

AGROMEDICINE PROGRAM UPDATE

MUSC DEPARTMENT OF FAMILY MEDICINE – DIVISION OF PUBLIC HEALTH AND PUBLIC SERVICE
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Program Notes

➤ Agromedicine Selective

Ten first-year MUSC medical students began a selective with the Agromedicine Program on September 17. The objective of the selective is to introduce the students to related areas of agricultural and medical sciences. The students are required to attend weekly seminars presented by faculty from MUSC and Clemson University through December 10. Each student is required to research a topic in agricultural medicine and to present the topic at one of the seminars.

➤ Lectures

Recent agricultural medicine lectures by Dr. William Simpson include:

- September 16 - "A Medical Perspective on Pesticide Poisoning" was presented at the Worker Safety Course sponsored by the Cooperative Extension Service and the U.S. Environmental Protection

Agency at the University of California, Davis.

- October 2 - "Update on Vector-Borne Diseases" was presented as a meeting of the Entomological Society at Clemson University.

➤ Research

We are planning another study of primary care physicians' experience with spider bites, tick bites and fire ant stings this fall. This study will update our first report published in 1991. The Agromedicine Program frequently consults with health care professionals and patients on real or suspected health effects from insect stings and spider and tick bites.

Pesticide Exposure & Prostate Cancer

Age, race, and genetic predisposition have been established as risk factors for

prostate cancer. Other risk factors, such as exposure to suspected endocrine disruptors, are under study. Included among the suspected endocrine disruptors are organochlorine (OC) pesticides: chlordane, DDT, dieldrin, heptachlor, and lindane. OC pesticides have been banned or their use has been severely restricted for over 20 years.

There have been a number of studies that have examined the incidence and mortality from prostate cancer in farmers. Results have not been consistent as some studies found excess incidence while other studies reported no observable association. Added to the literature this year were two reports that support an association between pesticide exposure and prostate cancer.

The first study¹ was published in the *American Journal of Epidemiology*.

The American Cancer Society estimates that there will be about 220,900 new cases of prostate cancer in the United States in the year 2003.

Exposure to 45 pesticides and the incidence of prostate cancer were examined among 55,332 farmers enrolled in the Agricultural Health Study. Pesticide exposure was elicited through self-administered questionnaires at the time of enrollment. Cancer incidence was obtained through population-based cancer registries. Two important observations were reported:

- "Use of chlorinated pesticides among applicators over 50 years of age and methyl bromide use were significantly associated with prostate cancer risk."
- "Several other pesticides (chlorpyrifos, coumaphos, fonofos, phorate, permethrin, and butyrate) showed a significantly increased risk of prostate cancer among study subjects with a family history of prostate cancer but not among those with no family history."

This study was the first to report the methyl bromide and the family history associations. The authors acknowledged these findings were unexpected and require confirmation in future studies.

The second study² was published in July by the *Journal of Occupational and Environmental Medicine*. It was the first study to assess the relationship between serum levels of 30 polychlorinated biphenyls (PCBs) and 18 OC pesticides with prostate cancer. Fifty-eight

prostate cancer patients and 95 control subjects were recruited for study. Two of the 48 chemicals were found to be significantly associated with prostate cancer while one chemical was found to be protective:

- "A significant elevated risk of prostate cancer was observed for ... oxychlor-dane (OR = 3.1, 95% CI = 1.3-7.6) and PCB 180 (OR = 3.1, 95% CI = 1.3-7.3)."
- "Those with the highest levels of dieldrin appeared to have a reduced risk of prostate cancer (OR = 0.3, 95% CI = 0.1-0.9) compared with those in whom dieldrin was not detected."

The authors concluded that long-term, low-dose exposure to specific OC pesticides and PCBs may contribute to increased risk of prostate cancer.

¹Alavanja M et al. Use of agricultural pesticides and prostate cancer risk in the agricultural health study cohort. *Am J Epidemiol* 2003;157:800-814.

²Ritchie JM et al. Organochlorines and risk of prostate cancer. *J Occup Environ Med* 2003; 45:692-702.

Nutraceuticals

Nutraceuticals (food compounds with health promoting, disease-preventing, or medical properties) are gaining increased attention among medical and agricultural scientists and con-



sumers who see these products as a means to improve human health and longevity. Interest in preventive health care, an aging population, endorsement by the medical community, and access to quality products are cited as reasons for the increase in demand for nutraceuticals.

On October 8, the Council for Agricultural Science and Technology (CAST) announced the release of its issue paper, *Nutraceuticals for Health Promotion and Disease Prevention*. The paper identifies issues in the development and use of nutraceuticals.

CAST calls for reliable research and regulation of nutraceuticals for efficacy and safety. Issues such as interaction of nutraceuticals with other products and with other nutrients and medications should be addressed. An important component to the future of nutraceuticals is consumer education. The health benefits derived from nutraceuticals must be clearly communicated to the public and to health care providers.

The full issue paper may be ordered or viewed for a fee on the CAST website at:

www.cast-science.org