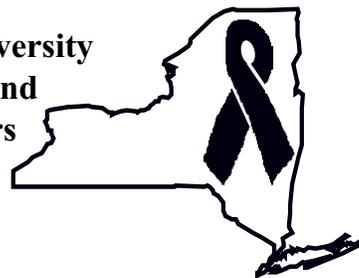


# The Ribbon

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A Newsletter of the Cornell University  
Program on Breast Cancer and  
Environmental Risk Factors  
in New York State  
(BCERF)



Volume 2, Number 2, Spring 1997

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## Intergenerational Education: Starting Early to Reduce Breast Cancer Risk

Early on in the development of its educational program, BCERF recognized that there were important reasons to address not only women, for whom breast cancer is often already a matter of personal concern, but also young women and girls. Dr. Carol Devine, Education Project Leader for BCERF (see accompanying biographical sketch, page 5) designed a unique approach for doing so: "intergenerational education," or, reaching girls by working with their mothers and grandmothers, as well as teachers and youth leaders.

An important reason for prioritizing girls in BCERF's educational strategy is the biological reason. As with all cancers, there is a period of 3-35 years that it takes for breast cancer to develop. As research continues to provide information about the risk factors for breast cancer, scientists are also learning more about the time period that may be especially critical for reducing risk later in life. The research suggests that this time period may be as long as pre-adolescence, through menarche to first birth.

BCERF's purpose for taking an intergenerational educational approach involves the development of health behaviors. Carol's previous and current research on women's health- and nutrition-related attitudes and behaviors over the life course, provide background for this aspect of the intergenerational approach. Health-

related behaviors, such as eating, exercise, smoking and alcohol consumption habits, and safe use of chemicals and pesticides, are influenced by a wide variety of circumstances in a girl's life, such as family environment, available choices, and positive opportunities for self-expression. Reducing exposure to environmental risk factors, such as certain chemicals, clearly relies on the knowledge and behavior of the adults around a girl.

A mother's feeling of responsibility for her daughter's health gives her a strong motive to set a good example. Alternately, a daughter pursuing positive health behaviors can influence a mother and others around her. Importantly, a girl's health behaviors may form the basis of behaviors throughout her life.

Carol is currently doing critical reviews of the existing research on diet and other lifestyle factors and breast cancer, and using what she finds to further develop BCERF's intergenerational risk reduction efforts.

### **The Pre- and Post-Puberty Years: Importance in Breast Cancer Risk**

**Age of menarche.** One established risk factor for breast cancer is the age of menarche. Research studies have estimated that women who have their first menstrual period at or before age 14 have a 30% greater risk of

developing breast cancer than women who reached menarche at age 15 or later. Early menarche means an early start to a girl's lifetime exposure to estrogen, and thus may increase breast cancer risk.

Although age at menarche may not be modifiable for individual women, there is evidence that age of menarche is, to some extent, related to social trends that have changed over time. We know this for several reasons:

- the average age of menarche and development of secondary sex characteristics in western countries has decreased over the last 200 years
- girls in less developed countries, such as Africa and Asia, begin menstruating much later than those in western countries
- fatter girls reach menarche earlier than thinner girls
- physically active girls experience menarche later than sedentary girls

The goal is clearly not to try to change the age of menarche in individual girls. Rather, the goal is to make use of existing knowledge about the many benefits of a healthy diet and physical activity for this age group, as described below. With these ideas put to work, an added benefit for the population may be an effect on the age of menarche, and a decreased risk of breast cancer for this or a future generation.

**Sensitivity of rapidly growing cells.** There is another indicator which points to the importance of the time of pre- and post-puberty, with regard to breast cancer risk.

During this time, the cells in the breasts are growing and dividing rapidly. This rapid growth and division presents more opportunity for genetic mistakes to occur, and therefore greater 'sensitivity' to outside factors. The diagram below refers specifically to activity that takes place between the onset of puberty and first pregnancy.

Research after the bombings of Japan during World War II showed that the effect of the radiation on breast cancer risk was greatest among women in their teens and early twenties, and far less for older women. Starting smoking at an early age may present a higher risk of breast cancer. Likewise, it seems that exposure to any environmental risk factor may have a greater effect on girls and women in the period between menarche and first pregnancy.

