



Bay Area Breast Cancer and the Environment Research Center



3rd Annual Town Hall Meeting

***Translating Breast Cancer & Environmental Research into Action:
Integrating Biological, Human and Community-Based Research***

Saturday, March 1, 2008

Held in partnership with





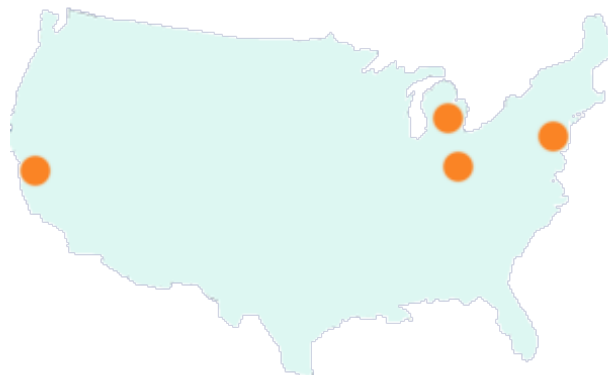
Breast Cancer and Environment Research Centers – A Nationwide Collaboration

BCERC is jointly supported by a seven-year grant from the National Institute of Environmental Health Sciences (NIEHS) and the National Cancer Institute (NCI) to investigate mammary gland development and determinants of puberty that may impact breast cancer risk in later years.

The four national research centers that make up the consortium are led by:

- Fox Chase Cancer Center, Philadelphia, PA
- Michigan State University, East Lansing, MI
- University of California, San Francisco, CA
- University of Cincinnati, Cincinnati, OH

The BCERC functions as a consortium of basic scientists, epidemiologists, and community advocates within and across centers.



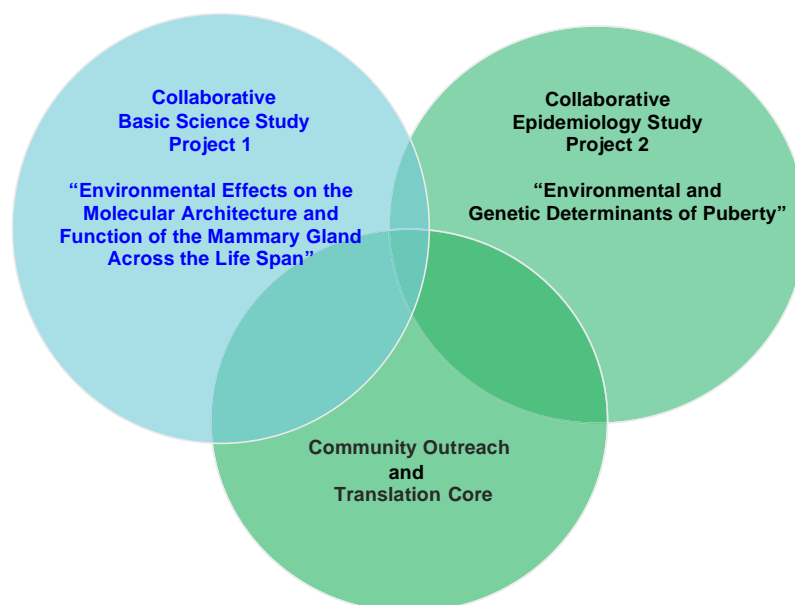
<http://www.bcerc.org/index.htm>

The research at each center includes a basic science study, an epidemiology study and a Community-based Outreach and Translation Core (COTC). The joint research being conducted by the centers is based on the hypothesis that environmental exposures during mammary gland development may impact the breast in ways that can alter the risk of breast cancer in later life.

One objective of having these two different research projects interact is to achieve a better understanding in both humans and mouse models of how to prevent breast cancer.

The basic science studies are examining what determines mammary gland development and how mammary gland development in genetically engineered mice is affected by environmental exposures. The prospective epidemiology study is examining environmental and genetic determinants of early onset of puberty in young girls.

The Community Outreach and Translation Core (COTC) is working with the investigators from each of the Projects as well as an active Advisory Board to translate the scientific findings of the Center into information for the public, policy makers, and clinical professionals to use to implement strategies to prevent breast cancer.





The Breast Cancer and the Environment Research Centers: New Information From a New Approach to the Conduct of Science

Robert A. Hiatt, MD, PhD
BABCERC Director
Director of Population Sciences and
Deputy Director, UCSF Comprehensive Cancer Center
Professor and Co-Chair of the Department of Epidemiology and Biostatistics, UCSF

Dr. Robert A. Hiatt was the first speaker from the panel entitled, “Understanding BABCERC Research and the Research Process”. He expressed his hope that the audience members come away from the event with an understanding of the work that is being done by BABCERC and why that work is important for society. He encouraged people to pay particular attention to the ways in which knowledge gained from research is integrated into decision-making.

