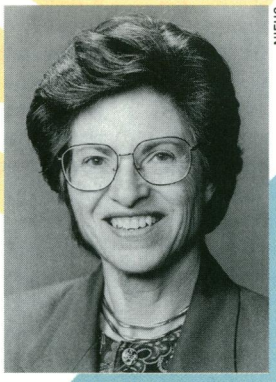
NIEHS News

Falk Lecture Gives Overview of Breast Cancer

Although breast cancer still represents one-third of all cases of cancer in women and affects one out of nine women in the United States, the patterns of causation and some means of preventing breast cancer are becoming clearer, according to Barbara S. Hulka, who delivered the Hans L. Falk Memorial Lecture for 1994, on December 12 at the NIEHS in Research Triangle Park, North Carolina. Hulka was the tenth lecturer in the annual series, named for NIEHS's first scientific director.

In a meticulous overview of recent studies, the internationally recognized epidemiologist disucssed the many risk factors associated with breast cancer, some familiar from mass media reports and others less well known. Hulka then reviewed possible strategies for preventing the disease, even before the benefits of mammography and early detection come into play.



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Barbara S. Hulka

Rates of breast cancer increase dramatically with age, Hulka pointed out, with only 20% occurring before age 50, and the rates are increased in women with family members who have had the disease, especially when those family members are young women. Geography makes a marked difference in incidence, with lowest rates in Asia and Africa and highest rates in several Western nations such as the United Kingdom and the United States. Women with higher educational and professional levels have higher rates, perhaps because of later childbearing patterns among these women. Early childbearing and longer duration of breastfeeding decrease rates, as do later commencement of menstruation and earlier menopause.

Other risk factors include alcohol consumption, cigarette smoking, dietary fat, oral contraception use among women diagnosed before age 45, and estrogen replacement therapy. Controversial suspected risk factors include exposures such as organochlorine pesticides (DDT/DDE and PCBs), electromagnetic fields, by-products of charbroiling food (heterocyclic amines), phytoestrogens from soy products, and breast implants.

With such an array of established and suspected risks, at least some of the risks also provide a means of prevention; for example, simple lifestyle choices. Women have control of their alcohol consumption and smoking habits. Exercise at all ages and weight reduction in post-menopausal women are likely to be beneficial, and for new mothers, breastfeeding for six months to a year or more has potential benefits, Hulka pointed out.

Other preventive strategies being studied include a clinical trial of the drug tamoxifen and hormone replacement therapy. Clinical trials of dietary modification will include calorie and fat reduction and increased consumption of fruits, vegetables, and grains among some 60,000 women volunteers. Other studies are looking at the role of micronutrients including retinoids and carotenoids and antioxidants in decreasing risk.

Environmental Awareness at NIEHS

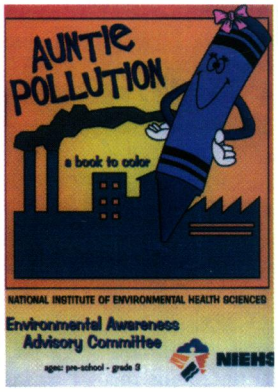
Although the primary mission of the NIEHS is to investigate the effects of the environment on human health, the institute has not forgotten the health of its own local environment. This May marked the third anniversary of the establishment of the institute's Environmental Awareness Advisory Committee (EAAC), an employee-based organization created to respond to specific issues and practices that have a significant impact on the NIEHS and its surroundings.

"The committee was originally formed to deal with a number of energy-saving and other environmental issues arising from suggestion programs and other formats," explains Associate Director for Management Charles Leasure, Jr. "Before long, the program included a much wider range of concerns, such as paper reduction, safe plastics, and the responsible use of pesticides and herbicides. As its mission broadened, so did the number of people who were interested in joining the committee, and so we opened it up to any employee who is willing to actively participate in a project."

One of the committee's most visible enterprises is a multimaterial recycling program begun in January 1993. The program targets many of the institute's solid wastes, including paper, newspaper, cardboard, magazines, catalogs, aluminum foil and cans, beverage glass, plastics, and steel cans. The waste is picked up by a private contractor and eventually sold to paper mills and other manufacturers for reprocessing. Over 392,000 pounds of solid waste have been recycled in the 18 months since the program started.

Another successful approach to NIEHS's solid waste problem is a program to reduce the flow of incoming mail. Committee Secretary Bill Willis has been working with vendor representatives to eliminate the names of employees who are no longer with the institute from their mailing lists. "We have prevented hundreds of unwanted catalogs from being delivered to the institute," says Willis. "This program reduces our need to get rid of these items while also eliminating the companies' need to print them, the end result being an overall reduction in paper use."

The EAAC has also begun an aggressive program to reduce energy consumption. Many of the institute's incandescent lights have been replaced with more energy-efficient fluorescent bulbs, and variable-speed motors are replacing the less efficient single-speed devices. Facilities engineering personnel are equipping conference rooms and laboratories with light timers and automatic sensors that can be programmed to turn off unneeded lighting. A "lights out" campaign has been started, complete with promotional stickers to remind employees to take responsibility for turning off their own lights. Committee members are also working on a plan to reduce the amount of solar heat in the main building during summer months.



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Color my world. EAAC outreach uses coloring books to teach children about pollution.

Although much of its focus has been on human activities, the committee's agenda has expanded to include wildlife around the NIEHS campus. NIEHS Director Kenneth Olden recognizes the importance of maximizing the biodiversity of flora and fauna that inhabit the NIEHS campus. "Research has shown that more complex ecosystems are better able to withstand the stresses of change than are simple ones," says Olden. "We should strive to provide a place for our local species that are threatened by decreased habitat and food supplies."

To achieve this goal, the EAAC has enlisted the help of students from the Duke