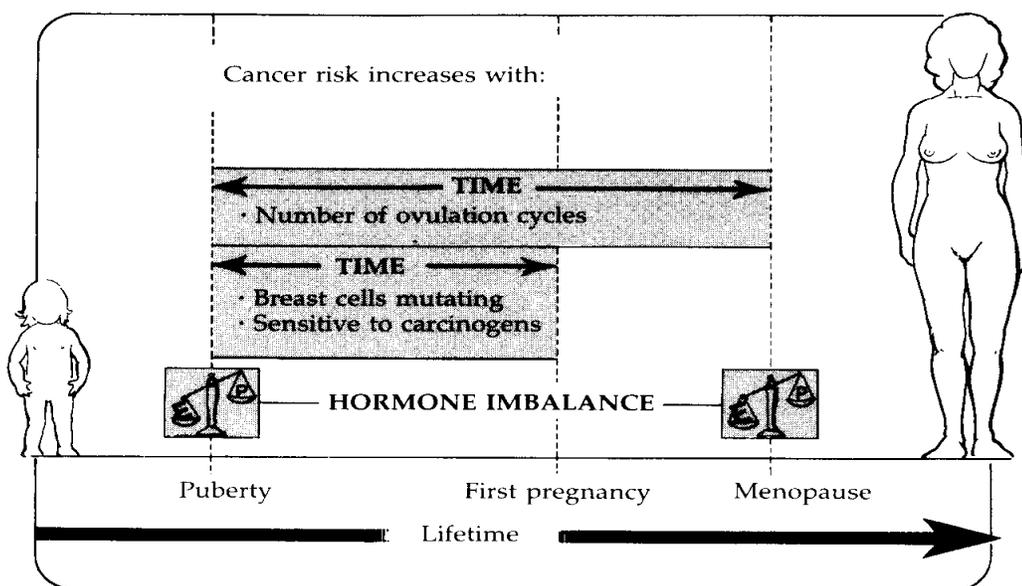
In addition, protective factors, such as a diet rich in fruits and vegetables, may have an especially important role during this time. The antioxidant nutrients which can help repair damaged cells may be especially needed during a period of rapid cell growth and division.

### Reducing Risk: Steps to Take With Girls and Young Women

There are many difficulties in studying the possible environmental risk factors for breast cancer, and understanding the exact significance of girls' and young women's exposures. Carol points out that *prospective, long-term studies* are needed, but are complicated and expensive to carry out. Simply put, these are studies which would follow a large group of girls over time to adulthood, recording behaviors and measuring exposures, then observing the incidence of breast cancer. In the absence of these kinds of studies, there is still enough information to

focus attention on girls and young women and encourage policies and behaviors that have many positive health benefits.

**House and garden chemicals.** For a variety of reasons, children may be more sensitive to environmental toxins than adults. Girls in the developmental period described above may be especially susceptible. BCERF's project of evaluating evidence of any links between exposure to certain pesticides and breast



S. Love, DR SUSAN LOVE'S BREAST BOOK, Second Edition, (figure 14-5). © 1995 Susan M. Love, M.D. Reprinted by permission of Addison-Wesley Longman Inc.

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cancer risk also identifies the knowledge gaps in these areas, and has shown that there are many. Even in the absence of complete knowledge, it is sensible to protect this group from unnecessary exposure to pesticides and other environmental chemicals.

This begins in the home, where, for example, adults may not recognize the exposures they may create for their families when they use or have someone else use pesticides when dealing with weed, insect, or rodent problems. A 1992 EPA study showed that people often do not recognize that pesticides pose health and safety threats if not managed properly. Other household chemicals, such as cleaning products, can also be harmful if they are used without appropriate precautions.

With pest control, it is critical to understand the problem, look for the least toxic alternative to dealing with it, and use a range of precautions if choosing pesticide use. The question of pesticide use in schools and other places where children spend time has increasingly been addressed by the Environmental Protection Agency, the New York State Attorney General's Office, municipalities, and others. The New York State Integrated Pest Management (IPM) Program is helping to reduce pesticide use in these places. Parents can get involved in reducing their children's pesticide exposure in the schools by such efforts as: asking about the school's pest management policy; requesting notification of pesticide use; and observing posted warnings on school grounds and parks, and encouraging their children to do the same.

