

AGROMEDICINE PROGRAM UPDATE

MUSC DEPARTMENT OF FAMILY MEDICINE – DIVISION OF PUBLIC HEALTH AND PUBLIC SERVICE
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Volume 14
No. 11
November 15, 2002

Previous issues are available at www.musc.edu/oem/apunews.html

Program Notes

➤ Consultations

County Extension agents, health care providers, and other professionals, as well as their clients and patients, can contact the Agromedicine Program for free medical consultation. Telephone our office at 843-792-2281 from 8:00 a.m. to 5:00 p.m. Monday through Friday. We may also be reached toll free through MEDULINE at (800-922-5250). Advise the person who answers the phone that you are requesting medical consultation.

The Agromedicine Program provides consultation on agricultural and environmental medicine topics. These include exposure to farm chemicals and pesticides, indoor air quality, insect and spider bites and stings, tick-

and-animal transmitted diseases, and other conditions associated with food or fiber production.

Please advise your clients and patients to present their concerns succinctly and to be prepared to discuss their medical and occupational histories. Clients will also be asked for the names and telephone numbers of their primary care physicians. If a client does not have a physician and requires medical care, he or she will be referred to an Agromedicine Program Consulting Physician in their community. Consultations with the Agromedicine Program are confidential.

➤ Guest Lecturer

Dr. William M. Simpson, Jr. spoke on "Personal Repellents" at the annual meeting of the S.C. Mosquito Control

Association held in Myrtle Beach, S.C. on November 7.

Childhood Cancer Unrelated to Pesticide Use in California

by Dr. Stanley Schuman

The California Cancer Registry provided 7,143 cases of invasive cancer during 1988-1994 for epidemiologic study of agricultural pesticide use.¹ Comparing statewide records of over 850 chemicals used in agriculture with statewide cancer rates for children (less than 15 years of age) represents the best study to date. This study analyzes data from the largest agricultural state in the nation.

Half the cancer cases were under five years of age; leukemias accounted for 34% of cases; brain tumors (gliomas) for 10%. Geo-

Fruits, Vegetables and Pesticides

"If the EPA eliminates all the pesticides, all it's going to do is increase the price of fruits and vegetables, and there will be more cancer."

Dr. Bruce Ames
University of California, Berkeley
(Wright K. Free radical. Discover 2002, 23(10))

graphic analysis by census blocks of pesticide usage yielded negative associations, as follows: relative risk (RR) for all cancer sites was 0.95 (0.80 – 1.13 confidence interval) for all agricultural chemicals; RR for the highest-use census blocks and for Class B (“probable carcinogens”) was also reassuringly negative: 0.98 (0.91 – 1.04) for all cancer sites; 0.89 (0.66 – 1.20) for leukemias; 0.78 (0.54 – 1.12) for gliomas. Even three suspect chemicals (propargite, ziram, and azinphos-methyl) yielded negative cancer probabilities.

This in-depth study provides reassurance for “three Central Valley communities which were sites of previous childhood cancer ‘cluster’ investigations.” The authors cite the strength of this comprehensive study which casts scientific doubt on the pesticide exposure-child cancer hypothesis: “The pesticide data used in this study was based on mandatory reporting by growers that was not subject to recall bias. The data also provided specific pesticide active ingredients and the amount applied.” The authors point out that most childhood cancer – pesticide exposure studies “have relied on self-reported pesticide use in the home or garden or parental occupational exposure.” An unbiased scientific study such as this one from California supports a series of other reassuring studies of lower

rates for cancers of all sites documented in farming, when farmers are compared to non-farmers, especially during the most recent decades of heavy pesticide use.²

¹Reynolds P, Von Behren J, Gunier R, et al: *Childhood cancer and agricultural pesticide use: An ecologic study in California. Environ Health Perspect* 2002; 110:319-324.

²Acquavella J, Olsen G, Cole P, et al: *Cancer among farmers: a meta-analysis. Ann Epidemiol* 1998, 8:64-74.

Synergistic Effects of Dust and Ammonia on Poultry Production Workers

The trend towards large-scale confinement facilities in the livestock and poultry production industries has placed workers at increased risk for respiratory disease. The risk is due to the workers' exposure to ambient bioaerosols, particulates and gases in confined work areas. These risks have been well documented by specialists in occupational medicine. The specialists also warned that the risk would increase as the large-scale operations with full-time employees outnumber the smaller operations with part-time workers.



In the first-of-its-kind study¹, scientists at the University of Iowa examined the combined health effects of air contaminants of large-scale poultry confinement facilities. 250 poultry production workers were recruited for study. The study participants participated in pulmonary function testing prior to and at the end of four-hour work shifts. Participants wore personal air samplers that measured total and respirable dust, total and respirable endotoxin, ammonia, and carbon dioxide. Statistical analyses used to assess the relationship between dust and ammonia exposures included correlation, logistic modeling, and synergy index.

The major finding of the study was that synergy between ammonia levels and airborne dust explained 43% of Forced Expiratory Volume in one second and 63% of Forced Expiratory Flow of the study participants. The authors note that the synergy is logical because ammonia is dependent on adsorption to dust particles for distribution to the lower respiratory tracts.

¹Donham KJ et al. *Synergistic effects of dust and ammonia on the occupational health effects of poultry production workers. J Agromedicine* 2002; 8(2):57-76.