The Newsletter of the Clemson University / MUSC Agromedicine Program

AGROMEDICINE PROGRAM UPDATE

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

➢ Agromedicine Textbook

Dr. James Lessenger (Morinda Medical Group, Porterville, California) is editing a textbook of agromedicine. He is recruiting authors for chapters on pesticides, insect stings, and other topics. If you are interested, please contact him via e-mail at: agbook@lessenger.net

Prevalence of Peanut Allergy

Dr. Howard Bauchner[1] suggests that peanut allergy among children may be becoming more prevalent. He cites two recent studies that reported the prevalence of peanut allergy to be 1% to 2% among adults and children. In one study (a national telephone survey of more than 12,000 people), the prevalence among children doubled over a five-year period. Dr. Bauchner reported that about 20% of children with peanut allergy are known to outgrow it.

[1]*Bauchner H. Is peanut allergy becoming more common? Journal Watch 2004; 24 (3):26-27.*

Cancer Mortality Among Italian Agricultural Workers

The results of a study[1] of Italian agricultural workers should provide reassurance to those concerned about the chemical, biologic, and physical exposures of farmers and their potential risk for cancer.

The study population consisted of all residents of the Province of Forlì who were registered with the National Institute of Social Insurance as agricultural workers between 1969 and 1993. After exclusions (i.e., unknown vital status), 36,579 subjects were available for study. Their cancer mortality was compared with the rest of the male population using age-standardized mortality rates (ASR). Cause of death was obtained from death certificates stored by the Italian National Statistics Bureau. A total of 3,684 cancer deaths were identified in the agricultural worker cohort.

The only significant finding was a "generalized, but declining excess mortality from gastric cancer" (ASR = 1.25, 95% CI = 1.13-1.39). This excess was observed in both farm owners and farm workers.

PESTICIDES ARE AN UNPROVEN HUMAN CANCER RISK

"Many kinds of pesticides (insecticides, herbicides, etc.) are widely used in agriculture in the production of our food supply. High doses of some of these chemicals have been shown to cause cancer in animals, but the very low concentrations found in some foods have not been associated with increased cancer risk. In fact, people who eat more fruits and vegetables, which may be contaminated with trace amounts of pesticides, generally have lower cancer risks than people who eat few fruits and vegetables."

American Cancer Society, 2004
www.cancer.org

"Compared with the rest of the male population, those working in agriculture as a whole were less likely to die from 3 main groups of malignancies: 1) larynx, lung, other respiratory sites, and bladder; 2) colorectal cancer, liver cancer, and other digestive sites; and 3) NHL and lymphatic leukemia." A significant reduction in total cancer mortality was observed among the farm owners (ASR = 0.83; 95% CI = 0.79-0.88).

The authors note that earlier research on stomach cancer in the Province of Forlì identified risk factors for gastric carcinogenesis. These include consumption of traditional food items along with the lack of refrigeration.

[1]Bucchi L et al. Cancer mortality in a cohort of male agricultural workers from northern Italy. J Occupational Environ Med 2004; 46(3): 249-256.

Farm Worker Exposure to Pesticides

Farm workers who mix, load, and apply pesticides are known to have high-risk pesticide exposure and have been well studied over the years. The 1992 U.S. EPA's Worker Protection Standards requires these workers to be trained in safe handling practices including protective measures to reduce their exposure to pesticides.

There has been less research on the pesticide exposure patterns of farm workers who do not mix, load, or apply pesticides, but are exposed nevertheless. Jobs these workers perform do not require the use of protective devices and include such tasks as harvesting, pruning, thinning orchards (a process of removing fruit from trees in order to prevent limb breakage and to improve fruit quality), and loading and packing fruits and vegetables. Also little is known about the children of the workers who are exposed at home to pesticide residues on their parents clothing and shoes and to contaminated dust in the family's car.

To learn more about the pesticide exposure patterns of these workers and their children, scientists in the state of Washington examined the association between specific agricultural tasks and markers of exposure.[1] Markers included urinary metabolites in farm workers and their children and dust residues in the farmworkers' homes and vehicles.

211 farmworker households in Yakima Valley with children 2 - 6 years of age were recruited for study. Farmworkers were interviewed for job tasks performed in the past three months and exposure to workplace pesticide applications. Dust samples were collected from the homes in the areas where the children played and from the foot wells of the family vehicles used for transportation to and from work. These were analyzed for six organophosphate (OP) insecticides used on crops in the valley: azinphos-methyl, malathion, methyl parathion, phosmet, chlorpyrifos and diazinon. Urine samples collected from the study participants were analyzed for five OP metabolites.

Significant findings include:

- "Workers who thinned were more likely than those who did not to have detectable levels of azinphos-methyl in their house dust (92.1% vs. 72.7%; p = 0.001) and vehicle dust (92.6% vs. 76.5%; p = 0.002)."
- "Thinning was associated with higher urinary pesticide metabolite concentrations in children (91.9% detectable vs. 81.3%; p = 0.02) but not in adults."

An unexpected result was that workers who mixed, loaded, or applied pesticides had lower levels of OP residue in the dust of their homes and cars.

It was noted that thinners are the first to enter orchards that have been sprayed. Previous research suggested that orchard thinning had twice the amount of pesticide exposure as harvesting or pruning.

[1]Coronado GD et al. Agricultural task and exposure to organophosphate pesticides among farmworkers. Environ Health Perspect 2004; 112(2):142-147.