**Diet.** Many of the studies analyzing diet and breast cancer risk have been inconclusive. One of the reasons may be that these studies typically do not address life-long diet, but rather a limited period in adulthood. Currently scientists are discovering more and more aspects of whole vegetables, fruits and grains which contribute to the protective effect of certain foods in the diet against cancer. Other ways that a plant-based diet may contribute to a reduced risk of breast cancer include the possibilities that this kind of diet is associated with a later age of menarche, and lower levels of circulating estrogens. These are both possibilities that have been suggested by research studies, such as the several *cross-sectional studies* which found a later age of menarche in vegetarian girls. Providing a range of vegetables, fruits and whole grains for developing girls is a good strategy for a whole range of health reasons. Parents may need to make the extra effort of ensuring that these foods are available in their children's schools.

**Exercise.** There is evidence that exercise is related to reduced breast cancer risk among women. Studies

suggest that teens who are physically active may have a reduced risk for breast cancer later in life. The biological mechanisms may be related to levels of circulating estrogens, body weight and fat distribution, and increasing the number of anovulatory menstrual cycles (menstrual periods without ovulation.) There are no prospective, longitudinal studies that have measured exercise and subsequent breast cancer risk. However, because exercise appears to reduce the risk of breast cancer among women, and because we know that physical activity tends to decline around adolescence, this is another area in which starting early may be a good idea for many reasons.

**Alcohol and smoking.** An increase in the risk of breast cancer has been found among women who drink even moderate amounts of alcohol for their lifetime. There is much evidence suggesting that alcohol increases a woman's estrogen levels. One of the more specific questions that remain about the association between alcohol and breast cancer is whether the timing of alcohol consumption matters; for example, whether alcohol use in adolescence is especially significant, or whether it is the total lifetime exposure to alcohol. One study from the National Cancer Institute showed that alcohol consumption increased the risk of breast cancer only in those who had started drinking before age 30. Although the research overall is not clear on this question of timing, it may be that stage of life is an important aspect of this risk factor also.

Beginning to smoke at an early age presents a greater risk of several cancers, including breast cancer. Several studies showed that it is the age a woman begins to smoke, rather than the duration of smoking years, that is related to increased breast cancer risk. One recent study showed that, among heavy smokers, there was an 80% increased risk of breast cancer among those who began smoking before age 16, and a 140% increased risk for those who began before age 14. This suggests that there is a period when the breasts are more susceptible to the carcinogens from cigarette smoke.

### **An Intergenerational Educational Strategy**

There are changes that can be made to address many of the possible risk factors for breast cancer. However, Carol emphasizes that many of these practices cannot be expected from girls on their own. Some involve changes in family habits, including what is served at meals and available for snacks, opportunities for exercise, and home chemical safety. Others involve policy changes; for example, menu options in school lunches, physical education programs, and chemical-use practices in public places.

*(continued on page 7)*

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# The New York State College of Human Ecology: Many Approaches, All Responding to Human Needs

BCERF was founded at Cornell University because existing resources here could be brought together to provide expertise and direction to the program. One of these critical resources is the New York State College of Human Ecology (CHE).

*Francille M. Firebaugh*

The dean of the college, Francille M. Firebaugh, sees the link between CHE

and BCERF as multi-dimensional. She says that BCERF's founding as a response to a health-related need identified by New York State citizens "is a great fit with CHE's commitment to anticipating and responding to human needs." CHE carries out its commitment through research, education and outreach within four major initiatives:

- Nutrition and Health
- Human Development
- Economics and Social Well-Being
- Environmental Design and Technology

"Breast cancer looms large as an important women's health concern," Dean Firebaugh says, as she describes the college's long history of work in areas closely related to the study and dissemination of knowledge about breast cancer and environmental risk factors. "There is a strong interest in women's health issues, and maternal and child nutrition has long been a cornerstone of the Division of Nutritional Sciences and its predecessor units. The College also has a broad interest in the environment." The College's active outreach program through Cornell Cooperative Extension serves as an effective route disseminating the results of CHE's research to New York State citizens.

**Nutrition and health.** BCERF's Education Project Leader Carol M. Devine, is an Assistant Professor in CHE's Division of Nutritional Sciences (see profile on page 5). Dean Firebaugh refers to a concept that is reflected in Carol's work and central to CHE's approach in nutrition: "Traditionally relationships between diet and disease were studied; now we are oriented toward diet and health. The College has a keen interest in prevention."

CHE boasts many examples of broad-based study and development of community programs in nutrition and health, including the national award-winning Nutrition for Life Program, a comprehensive nutrition education program for New York State schools. This successful program provides a foundation for work in the schools that will be necessary to begin reducing the future risk of breast cancer among girls and young women.

