

**Breast Cancer and the Environment: From Research to Action
Community Forum**

Summary Report by Sue Rochman

More than 200 Bay Area residents recently took part in a free community forum that provided a unique opportunity to discuss issues related to breast cancer and the environment with a panel of nationally recognized experts and local advocates.

The National Institute of Environmental Health Sciences and the Bay Area Breast Cancer and the Environment Research Center (BABCERC) sponsored the community forum, which was held Nov. 18, 2009, in Sausalito, Calif. It was held in conjunction with the Sixth Annual Breast Cancer and the Environment Research Centers' Scientific Conference on Early Environmental Exposures.

Dr. Robert Hiatt, the director of population sciences at the University of California, San Francisco, Helen Diller Family Comprehensive Cancer Center, and principal investigator for the BABCERC, opened the meeting by providing an overview of the four centers and their work. He noted that the "impetus for the centers was driven by community and advocacy concerns about breast cancer" and explained that communicating findings to the public is just one aspect of the centers' collaborative nature.

The hypothesis that drives the four Breast Cancer and the Environment Research Centers (BCERCs) work, said Dr. Hiatt, is that "early pubertal development is a potential window for environmental exposures that can act across the lifespan and can affect breast cancer in adult life." Most breast cancer research focuses on adult women, he said, "we are taking a different tack, by looking at breast cancer in early development. We are not just doing research. We are committed to applying what we know to intervention and public policy and to disseminating information as broadly as we can."

The Cause of Our Time

The community forum's expert panel featured Dr. Linda Birnbaum, the director of the National Institute of Environmental Health Sciences (NIEHS) and the National Institutes of Health National Toxicology Program. "Environmental issues are the cause of our time," Dr. Birnbaum told the audience. "They have contributed to diseases. They've had an effect on climate change, and on human health."

A board certified toxicologist, Dr. Birnbaum's research focuses on environmental chemicals, endocrine disruptors, and the linking of real-world exposures to effects. She explained how genetics and the environment interact, and, in turn, the effect that chemical exposures can have on the body. "Our bodies are influenced by genetics and the environment," she explained. "Even identical twins are not exactly identical. That's because the environment impacts how the genes act."

It is now understood that cancer results from both genetic and environmental factors. The Sister Study, which is sponsored by the NIEHS, is following 51,000 sisters of women

who have been diagnosed with breast cancer. This is an example of the type of study that can be done to look at both genes and the environment, Dr. Birnbaum explained, “and we are already getting data. We are finding that women who are obese have shorter telomeres. [Telomeres are special caps that are on each end of a chromosome’s arms that get shorter each time a cell divides. When they get too short, the cell stops dividing and dies.] We are seeing an inverse association between stress and telomere length. And we are also finding that multivitamins lead to longer telomeres.”

[This is of interest to cancer researchers because studies have shown that a number of different types of cancer cells have shortened telomeres. It’s also known that cancer cells are able to activate an enzyme, called telomerase, that keeps the telomeres from getting too short, thereby preventing cell death.]

Dr. Birnbaum told the audience that one of the unique things about the BCERCs is that community involvement is seen as essential to each center’s success. “Because this community involvement has been so successful,” she said, “we are now making it a requirement for any other centers we establish. It’s just the way we have to go.”

In closing, said Dr. Birnbaum, “We look forward to working with people in the Bay Area to learn more about breast cancer and develop effective prevention strategies. I just want to remind you: We can’t change our genes, but we can change our environment.”

Addressing Community Concerns

Ysabel Duron, founder and executive director of Latinas Contra Cancer and the anchor of the Bay Area’s KRON 4 TV Weekend Morning News, served as the moderator for the community forum. She directed questions to seven panelists: Dr. Birnbaum; Janice Barlow, executive director of Zero Breast Cancer; Gwen Collman, acting director of extramural research at the NIEHS; Dr. Rupali Das, chief of the exposure assessment section of the Environmental Health Investigation Branch of the California Department of Public Health; Dr. Hiatt; Dr. Peggy Reynolds, a senior research scientist at the Northern California Cancer Center; and Jeanne Rizzo, the president and CEO of the Breast Cancer Fund.

The forum’s audience included representatives from more than 20 of the BABCERC’s community partners. These groups range from the Asian & Pacific Islander National Cancer Survivors Network and Health Research for Action to the Bay Area Disparities Coalition and the UC Berkeley Center for Children’s Environmental Health Research, and the questions directed to the panelists illustrated the breadth of their work.

The community forum took place on the heels of the release of controversial new breast cancer screening recommendations by the U.S. Preventive Services Task Force. As a result, the first question to the panelists was about the new mammography guidelines, which some participants feared would be especially devastating to African American women and other women of color, who already have difficulty accessing quality care.

The panelists noted that the Task Force’s conclusion was a result of an unanticipated increase in negative consequences that have been seen since mammography screenings was extended to women ages 40 to 50. They also emphasized that mammography

screening was a personal decision that should be made in consultation with a health professional and based on an individual woman's health history and individual risk factors.

Jeanne Rizzo said it was her organization's position that whether women under 50 should have annual mammography screening "was not the right question." The problem, she said, is that "we have an outdated model of screening. It exposes us to radiation, which we know is a carcinogen. ... We've been having this conversation for years if this is the best way to detect breast cancer. And we know that it's not telling us what we need to know. ... I understand the rage about the new guidelines. It comes from the desperate need for us to understand this disease. We haven't invested in any alternative forms of screening"—and that's where we need to be directing our attention.

