



CHDS Research Update: Pesticide exposure in pregnancy may increase body fat, high blood pressure, and heart disease in 2 generations.



This advertisement appeared in the June, 1946 issue of *Woman's Day* and represents the general mindset at the time – DDT use was commonplace and considered safe.

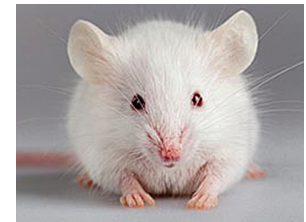
and collected their blood when DDT was at its peak use, allowing researchers the ability to measure DDT directly at a time of vulnerability for both mother and child.

CHDS Mothers. Using over 2,400 blood samples from CHDS mothers along with information from California death records, CHDS researchers examined whether DDT exposure at the time of pregnancy predicted heart disease death in CHDS mothers over the next 50 years. Mothers' blood samples were collected shortly after their pregnancies when they were an average of age 26. The researchers found that mothers with high DDT levels were three times more likely to die from heart disease. The higher risk was seen even after other risk factors like diabetes and obesity were considered.

CHDS Daughters. DDT may influence development of heart disease even before birth. CHDS researchers combined results from DDT levels in mother's blood during pregnancy and information about high blood pressure in their daughters when they were between 39 and 47 years old. CHDS daughters exposed to higher levels of DDT in the womb were more likely to be diagnosed with high blood pressure that required medication for treatment. This finding was not due to other factors that are linked to high blood pressure including obesity, race, and diabetes.

DDT, a pesticide widely used in the U.S. from 1945 until it was banned in 1972, could be linked to health problems such as high blood pressure, heart disease, and slowed metabolism, according to recent research by CHDS scientists. This year, CHDS research focused on factors that may influence heart disease risk during "windows of susceptibility", time periods in a person's life when they may be more vulnerable to environmental exposures, such as in the womb, during puberty, and during pregnancy and postpartum. The CHDS is one of the few, perhaps only, human studies that can examine whether DDT exposure during these time periods affects health in middle age, when high blood pressure and heart disease begin to appear. In addition to over 50 years of continuous data on health outcomes in mothers and their children, CHDS enrolled mothers during their pregnancies from 1959–1967

CHDS findings help in the search for explaining how DDT affects health. Michele La Merrill is a UC Davis toxicologist who works with CHDS researchers. In addition to completing the research on the daughters study previously described, she also conducts animal research to investigate possible mechanisms of DDT's effects on the body. In her most recent study, Dr. La Merrill exposed pregnant mice to DDT in doses comparable to CHDS mothers' exposures. The offspring of the mice had a lower resting body temperature and burned fewer calories than their peers, indicating slower metabolism. When these mice were fed a high-fat diet during adulthood, the impact of DDT on metabolism was even larger. The DDT-exposed mice were more likely to be obese, and have symptoms commonly called "pre-diabetes" (impaired glucose tolerance and insulin resistance). This research suggests that DDT may be involved with slower metabolism which may increase the risk of obesity and diabetes, both risk factors for heart disease. This research is important because it shows that high fat diet magnifies DDT effects. DDT exposure in combination with steady increases in high fat diet while DDT was in use and since its ban could be one reason for the current obesity and diabetes epidemics. The people who were exposed to DDT in utero are now in adulthood when these diseases are most likely to occur.



La Merrill's study is the first to show that developmental exposure to DDT increases the risk of females later developing a cluster of conditions that include increased body fat, blood glucose and cholesterol.

http://news.ucdavis.edu/search/news_detail.lasso?id=10982

These studies add to an increasing amount of evidence suggesting exposure to environmental contaminants plays a role in the development of many adverse health outcomes. Though banned in the US, DDT remains relevant because it is still present in the environment in dust and soil and is currently in use in other countries for malaria control. Its metabolite, DDE, still exists in larger amounts in the environment. DDT and DDE are part of a group of compounds known as persistent organic pollutants that include man-made chemicals used in agriculture, disease control, and manufacturing, and natural chemicals that are by-products of industrial processes such as incineration of waste. Understanding the health impact of DDT and DDE exposures can inform regulation of currently used and newly developed chemicals, which may act in similar ways. Looking ahead, CHDS study director Barbara Cohn says that she plans to study whether chemical exposures also affect the third and fourth generations as some animal studies have suggested. The CHDS is also currently planning future studies to include CHDS sons.



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CHDS Kids – 1960s

New CHDS Studies To Launch This Fall and Winter

MyCHDSReport

The CHDS is excited to announce a new grant awarded in August 2013. The MyCHDSReport Study will inform up to 300 women who recently participated in the 3Gs Study or Health Disparities Study about levels of environmental contaminants found in their blood. This pilot study is part of a growing trend nationwide to report results directly to participants and explain what the results mean. Past research practice has been to provide only grouped results that are published primarily in scientific journals. We hope this new approach will enhance awareness and serve as a resource for ways to reduce exposure to environmental contaminants, increase commitment to health research, and motivate participants to talk about their results with their family, friends, and community. If you are eligible for this study, you will be mailed an invitation letter in early 2015. This project is funded by the California Breast Cancer Research Program.

Early Determinants of Autism

The CHDS, in collaboration with researchers from Columbia University, launched a new study this fall. The Early Determinants of Autism Study will be the first study to investigate whether medications taken during pregnancy influence the risk of autism in the following generations. More than 3,000 CHDS daughters will be invited to participate in this 10-minute screening study to identify cases of autism in the second and third generations. This study is funded with a generous donation made by Jill Escher, a mother of two children with autism spectrum disorders. Participants in the study will be included in a drawing for a \$50 gift card to Starbucks or Amazon.com. If you are a CHDS daughter and have not received an invitation to the study and would like to be included, please contact the CHDS office at 510.649.6390 or by email at info@chdstudies.org. A more in-depth study will be planned after CHDS researchers better understand the number of CHDS members affected by autism spectrum disorders.

Requesting Interviews with CHDS Families Impacted by Cancer: WNYC New York Public Radio.

WNYC is the national radio partner for the forthcoming Ken Burns PBS documentary "The Story of Cancer: The Emperor of All Maladies" based on Dr. Mukherjee's book. WNYC will be producing a dozen or so radio stories about cancer over the next many months to air nationally on NPR in early 2015. If you are willing to be interviewed for these stories please send an email to info@chdstudies.org.