


BCERF joining the Sprecher Institute for Comparative Cancer Research


Rodney R. Dieter, BCERF Director and Professor of Professor of Immunotoxicology

The Cornell Program on Breast Cancer and Environmental Risk Factors (BCERF) was created eight years ago in response to a major public need for sound science to be brought to the public, state and federal agencies, and researchers in a way that facilitated public protection against environmental risks of breast cancer. While serving as a neutral arbiter of the science, our efforts have helped to inform and enhance public health protection legislation at both the state and federal levels. The model established for integrating the best scholarly translational research with grassroots public education aimed at preventative medicine/risk reduction has set the standard for public health education in the land grant university setting. Our impact has extended well beyond New York State with both regional and coast-to-coast collaborations as a hallmark of our current activities. Now BCERF enters a new era with the opportunity to join the newly created Sprecher Institute for Comparative Cancer Research in Cornell's College of Veterinary Medicine. This Institute will provide a programmatic home for the majority of Cornell's cancer research effort and also provide novel opportunity to extend comparative medicine not only across different cancers but also different species.

Under the new banner of *Cancer and Environment*, BCERF will continue its tradition of providing timely science-based information on environmental risk factors for breast cancer. However, as additional funding becomes available, we will apply the same successful model to address additional human cancers and the protection of our pets and wildlife from the same environmental hazards. Our new linkage to the best cancer research and clinical application at Cornell will certainly enhance our future efforts and we are pleased to join the Sprecher Institute at its inception. 

Rodney L. Page, Director, Sprecher Institute for Comparative Cancer Research and Professor of Medicine

The administrative transfer of BCERF to the College of Veterinary Medicine at Cornell University coincides with the establishment of The Sprecher Institute for Comparative Cancer Research. The mission of the Sprecher Institute is to promote discovery and translation of research from basic science to clinical implementation for prevention and treatment of cancer for all species. The transition is entirely consistent with the mission of the College of Veterinary Medicine which is to enhance the health of animals and humans. This merger creates unique opportunities for both BCERF and the Sprecher Institute. The remarkable scientific and educational resource that BCERF has developed during the last eight years will be extended to include unique constituents such as agricultural families and open avenues of collaboration between those studying environmental causes of cancer in all organisms. For example, spatial pattern analysis on a database of cancers from companion animals living in Long Island is currently being conducted relative to the GIS data from human cancers and environmental contamination and socio-economic data. Such new information may lead to previously unavailable correlations. The basic scientific strengths

of the Sprecher Institute will also provide the means to develop investigations on the causal associations of environmental risks and cancer development. To this end, normal and tumor tissue repositories from multiple species can be sampled to investigate hypotheses common to cancer evolution in the full constellation of affected subjects. The goal of the combined efforts of BCERF and the Sprecher Institute is to establish a broader foundation for causation, prevention and control of cancer and we believe such a comparative approach to cancer will yield great benefits. 

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BALANCING RISK AND BENEFIT IN AN ENVIRONMENT OF EMERGING AND SHIFTING UNDERSTANDINGS

The Example of Postmenopausal Hormone Therapy

Barbour S. Warren, BCERF Research Associate

Life is not simple, especially when it comes to health choices. The educated consumer is continually bombarded with an ever-changing list of exposures from diet, other health behaviors, and the environment that increase the risk of developing diseases, including cancer. Making it all the more overwhelming, in a number of cases the beneficial and risky exposures can overlap to varying degrees, placing one in a position where a balance between these two effects must be reached. This discussion will examine the basic characteristics of this balance between risk and benefit. Postmenopausal hormone therapy, also called hormone replacement therapy, will be used as an example throughout this discussion (See BCERF Factsheet No. 40, *Hormone Treatments and the Risk of Breast Cancer*). Scientific understanding of the balance of risk and benefit for postmenopausal hormone therapy has changed rapidly in the last year and provides a good example for this discussion. Although the focus will be breast cancer risk, these risk/benefit characteristics should be applicable to other health areas.