Breast Cancer Biomarkers

Some forum participants were interested in learning more about which biomarkers were being studied. Others wanted to know more about the research investigating chemicals that mimic estrogen in the body. Dr. Birnbaum explained that when studying chemicals in the body, scientists look at what amount of chemical stays in the body and what amount is eliminated. She pointed to the increased incidence of breast cancer in men who were stationed at Camp Lejeune, in North Carolina, that "appears to be a cluster" linked to contaminated water, as an example of the challenges in linking cancer to the environment. "Once people have cancer it's hard to understand what the causes were," she explained. "This contamination occurred in the '60s, '70s, and '80s, and we don't know how long the exposure lasted, but [what we are seeing] certainly is provocative."

Questions were also raised about the progress being made by California's biomonitoring program. Dr. Das explained that although a law was passed in 2006 that required the state to establish an environmental contaminant biomonitoring program to monitor the presence and concentration of certain chemicals in residents of California, the program is only now getting started and that, due to state budget cuts, would not be as extensive as had initially been envisioned. Instead, she said, investigators will be pursuing smaller studies, including one that they expect to initiate in 2010 that will look at levels of chemicals in mothers and their newborn infants.

Dr. Peggy Reynolds noted that "California is a bit of national experiment for chemicals" due to the unintended consequences of it being the first state to require that specific products, like mattresses and furniture, be fire-retardant. What wasn't clear at the time, but now is, says Dr. Reynolds, "is that people in the US have some of the highest body burden of these chemicals in the world." In addition, "there is some animal evidence to suggest they are carcinogens, which means this is the next frontier we may want to deal with."

Added Dr. Birnbaum, "I'm sorry to say that at there are at least 10 or 12 human epidemiology studies that have looked at flame retardants and their health impact in humans and, while cancer was not an endpoint that has been looked at yet, there is an association with undescended testicals, changes in hormone levels, and changes in

thyroid levels in studies that have looked at adults and newborns. These studies all came out within the last year-and-a-half. We're just beginning to look, and once you begin to look you start to find things."

The Impact of Community Involvement

Some community members had questions about the impact that community involvement has had on the type of research that is taking place on breast cancer and the environment.

Janice Barlow noted that the impetus for the BCERCs came from advocacy groups in the Bay Area who wanted to see an increased focus on environmental factors in breast cancer research.

Dr. Collman, of the NIEHS, explained that her agency had met with a group of Oakland residents who were concerned about the chemical exposures of Asian nail salon workers. She discussed how the advocacy group and her office worked together to educate women about the potential harms of the products they were exposed to at work. This information, she said, empowered the nail salon employees to address these concerns and make changes in their working conditions, such as the amount of solvents used and improving airflow inside their stores.

Dr. Collman said her agency also had helped residents of Los Angeles address concerns related to diesel exposure from both idling ships in nearby ports and the trucks that travel from the port on roads that go through low-income minority neighborhoods. "There are schools along these routes and the kids are breathing in fumes from the trucks," she said, and there was great concern about health risks.

In response, she said, the NIEHS funded programs that taught community members and advocates "how to do truck counts and measure particulates in the air and work with scientists to learn about what the data they had meant for their communities." Residents then went to the local zoning board with their data, and were successfully able to lobby for new policies that would keep the trucks off of certain streets. "That's an example," Dr. Collman said, "of what we're most proud of—bringing together communities and scientists not just for science's sake, but to make real change at the local level."

Jeanne Rizzo emphasized that partnerships between scientists and advocates can and do work. She said that her agency, the Breast Cancer Fund, had created a corporate accountability campaign about cosmetics that they then took to the policy level, resulting in the passage of a California state law requiring cosmetic companies to list all of the ingredients in their products. These companies "took the bad products out," she said, "because they didn't want to have to reveal that they were using things that were bad." This type of advocacy, she said is "about coming together with collective knowledge and will. An Asian woman who needs her job can't walk away from her salon, but we need to stand with her so she has a safe environment to work in."

Dr. Das also noted that there were a number of ways for people to get involved in the exposure assessments that will be done by her agency. “It’s run by the government,” she said, “but it relies on participation from the public for input.”

Breast Cancer Insights

Community participants asked the panel to address what appeared to be an increase in breast cancer diagnoses in women under age 40. Dr. Hiatt answered this question by first explaining that “it is now becoming clear that there is more than one type of breast cancer,” and that these different types are not characterized just by what they look like under a microscope but by certain biomarkers, such as whether they are fueled by estrogen or are HER2-positive. “Using these biomarkers,” he explained, “you can distinguish at least five different kinds of tumors, and one kind, triple negative, do seem to occur earlier and be more aggressive. We are interested in that because it seems to be a phenomena occurring earlier” than other types of breast cancers. “But as far as I know, there is no overall increase at a population level of breast cancer in women under age of 40.”

Residents also wanted to know if more had been learned about the higher breast cancer rates seen in Marin County. Janice Barlow, of Zero Breast Cancer, explained that demographic studies have found that women in Marin tend to have no children, have them at a later age, or have fewer children, and that they also tend to be highly educated, and have a higher socioeconomic status (SES) —all of which have been linked to an increased breast cancer risk. She also noted that there is some preliminary data that suggests that there may have been increased use of hormone replacement therapy (HRT) over a longer period time among Marin women, which might be a factor as well. In addition, she said, the adolescent risk factor study her organization spearheaded found that women who developed breast cancer were more likely to have one or two glasses of alcohol per day and to have had a high SES as an adolescent. “That fits with what we at the BABCERC are looking at, with risk over the lifetime,” she said. “There may be certain stages where girls or women are more vulnerable to exposures, and one may be adolescence.”

These final questions brought the forum to a close. But as participants rose from their chairs to leave, many new conversations began. It was evident that the information presented and the ideas discussed had initiated a conversation among Bay Area residents and between researchers and community members that would continue for some time to come.