. The only published studies on health effects conducted in these populations have shown profound effects on male fertility. Clearly, more research is needed on the health of populations where indoor residual spraying is occurring, but in the meantime, DDT should really be the last resort against malaria rather than the first line of defense."

The researchers noted that the majority of studies on DDT have focused on the impact on wildlife and the environment. Of the studies published on human health, almost all have dealt with populations exposed to low, background levels of DDT. Nevertheless, some of those studies have suggested links between DDT and cancer risk, diabetes, developmental problems in fetuses and in children, and decreased fertility.

"Any studies conducted up to now on the human health effects from DDT exposure may not be relevant to the populations currently exposed to the pesticide through indoor residual spraying," said Eskenazi, who has published research on the negative impact of DDT exposure to a child's neurodevelopment.

Moreover, most of the studies on DDT and human health were done in developed countries where the pesticide was banned in the 1970s, the

researchers said.

"DDT is now used in countries where many of the people are malnourished, extremely poor and possibly suffering from immune-compromising diseases such as AIDS, which may increase their susceptibility to chemical exposures," said co-author Jonathan Chevrier, UC Berkeley post-doctoral researcher in epidemiology and in environmental health sciences.

DDT has been banned in the United States since 1972. To date, more than 160 countries have signed the Stockholm Convention on Persistent Organic Pollutants, an international treaty banning DDT and 11 other persistent organic pollutants, except when needed for malaria control.

In cases where DDT must be used, the Stockholm Convention requires an implementation and management plan to minimize the pesticide's exposure to humans and its release into the environment. However, the authors noted, little oversight exists to ensure that those plans are being carried out properly.

"There are anecdotal reports of people failing to remove their clothes and cooking utensils from their homes before DDT spraying," said Chevrier. "More training and monitoring is needed to prevent such instances."

The consensus statement emerged from a March 2008 conference jointly organized by the Pine River Superfund Citizen Task Force, the Center for Responsible Leadership and the Public Affairs Institute of Alma College. More than 200 participants attended the conference, which was held near the site in St. Louis, Mich., where a chemical plant leached massive levels of DDT into Pine River. In 1983, the area was named a Superfund site by the U.S. Environmental Protection Agency.

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