Risk and benefit as used in epidemiology

It is commonly known that risk refers to increases in injury or harm, while benefit refers to decreases in injury or harm. But these terms, as used in epidemiology, are frequently misunderstood. The misunderstanding arises from two of their characteristics.

First, both terms represent the probability (or in other words, the possibility or likelihood) of the occurrence of harm or benefit. Risk is linked to increased possibility of injury or harm and benefit is linked to decreased possibility of injury or harm. In epidemiological studies, risk and benefit are given numerical values. A lack of an effect on risk or benefit—no risk or benefit—has a value of one. Benefits (implying decreased risk) have a risk value less than one, and a risk (implying increased risk) has a value greater than one.

Second, most epidemiological studies evaluate risk or benefit *relatively*. This means that the risk or benefit of an exposed group is determined in relation or comparison to that of a similar but unexposed group. As an example, a study can examine the relative risk of breast cancer for women using postmenopausal hormone therapy. Such a study would compare the risk of breast cancer among women using postmenopausal hormone therapy with the breast cancer risk of a similar group of women who were

not using this treatment. Studies of this type have found that women using postmenopausal hormone therapy had a probability of getting breast cancer that was greater than that of women not using this treatment. The size of the difference in these two probabilities is expressed as the *relative risk*. The relative risk is the number by which the non-user's breast cancer probability would have to be multiplied to equal the user's breast cancer probability.

A closer look at relative risk

Women currently using postmenopausal hormone treatment containing estrogen alone for five years or more had a relative breast cancer risk of 1.35, or a 35% increase in breast cancer risk (Collaborative Group, 1997). It is important to realize that this finding only pertains to women in these two groups. Further, the risk value is accurate across the whole group of women with these characteristics (currently using estrogen-only hormone replacement treatment for five years or more years) *but is not accurate for a single individual within the group*. Thus, looking at two individual women, "Jane" who is currently using estrogen-only postmenopausal hormone treatment and "Mary" who is not, Jane's risk of breast cancer is not 35% greater than that of Mary's. The individual breast cancer risk for each of these women is not known. The epidemiological studies only define the breast cancer risk of the groups to which these two women belong.

Benefits can be accompanied by risk

We are all aware that anything, even something good, taken to an extreme is likely to be harmful. This suggests that dose—or level of exposure—may play a key role in the risk/benefit balance. In most cases, the dose or level of exposure does indeed determine the balance between risk and benefit. Yet this is not always the case, and there can be overlaps in risks and benefits for some exposures. Postmenopausal hormone treatment provides a good example. Postmenopausal hormone treatment was very successfully marketed in the 1960s for the control of symptoms associated with menopause, protection against osteoporosis, reduction of breast and genital cancers, as well as for the unsubstantiated claims of reducing wrinkles, aiding mental clarity and increasing sexual libido. The early preparations contained only estrogens (estrogen-only treatment). In the mid 1970s two groups of investigators reported that there was a delicate risk/benefit

balance for estrogen-only postmenopausal hormone treatment (Smith et al., 1975; Ziel and Finkle, 1975). Estrogen-only treatment was found to greatly increase the risk of uterine cancer. One of these studies found that use for seven or more years increased the relative risk of uterine cancer among women in the group of users to a very large extent (the relative risk was 14). Subsequent to these studies, estrogen-only postmenopausal hormone treatment was recommended for use only in women who had had a hysterectomy and did not have a uterus. Later studies indicated that the addition of another reproductive hormone, progesterone, to the estrogen-only treatment would greatly decrease the risk of ovarian cancer and apparently restore the risk-benefit balance to an acceptable level. This type of treatment, called combination postmenopausal hormone treatment (estrogen combined with progesterone), was substituted for the estrogen-only treatment and became commonly used.

Understanding risk/benefit balance is dependent on current scientific knowledge

The apparent balance between risk and benefit in postmenopausal hormone therapy is totally dependent on the current understanding of the process or form of treatment being evaluated. In addition, some types of scientific evaluations have greater certainty and are less likely to change to a great extent. Studies that examine the health effects of practices and treatments can be divided into two classes. First are the *observational studies* that examine the health of people under treatment and compare them to similar people not being treated. These types of studies continue to provide a great deal of scientific understanding, but they are less reliable than the second type of studies, the *clinical trial*. Clinical trials gather together a group of people, randomly assign them to a treatment or placebo (no treatment) group and assure that neither the scientists nor the subjects know to which group they belong. Such clinical trials are considered the ‘gold standard’ for determining the effectiveness and safety of treatments.