In addition to applied work such as this, the Division of Nutritional Sciences is also home to cutting-edge research in nutrition and cancer. Examples include the China-Cornell-Oxford Project, which is analyzing detailed data about regional Chinese diets and chronic disease outcomes, and exciting research on dietary components such as selenium and vitamin A, and their role in cancer prevention. A recently-concluded 13-year phase of research by Dr. Gerald Combs and his colleagues looking at selenium supplements in the diet, points to a protective effect on hormone-sensitive cancers, possibly including breast cancer.

Dr. Banoo Parpia is a Senior Research Associate in the Division of Nutritional Sciences, an international nutrition demographer by training, and the Coordinator of the China-Cornell-Oxford Project. She is very involved in the BCERF project, contributing her epidemiological expertise in a variety of ways, including presentations at meetings and training programs, and authoring a BCERF fact sheet on "Understanding Breast Cancer Rates." (see tear off sheet)

**Environment.** Another direct link between CHE and BCERF is Dr. Ann Lemley, Professor and Chair of CHE's Department of Textiles and Apparels and head of the university's Water Quality Program. Ann recently joined the BCERF staff as its Associate Director. She has an extensive background and continued interest in water quality questions that are important to BCERF's information base, for example:

- Pesticides and their degradation in drinking water
- Guidelines of the Safe Drinking Water Act
- Public policy and drinking water

A central component of the Water Quality Program is its commitment to education about a wide range of issues related to drinking water and health. As research about any possible links between pesticide or other

environmental chemical exposure and breast cancer continues, and may hopefully provide clearer answers in the near future, many New York State citizens want to understand and reduce their exposures. Ann says, "I am very interested in empowering individuals, families and communities to take some responsibility for maintaining safe drinking water." The Water Quality Program also provides information on household chemical use and disposal — a topic on which BCERF has received inquiries. The public is very interested in what Ann describes as the "...natural connection between maintaining safe drinking water, handling household chemicals safely, and reducing risks of cancer."

As research to understand any possible role between pesticide exposure and breast cancer continues, reducing human exposure to pesticides is important for a range of immediate and long-term health reasons. Within CHE, also in the Department of Textiles and Apparels, the Personal Pesticide Protection Program researches and educates on the selection, use and maintenance of personal protective equipment. Senior Extension Associate Charlotte Coffman collaborates with Dr. S. Kay Obendorf on research to enhance health and safety through textile systems.

**Life course.** The Bronfenbrenner Life Course Center is housed and supported by CHE. Its many interdisciplinary projects all relate to the "pathways of individual and family well-being," and are providing new and needed perspectives on current social challenges. Many of these projects can help inform BCERF's work on understanding and communicating possibilities for intergenerational risk reduction. The Life Course Center also offered the opportunity to discuss some relevant questions about genetics and breast cancer when it offered a Fall 1996 colloquium on "Social and Economic Consequences of Genetic Testing for Breast Cancer Susceptibility."

These are just a few examples of the many resources of the College of Human Ecology from which BCERF can draw. There are many more cooperative efforts that will be developed over time as BCERF seeks to remain up-to-date and active in the many related fields which comprise CHE. Dean Firebaugh sees these relationships as important to BCERF continuing to refine its work "educating about the complex contributing factors for breast cancer, and seeking direction for prevention." In the longer term, she hopes for even more opportunities for research related to these topics, in combination with CHE, the Cornell Medical College, and other partners.

## **Carol M. Devine, Ph.D., R.D.**

### ***Originator of BCERF's Intergenerational Research Approach***

*Dr. Carol Devine is an assistant professor of nutrition and women's health in the Division of Nutritional Sciences at Cornell University and project leader for the public education component of BCERF. She received her doctoral degree in nutrition from Cornell, her Master's degree from Tufts University. Carol is a registered dietitian who completed her dietetic internship at the Frances Stern Nutrition Center at Tufts. She has done extensive research in the area of women's nutrition and health. Specifically, she is interested in how transitions in women's lives such as pregnancy and menopause affect their eating patterns and their attitudes about health and nutrition. In addition to her research, she is a member of the Cornell Cooperative Extension faculty. As such, she is involved in planning and conducting community nutrition programs to improve the health of New York women. She is also the leader of the working group on Nutrition for Working Women of the Division of Nutritional Sciences.*

### **VIDEOTAPE OF BCERF'S FEBRUARY SATELLITE CONFERENCE**

Reminder: videotapes from BCERF's February satellite videoconference are available from Cornell Media Services for \$15. This tape, which includes segments on understanding breast cancer rates, breast cancer and pesticides, and risk reduction, can be very useful in introductory programs. To order, contact: Glen Palmer (607-255-5431) or e-mail: [grp2@cornell.edu](mailto:grp2@cornell.edu).

