

# AGROMEDICINE PROGRAM UPDATE

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Previous issues are available at [www.musc.edu/oem/apunews.html](http://www.musc.edu/oem/apunews.html)

## Program Notes

### ➤ West Nile Virus

The Agromedicine Program has a limited supply of fact sheets on West Nile Virus prepared by the USDA Pest Management Centers. Agromedicine Program Consulting Physicians may receive a copy by telephoning 843-792-2281.

### ➤ Lecture

On April 17, Dr. William M. Simpson, Jr. will present "Pesticide Toxicology: Communicating Risk and Preventing Injury" at a meeting of the Everglades Golf Course Superintendents' Association in Naples, Florida.

### Unsafe Farming Practices Related to SARS and Other Infections?

An article<sup>1</sup> published in the April 7, 2003 issue of *The Sydney Morning Herald* suggests that there may be an association between unsafe farming practices and severe acute respiratory syndrome (SARS). The ar-

ticle notes that the first known case of SARS was traced to Guangdong province. This region has a history of being the source for new epidemics of influenza including the Spanish flu in 1918-1919 that claimed 20 million lives worldwide and 1997's Hong Kong avian flu epidemic that was transmitted from poultry to humans.

Guangdong's 80 million people live close to the animals, poultry, and fish that they raise for food. Suspected unsafe farming practices include the indiscriminate use of antibiotics to treat and prevent infections in livestock and poultry and the disposal of animal waste.

The reporter cited examples of pig farmers who freely obtain antibiotics even though the law requires a prescription from a veterinarian or a physician. This widespread practice increases the risk of bacteria developing immunity to the medications.

Traditional farming methods include pigsty waste that is

drained into ponds where shrimp and fish are raised for human consumption. Also, there is the practice of housing chickens above pigpens where waste from the chickens is allowed to fall into the pig food troughs. "The close proximity and cross pollution adds to the risk of animal viruses infecting humans, either directly or via the pigs."

<sup>1</sup>McDonald H. China's unsafe farming practices may be breeding more than pigs. *The Sydney Morning Herald*, April 7, 2003.

### Organochlorines as Endocrine Disrupters

by Dr. Stanley Schuman

Dr. J.R. Udry of the University of North Carolina, Chapel Hill, takes time to critique a report from a medical research team trying to support the "hormone disrupter" theory.<sup>1</sup> This theory assumes that environmental residues of PCBs, DDT, and other long-lasting organochlorines can permanently alter the reproductive-and-gender fitness of fetuses exposed in-utero.

Investigators at the Children's Hospital of Buffalo tried to "detect subtle shifts in masculine and feminine behavior" that may be related to consuming Lake Ontario sportfish by mothers of 233 boys and 215 girls, who took a battery of gender-oriented, paper-and-pencil questionnaires.<sup>2</sup>

After considerable statistical adjustment of the various self-reported behavioral scores, the six authors concluded that "a combination of sex-dimorphic behaviors can differentiate the behavior of middle-childhood boys and girls." In fact, they claim these behaviors may be related to "increasing years of maternal sport fish consumption."

In a sharp editorial, Udry reminds the Buffalo investigators not to overinterpret their very limited sociologic data. In fact, weighing the evidence of published human and animal studies so far, Udrey states:

Fish eating humans may be affected by whatever potpourri of endocrine disrupters is in the fish. These disrupters are variously androgenic, antiandrogenic, estrogenic, and antiestrogenic. To sort out the behavioral effects of such a chemical mixture may be hopeless.

Nonetheless, the federal grant-funded team of pediatricians and psychiatrists calls for more investigations to explain how "environmental contaminants contributed to shifts in gender-

role behavior." As fish consuming taxpayers, we might comment, "give us a break, and pass the tartar sauce."

<sup>1</sup>Udry JR. *Putting prenatal effects on sex-dimorphic behavior in perspective: Epidemiology* 2003; 14:135-136.

<sup>2</sup>Sandberg DE, et al. *Hormonally active agents in the environment and children's behavior: Assessing effects on children's gender-dimorphic outcome. Epidemiology* 2003; 14:148-154.

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### **Importance of Accurate Family History of Breast Cancer in Pesticide Exposure Studies**

by Dr. Stanley Schuman

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The importance of taking a family history of illness routinely is taught in medical school, but seems to weaken considerably in the average busy clinical practice. Part of this is the fault of the doctors, but patients share the responsibility of organizing their relevant information.

British researchers<sup>1</sup> collected blood samples from 99 breast cancer patients whose onset occurred at age 30 years or younger. Using family history interviews alone, they were able to accurately predict pathogenic genetic mutations (BRAC1, BRAC2, TP53) in 16 of 36 (44%) of the cancer patients. However, less than half of the patients had a useful family history of malignancy recorded in their hospital charts. The authors note that "women with BRAC1 and BRAC2

mutations carry a contralateral breast cancer risk of 60% and women with TP53 mutations are at high risk of radiation-induced tumors." Better family history recording could help patients and doctors predict a variety of chronic illnesses with potential for earlier diagnosis and treatment.

Who knows how many studies of cancers showing weak associations with agricultural chemical exposures would have revealed stronger genetic association if accurate family histories had been obtained? This is especially true for organochlorine exposures (so-called endocrine disrupters) when the basic family history is missing from most medical records. Dr. Laloo, et al make a strong case for earlier identification of high-risk patients for breast and ovarian cancers.

In fact, in 1976, Schuman and Burton predicted osteogenic sarcoma in a 15-year old girl whose mother had early onset breast cancer, and reported this to geneticists as a new variant of the Li-Fraumeni Syndrome.<sup>2</sup> Only later were the three tell-tale genetic mutation markers discovered by laboratory scientists.

<sup>1</sup>Laloo F, et al. *Prediction of pathogenic mutations from patients with early-onset breast cancer by family history, Lancet* 2003; 361:1101-2.

<sup>2</sup>Schuman S, Burton W. *A new osteosarcoma/malformation syndrome. Clinical Genetics* 1979; 15:462-463.