A recent large clinical trial, the Women’s Health Initiative, organized by the Center for Disease Control and prevention, the National Center for Chronic Disease Prevention and Health Promotion and the National Institutes of Health, examined the health effects of both combination and estrogen-only postmenopausal hormone treatment (Rossouw et al., 2002). Even though these treatments had been in use for many years, this was the first clinical trial to examine postmenopausal hormone therapy in healthy women. The results were very surprising. Prior to this study use of postmenopausal hormone treatment was based largely on observational studies. Many but not all of these observational studies supported the idea that postmenopausal hormone treatment had a favorable risk/benefit balance. It appeared to decrease the risk of cardiovascular disease, prevent osteoporosis and

decrease colorectal cancer, which would apparently outweigh an increased risk of breast cancer (2% for each year of use for estrogen-only treatment and 6% to 8% per year for combination treatment) and ovarian cancer. After an average follow-up of five years, the combination therapy part of the Women’s Health Initiative trial was stopped due to an excess number of breast cancer cases; breast cancer risk was increased 26%. (The portion of the study examining estrogen-only postmenopausal hormone therapy will be completed in March 2005.) Analysis of other health effects raised further concern. Cardiovascular benefits were not seen: the risk of coronary heart disease was increased 29%, the risk of stroke was increased 41% and the risk of blood clots in the lungs was increased 113%. Some benefits were seen but not to the extent that they outweighed these risks. The risk of colorectal cancer decreased by 37% and the risk of hip fractures was decreased by 34%. It should be kept in mind that these values represent those seen when the trial was terminated for subject safety reasons. A longer period of treatment is typical for postmenopausal hormone treatment and excess risk would be expected to be higher.

Risks and benefits are different for different parts of the body; overall balance is critical

The balance of risk and benefit must be seen from a holistic point of view. Treatments and practices may be harmful to one aspect of health while helpful to another. The recent findings of the Women’s Health Initiative trial described above illustrate this characteristic well. Combination postmenopausal hormone therapy decreased the risk of colorectal cancer and hip fractures, but these benefits were outweighed by increased risks of breast cancer, heart disease, stroke and blood clots in the lungs.

Risk/benefit balance may be different at different times of life

Responses to different treatments and exposures can be different depending on a person’s age and the development of the organs in question. This characteristic has special relevance for the breast. Women’s breasts change throughout life and can be characterized as having multiple periods of development. Studies in animals and humans have suggested that the breast is affected by estrogen differently during these periods. During some periods, estrogen exposure is considered beneficial, such as during adolescence when estrogen plays a role in normal development of the breast. However, during other periods estrogen exposure can be harmful, as the Women’s Health Initiative trial of postmenopausal hormone therapy has shown for the period after menopause (postmenopause).

The Women’s Health Initiative has also recently reported another serious effect of combination postmenopausal hormone therapy that was age-specific and affected older postmenopausal women (Shumaker et al.,

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Why Risk-Benefit Analysis is the Wrong Way to Look

By Sandra Steingraber

TWO YEARS AGO, I PUBLISHED *HAVING FAITH*, AN EXPLORATION OF VARIOUS ENVIRONMENTAL THREATS TO HUMAN FETUSES AND INFANTS. A FEW WEEKS BEFORE I BEGAN THE TEN-CITY TOUR TO LAUNCH THE BOOK, I GAVE BIRTH TO MY SECOND CHILD: A BLOND, TEN-POUND BABY BOY WHO CHEERFULLY AGREED TO SERVE AS MY AUDIO-VISUAL AID DURING MY TRAVELS.