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*“We Need to Know”*

## **Ad Hoc Discussion Group**

*“Learning Together”*

Welcome Ann and Maria! Dr. June Fessenden MacDonald, Director of BCERF, introduced the newest members of the BCERF staff. Dr. Ann T. Lemley, Professor and Chair of the College of Human Ecology's Department of Textiles and Apparels recently joined the BCERF staff as its Associate Director. Maria Sant'Angelo, Extension Agent with the Cornell Cooperative Extension Association of Nassau County has become BCERF's Extension Educator in Nassau County.

The February 21, 1997 Ad Hoc Discussion group meeting was again well attended. June provided the group with a review of BCERF's activities in research, education and outreach.

She discussed the vital role partnerships play for BCERF. For example, Dr. Carol Devine has recently been interacting with the NYS Department of Health/Bureau of Chronic Disease — Breast Cancer Partnership, Center for Agricultural Medicine & Health (NYCAM), NCI/Cancer Information Service, Buffalo and NYC.

June announced that on September 29 and 30, 1997, Cornell's Institute for Comparative and Environmental Toxicology along with the BCERF program will be holding a symposium on “Breast Cancer and Environmental Risk Factors: The Science that Drives Public Policy”. For more information on this symposium, contact: Cindy Wright, ICET, 214 Rice Hall, Cornell University, Ithaca, NY 14853-5601; 607-255-8008; e-mail: CLW3@cornell.edu.

Continuing on with the agenda was an update on the Pesticide Use and Sales Registry by Robert Haggerty, Program Specialist, NYS Department of Environmental Conservation. Bob started off with a brief overview of the law and discussed the process of disseminating information to those who are required to submit reports. Four meetings have been held and he continues to travel across the state to distribute this information. The forms, available electronically and in paper format, have been developed to facilitate the filing of information pursuant to the law. He stated that they expect to get 56 million reports in the structural applicators alone. The next big area for him is in the area of guidance — preparing guidance to educate the public on filling out these forms. An information line has been set up and is receiving approximately 60 calls/day (888-457-0110).

William Smith, Robert Warfield, and Dr. Donald Rutz, all of the Cornell University Pesticide Management Education Program (PMEP), reported on some of PMEP's recent and ongoing activities, including the Pesticide Use and Sales Registry software development project and pesticide applicator training. In addition to reviewing PMEP's work with Bob Haggerty on pesticide use reporting, Bill's report included overviews of survey research the group is doing, additions to the PMEP world wide web site, and information and education about the Food Quality Protection Act. Bob reviewed the phases of development of the data entry system for the pesticide use software. Don discussed the curriculum requirements for pesticide applicator certification, and described the manuals that have been developed for training applicators.

Following the lunch break, Dr. Carol Devine, Education Project Leader for BCERF, presented BCERF's 'Intergenerational Approach to Breast Cancer Risk Reduction.' She described how the other work that BCERF is doing provides a context for this educational strategy. She reviewed the evidence for a relationship between several diet and other lifestyle factors and breast cancer risk, explaining what is known about the link of these factors with lifetime estrogen exposure. Carol highlighted areas where intergenerational education has much potential for an impact on breast cancer risk reduction. This approach is described in the lead article of this newsletter.

BCERF Research Project Leader, Dr. Suzanne Snedeker, gave the group an update on “What's New on the BCERF Web Site” and the Environmental Risk Factors Database. She discussed the pesticide Chlordane, an insecticide widely used from 1947 to the 1980's when it was banned. It was used to protect buildings, gardens and lawns from insects and termites. Chlordane was also used as an insecticide on grain, maize and potatoes. This pesticide is of concern because of its persistence (for example, it has been detected in the air of homes fifteen years after use) and high levels of household use (an estimated 52 million people live in Chlordane-treated homes). She discussed with the group this pesticide's relationship to breast cancer. A BCERF critical evaluation and fact sheet on Chlordane are forthcoming.

*Carin Rundle, Executive Secretary  
Ad Hoc Discussion Group*

Please mark the appropriate request, print your name and address and mail or fax to:

**Cornell University**  
**Program on Breast Cancer and**  
**Environmental Risk Factors in**  
**New York State**

110 Rice Hall, Cornell University  
Ithaca, NY 14853-5601

Phone: (607) 254-2893

FAX: (607) 255-8207

E-Mail: [breastcancer@cornell.edu](mailto:breastcancer@cornell.edu).

—add me to your mailing list

—send me a copy of the BCERF Information Sheet

PLEASE SEND ME THE FOLLOWING FACT SHEETS:

Phytoestrogens and Breast Cancer: Another Reason to Eat  
Your Vegetables (#1)

DDT, DDE and the Risk of Breast Cancer (#2)

PLEASE SEND ME THE FOLLOWING FACT SHEET WHEN  
AVAILABLE:

Understanding Breast Cancer Rates (#3)

NAME \_\_\_\_\_

Address \_\_\_\_\_

\_\_\_\_\_

Telephone \_\_\_\_\_

Fax \_\_\_\_\_

Email \_\_\_\_\_

**The next Ad Hoc Discussion Group meeting:**  
**Wednesday, June 25, 1997 -- 11:00am to 4:00pm,**  
**Center for Tomorrow, SUNY Buffalo**  
**North Campus, Amherst, NY**

In addition to the introductions and announcements, the report from the director, and an update on the pesticide use sales and software development, the agenda will include reports from breast cancer activist groups

- Geri Barish, "1 in 9" Long Island Breast Cancer Coalition;
- Karen Plesh Gilewski, Breast Cancer Network of WNY, Inc.;
- Lorraine Pace, Breast Cancer Education Specialist with Stony Brook University Hospital Medical Center;
- Rosemarie Williams, Cancer Awareness Coalition, New Paltz, NY

Ad Hoc Discussion Group meetings are open to any and all stakeholders to come together to discuss issues related to breast cancer and environmental risk factors.

### Intergenerational Education

*Continued from page 3*

Additionally, parents and educators would not want girls to be too worried about breast cancer at too young an age. Fortunately, many of the ways that are being identified to reduce the risk of breast cancer are health practices that are recommended for a variety of reasons, and can be 'packaged' with positive messages for girls and young women.

For example, together with Cornell Cooperative Extension of Nassau County, BCERF is developing a new initiative that, if funded, intends to contribute to the reduced risk of breast cancer in its target population by working with mother-daughter teams. A variety of activities will have objectives that are primarily positive and immediately meaningful to girls in this age group, such as involvement in sports. In addition, in BCERF's upcoming inservice training in June, there will be a session on lifestyle changes for mothers and daughters, which will include a discussion of successful models for working with this population. BCERF is putting to work what is known about the development of breast cancer, risk factors for breast cancer, and health-related attitudes and behaviors of girls and women, in order to promote risk reduction when it may matter the most.

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**Cornell Cooperative Extension**

## ***WHAT'S NEW*** ***"ON THE WEB"***

***<http://www.cfe.cornell.edu/bcerf/>***

We have a new page on the BCERF web site which will introduce you to "The New York State Integrated Pest Management Program" (<http://www.cfe.cornell.edu/bcerf/ipm.html>). The goal of "IPM" is to help those both in agriculture and in urban settings to use methods to control pest problems which reduces reliance on pesticides. Check out this emerging "sensible" pest control program which is sponsored by Cornell Cooperative Extension. We've added new links to our "Breast Cancer Statistics Page" (<http://www.cfe.cornell.edu/bcerf/link.stat.html>), which includes a direct link to the New York State Dept. of Health's "Cancer Statistics" web page, where you can download the most recent tables on cancer incidence and death rates. For those of you that thirst for more scientific information, we've provided links to on-line science and cancer journals at the bottom of our "Hyperlinks to Related Sites- Information for

Researchers" page (<http://www.cfe.cornell.edu/bcerf/link.scient.html>). You can obtain abstracts of articles, and in some cases, see the full-text version of scientific articles.

*Suz Snedeker, BCERF "Webmaster"*

NOTE: As of May 21, 1997 Rachel Clark joined the BCERF staff as Sciencewriter and our new Webmaster.

*The Ribbon* is published by the Cornell Program on Breast Cancer and Environmental Risk Factors in New York State. Comments are welcome; contact the Editor

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