What I needed him for was breastfeeding. Across the nation, during every press conference, interview, photo shoot, and booksigning, I openly nursed Elijah. I did this not only when he really needed to eat in the middle of a presentation but even when I had to wake him up to perform. Therefore, my media clip files from this tour are full of pictures of me with my blouse unbuttoned. (My sister pointed this out.)

Exhibitionism, however, was not my motivation for all these public displays of lactation. Fear was.

The last chapters of my book—which I spent much of my residency here at Cornell completing—address the ongoing adulteration of human breast milk with chemical contaminants. These include insecticides, PCBs, flame retardants, fungicides, wood preservatives, termite poisons, mothproofing agents, toilet deodorizers, dry-cleaning fluids, gasoline vapors, and dioxins. Some are known human carcinogens; some are known immune suppressors; some are powerful endocrine disrupters. All are fat-soluble. Many can persist for up to half a century in human tissues.

What I was afraid of was waking up in the morning after a public lecture and reading a headline along the lines of “Cornell Prof Says Mother’s Milk Poisoned.” I was afraid that raising the topic of breast milk contamination would scare other mothers away from nursing and back to the bottle. And yet I still felt strongly that we needed to have an informed public conversation about the presence of persistent toxic chemicals in breast milk. We cannot solve public health problems by keeping secrets.

How, then, could I talk about breast milk contamination from a pro-breastfeeding perspective? How could I ensure my words would not be taken out of context? The answer, I decided, was to speak the words while nursing my own child.

It is a strategy that I still employ. But now that Elijah is nearing his second birthday, he is no longer the portable, predictable traveling companion he once was. (On our last hotel check-in together, he fell headfirst into the bathtub before I could even get the suitcase rolled through the doorway.) So, he now stays home with his father, and, instead, I pass a jar of expressed breast milk

around the room while I talk.

In all of my presentations on breast milk contamination, one of my main messages is that risk-benefit analyses do not shed much light on the problem. Yes, it’s true that mother’s milk is, almost always, a superior food source for infants than its inferior pretender, infant formula. Breastfed infants have fewer respiratory infections, diarrhea, middle-ear infections and die less often from Sudden Infant Death Syndrome. Breastfed infants grow into children who suffer less than their bottle-fed counterparts from juvenile diabetes, rheumatoid arthritis, obesity, dental malocclusions, and some leukemias. They respond more vigorously to vaccinations. They have better hearing and visual acuity. They develop balance and gross motor coordination more quickly.

It’s also true that breast milk commonly violates Food and Drug Administration action levels for poisonous substances in food. Were it regulated like infant formula, the breast milk of many U.S. mothers would not be able to legally sold on supermarket shelves.

Any discussion of breast milk contamination—either in the popular press or in the scientific literature—is almost invariably followed by a reassuring statement to the effect that breastfeeding is, nevertheless, the best method of infant nourishment. In other words, if you piled up all the positive, health-promoting virtues of mothers’ milk—as described above—and balanced them against all the known and possible dangers created by its burden of toxic chemicals, the scales of health would still tip in favor of the breast.

The reason I believe that these kinds of risk-benefit analyses are an unhelpful approach to the problem of chemical contaminants in breast milk is that they offer no solutions. The usual recommendation that follows from them—“just keep nursing because the benefits outweigh the risks”—means that we nursing mothers should take no action until our milk becomes so contaminated as to pose as many risks to pediatric health as formula. In other words, until breast milk, like formula, kills 3,000 U.S. infants a year. (This figure is the best estimate of the annual number of infant deaths—from infectious diseases and other causes—attributable to lack of breastfeeding.)

at the Problem of Breast Milk Contamination

Risk-benefit analyses imply that as long as one danger (breastfeeding) is less than another (failure to breastfeed), we should accept the lesser danger—even though it still necessitates endangering our children. The narrow duality of the risk-benefit equation leaves no room for the proposition that the feeding of babies should be a risk-free activity. Period.

Furthermore, the scientific knowledge on which risk-benefit assessments rest is unbalanced. While the benefits of breastfeeding are measurable (the number lives saved can be derived from records of births and deaths), the risks are not. All those who have conducted quantitative risk assessments have been frustrated by this asymmetry. The earliest risk assessments compared lives saved from infectious diseases with an estimate of the number of additional cases of cancer that might be caused by the exposure to carcinogenic chemicals in breast milk. No other health risks were considered. The conclusion was that fewer children would die from breast milk-induced cancers than from formula-induced infections, therefore...breast is best.

These analyses were published before we understood that environmental chemicals can contribute to all kinds of problems other than cancer, such as damaged immunity, hormone disruption, and altered brain development.

Later risk assessments have tried to account for problems other than cancer, but they assumed that the high levels of exposure during the brief period of breastfeeding would be counterbalanced by lower levels of exposure later in life. These assumptions have now been questioned. Thus, recent researchers who attempt to balance risks against benefits come to much more troubled conclusions than their predecessors. Of course, in the United States, where we keep no systematic records on breast milk contaminants, risk-benefit assessments cannot even be attempted.


Beyond the lack of simple monitoring data lie further complications. For example, an emerging body of evidence suggests that some common chemical contaminants interfere with milk production (possibly by inhibiting the pituitary hormone called prolactin). How would we include poor lactational performance in a risk-benefit equation? The problem here is not that the contaminants pose a direct, quantifiable toxic threat to the infant (which they might also do), but that the contaminants threaten to deprive the infant of mother's milk altogether. I think most nursing mothers would find any threat to our ability to make milk a serious threat indeed—whether risk assessments can account for it or

not. And so far, they have not.

I believe that breastfeeding is a sacrament of motherhood that cannot be reduced to a risk-benefit equation—even if we did have all the data to create one. By taking breastfeeding out of a risk-benefit framework and placing it into a human rights context, we avoid stultifying breast-versus-bottle discussions. In this last effort, we are assisted by a few powerful legal precedents.

For example, the Convention on the Rights of the Child, which was adopted by the United Nations General Assembly in 1989, recognizes breastfeeding as an essential component of the right of the child to “the enjoyment of the highest attainable standards of health.” Many states, including New York, also consider the right of a woman to breastfeed a civil right.

Surely, the toxic contamination of breast milk—to the degree that it routinely violate laws governing contaminant levels in commercial foodstuffs and threatens a woman's ability to produce sufficient milk to feed her child—is also a violation of these rights. The presence of toxic chemicals in breast milk compromises its goodness and lowers its capacity to heal, promote brain growth, and orchestrate the development of the immune system. Even if, thus compromised, the benefits of breastfeeding still outweigh the risks of not breastfeeding, the contamination of breast milk infringes nevertheless on a child's right to attain its full capacity as a human being and to enjoy the right to safe food and security of person.

And out of this conviction, I unbuttoned my shirt for Bill Moyers. Thank you, Elijah. 

Sandra Steingraber, Ph.D. recently finished a four-year residency at BCERF. In July 2003, she began a position as a Distinguished Visiting Scholar in Interdisciplinary Studies at Ithaca College, where she will continue her work on children's environmental health. Congratulations, Sandra! Thank you for your innumerable, wonderful contributions to BCERF and the honor of working with you. We look forward to future opportunities together.

*Portions of this essay are adapted from *Having Faith: An Ecologist's Journey to Motherhood*, which was recently released in paperback from Penguin-Putnam. Dr. Steingraber's research on breast milk contamination was recently featured on the PBS show, “Now” with Bill Moyers.*

2003). Women older than 65 using combination postmenopausal hormone therapy were found to have twice the risk of dementia of similar women receiving placebo.

Risk and benefit information is derived from representative populations—but this information does not apply directly to individuals within those populations

Epidemiological analyses of risk and benefit optimally study large groups of people that are representative of the population in question. The risks and benefits determined from these studies are not accurate for individual people. This is well shown by the risk/benefit analysis from the Women’s Health Initiative trial of combination postmenopausal hormone therapy discussed above (Rossouw et al., 2002). The table below converts the changes in risk for heart disease, stroke, etc., to increases (risk) or decreases (benefits) in health-related events each year for every 10,000 women using this treatment.

As the table shows, an increase of 31 health-related risks (heart disease, strokes, lung blood clots and breast cancer) would be predicted for every 10,000 women using this treatment. This is almost three times the predicted decrease in health-related benefits. In addition, these numbers would have been greater if the study had not been ended early. This does not, however, indicate a large individual risk: 0.3 % of the women would be predicted to have harmful health effects. However, acceptance of even this low level of risk has been questioned as other treatments with a more favorable risk/benefit


	RISK	BENEFIT
	Increase in health-related events per year for every 10,000 women	Decrease in health-related events per year for every 10,000 women
Heart Disease	7	
Strokes	8	
Blood Clots in Lungs	8	
Breast Cancer	8	
Colorectal Cancer		6
Hip Fractures		5
TOTAL	31	11

Table 1. Risks and Benefits of Combination Postmenopausal Hormone Treatment from the Women’s Health Initiative trial at the time it was terminated

balance are available for most of the menopausal symptoms for which postmenopausal hormonal hormone therapy has been typically used (Grady, 2003). The exceptions would be extreme osteoporosis and extreme hot flashes. In the case of the hot flashes, minimal doses have been recommended. Since this symptom is usually resolved in a few years, it has also been recommended that the need to continue the treatment be checked every six months.

Individual actions can have a large impact on societal health

The Women’s Health Initiative has also predicted that, although the individual risk for this treatment is low, the impact on society as a whole is large. It is estimated that at least five million women in this country were using combination hormone therapy. From this number it would be predicted that each year more than 15,500 women would suffer serious adverse health effects related to this treatment. In addition, the women who will suffer adverse affects related to this treatment cannot be medically identified.

This article describes some characteristics of the balance between risk and benefit, as they relate to our evaluation of health choices. Knowing what we do that increases our risk for various diseases, as well as which actions decrease our risk, can focus our efforts for change. It is also important to be aware of areas in which the balance of risk and benefit is less well defined scientifically—and to be aware of changes that take place over time in these scientific understandings. 

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Ad Hoc Discussion Group meets on the (IPM) Green

On June 18, 2003 the Ad Hoc Discussion Group meeting took place at Bethpage State Park in Farmingdale, Long Island. Our host at this location was Cornell Professor of Horticulture, Frank Rossi, aka “the Turf Guy.” Frank Rossi’s collaborative project testing the reduced use of synthetic pesticides on the golf courses at Bethpage, through the use of integrated pest management (IPM) techniques, was a featured topic at this meeting. Over fifty participants, representing many areas of professional activity (health, local and state government, breast cancer

Ph.D. from Cornell’s Department of Natural Resources, Heather re-joins the program after working with us several years back. She reported on two chemicals for which she is developing critical evaluations and fact sheets: DBCP and Ochratoxin A. The National Toxicology Program has identified both of these chemicals as mammary carcinogens in its studies in laboratory animals. DBCP or dibromochloropropane, a banned pesticide highly toxic to the male reproductive system, is a water contaminant in several areas of the country—most dramatically, in

issues in international settings—such as the 1992 United Nations Conference on the Environment and Development—but also as a notion that relates as far back as Hippocrates and shows up in early approaches to infectious disease control. She relates examples which can be described as precautionary approaches in various legal and policy decisions in the US, and how many federal acts—as they are written but perhaps not as consistently carried out—take a precautionary approach. Examples of this include the Food and Drug Cosmetic Act and the Occupational Safety and Health Act. The largest professional association of public health workers, APHA, has a policy statement that “encourages precautionary action... even if some cause and effect relationships have not been established with scientific certainty.” Dr. Snedeker’s full discussion comparing US versus European approaches, and the new European Union initiative entitled REACH (Registration, Evaluation, Authorization for Chemicals) cannot be captured in this summary, but please look for an article on this theme in a coming issue of *The Ribbon*.

We regret that Sandra Steingraber could not be part of the meeting and present her talk on Canadian Legislation Regulating the Cosmetic Use of Pesticides.

Large-scale case studies of non-agricultural IPM

The afternoon centered on two large-scale case studies of IPM: the Bethpage State Park golf courses and throughout the New York City public schools. Frank Rossi described his and Jennifer Grant’s (Assistant Director of the NYS IPM Program) multi-year collaboration with the

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While on Long Island, BCERF staff had the wonderful opportunity to tour the **Hewlett House** and visit with its outstanding staff. Hewlett House is a comprehensive resource and support center for any and all people with cancer-related concerns. Without referral and at no cost, one is able to walk in to this warm environment and obtain support and information that has been up to this point extremely difficult for many to find. Personal counseling, group classes, medical and financial information, and more are part of what is offered at the still-growing Hewlett House (watch for organic gardens soon!)

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services, landscaping), civic issues, and those with personal interest took part. Participants came from across Long Island and New York City. We were very pleased to be joined by representatives from several breast cancer activist groups with whom we have been working for over eight years.

Participants were informed of the administrative change taking place for BCERF by Rodney Dietert and Rodney Page (see cover article).

Translational Research: Current Work

BCERF Research Associate Heather Clark provided a research update from the BCERF program. A recent

California’s Fresno area. Ochratoxin A is a mycotoxin produced by certain species of *Aspergillus* and *Penicillium* molds. It has been detected in a wide range of foods from grains to coffee and cocoa. Please watch for availability of these two BCERF publications.

The Precautionary Principle: What does it mean and how is it taking shape in Europe?

BCERF Associate Director for Translational Research, Suzanne Snedeker, then presented a fascinating history and overview of the precautionary principle. She described the emergence of this philosophy as applied to environment and health

The Ribbon is published by the Cornell Program on Breast Cancer and Environmental Risk Factors in New York State. Funding provided by the New York State Departments of Health and Environmental Conservation.

Editor

Carmi Orenstein,
M.P.H., *Assistant
Director*

Design

West Hill Graphics,
Ithaca, NY


Ad Hoc Discussion Group meets on the (IPM) Green

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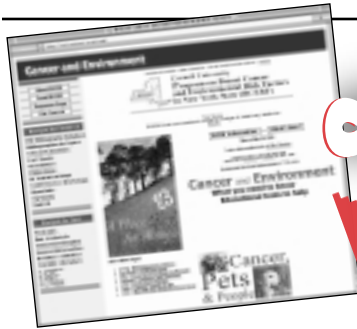
Bethpage State Park superintendent and crew to develop turf care programs to reduce or eliminate the need for pesticides. Frank reiterated the notion that demand for these kind of innovations directly affects their research and development. He described the buy-in they are receiving from the crew and the golfers, and the success stories to date in reduced pesticide use, without decreased performance of the turf.

We were very lucky to be joined by Dan Dickerson, the Director of Pest Control for the Board of Education, City of New York. With limited resources and staff, Dan is carrying out a no-pesticide use policy in New York City public schools, which includes 1200 school buildings and a population of 1.2 million students. His IPM approach emphasizes all aspects of

prevention, such as systematic sealing of pest entry points, and uses baits and traps instead of spray and fog pesticide applications. The US Environmental Protection Agency (EPA) awarded his program a certificate for outstanding efforts towards risk reduction in 2002.

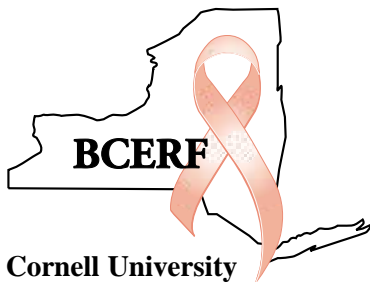
Thanks to everyone for their participation. If you have feedback on this meeting or input into future Ad Hoc Discussion Group meeting planning, please contact Carmi Orenstein at 607-254-2893 or cs01@cornell.edu 

Next Ad Hoc meeting
FRIDAY, OCTOBER 24, 2003
10:00am to 3:00pm at
New York-Presbyterian Hospital
Westchester Division,
White Plains, New York



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Cornell University
*Program on Breast Cancer and
Environmental Risk Factors in
New York State*
Box 31, College of Veterinary Medicine
Cornell University
Ithaca, NY 14853-6401

Phone: (607) 254-2893

Email: breastcancer@cornell.edu