Scientists, Dr. Hiatt explained, spend their time trying to understand how the world works in terms of biological processes. Usually, that is where their work ends. They “write a paper, give a presentation, write a book.” However, BABCERC scientists are committed to a new approach that communicates their ongoing work and findings to the community so that study results can lead to action.

By way of example, Dr. Hiatt described the way in which the data collected by cancer registries was used to figure out what kind of women were getting breast cancer, where they were from, their race, ethnic identities, ages, and socioeconomic status. It became clear that the Bay Area had breast cancer rates that were much higher than anticipated and that the kind of women who were getting it did not fit the expected profile. Most cancers occur in people of lower socioeconomic status, while in the Bay Area breast cancer was occurring in women of higher socioeconomic status. This created a great deal of momentum in the community. Advocacy organizations were formed, community members spoke out, and state and federal agencies were encouraged to fund research that would try to uncover the cause for this unexpected finding.

Dr. Hiatt went on to explain the various scientific pathways that can be used in response to new information. Sometimes the information gets translated into drug development by the

pharmaceutical industry. Some scientists begin to look for biomarkers, which are molecular indicators of environmental exposures that may cause disease. Other scientists create better and earlier methods of screening to prevent the disease from occurring in the first place.

The National Institutes of Health (NIH) chose to focus on early life events such as breast development, as well as processes that occur in utero. They published a Request for Proposals. BABCERC submitted a proposal and subsequently won a grant to focus on these early life events. BABCERC is one of four centers nationwide that studies the environmental causes of breast cancer by focusing on mammary gland development during puberty when the breast may be especially vulnerable to environmental influences.

The researchers framed their work in a new way; they made a commitment to educate young girls and women at risk of developing breast cancer about the role of specific environmental factors in breast cancer and how to reduce their exposures to those agents. Their intention is that this information will be used to help develop public health programs for breast cancer prevention.

The Community Outreach & Translation Core (COTC), led by Janice Barlow, is the arm of BABCERC that creates the two-way street that allows the researchers and the community to communicate. COTC members actively participate in research projects where they bring the communities’ perspectives to the scientists and translate research findings back to the community members to keep them informed.

Dr. Hiatt expressed his hope that by using this new way of doing science, people will better understand the process of science as well as its application.

The Role of the Scientific Method in Rational Decision Making

Paul Yaswen, PhD
BABCERC Co-Investigator, Biology Study
Staff Scientist
Life Sciences Division
Lawrence Berkeley National Laboratory



Dr. Yaswen describes himself as “a basic researcher and avowed experimentalist” whose intention is to remove some of the mystery from the scientific method.

He began his presentation by observing that there are differences in the incidence of breast cancer among women of different ethnicities, socioeconomic status, and geographic location, which lead us to believe that there are environmental factors that influence this incidence. The questions we have are very basic. What are these factors? How do they influence breast cancer susceptibility? How can their effects be lessened?

To find the answers to such questions, Dr. Yaswen applies the scientific method, which includes the following steps:

- Making an observation
- Analyzing the observation
- Building a hypothesis
- Testing the hypothesis
- Coming up with a scientific theory

To demonstrate this, he used the analogy of childhood learning in which a child “bops” her sibling on the head and is scolded (observation and analysis of cause and effect), which leads her to build her hypothesis (if I bop him, I get scolded). It is then necessary to test the hypothesis (she bops him again and is scolded again). And from here she is able to predict the future (whenever I bop him on the head, I get yelled at).

Since breast cancer causality is a much more complicated problem than head bopping and can’t be tested as directly, scientists are required to break it down into smaller, more manageable problems.

Dr. Yaswen uses cultured human mammary epithelial cells to assay or measure the effects of suspected carcinogens. He uses these cell cultures so that experiments can be performed in real time with the fewest uncontrolled variables and so that he can distinguish between local, direct effects

and systemic effects. By using these cultured cells, scientists have been able to determine some of the effects of the chromosomal changes that occur, which he compared to “shuffling the genetic deck”. The effects of chromosomal changes are determined through studying each genetic aberration, one by one, as well as by studying malignant growth patterns.

In response to the question of why scientists don’t use already existing assays to assess the effects of suspected carcinogens in the environment, Dr Yaswen described a previous unsuccessful attempt to do just that using the Ames Test for Mutagenicity, which was originally heralded as a quick and easy assay for hazardous substances in our environment. As additional data on naturally occurring chemicals became available, the limitations of the test and the theory became evident.

Dr. Yaswen explained that carcinogenesis, or the growth of cancer cells, is very complicated. Cells are not all the same and may respond to malignant changes in different ways. The body’s own defense system plays a role in modifying the effects of potential carcinogens. He emphasized that cancer is not a disease of individual cells; it involves how cells communicate with each other within and among organs.

By using experimental models, scientists can test hypotheses. One person in one laboratory does not do this alone. Research results are the synthesis of many approaches to answering the questions being studied, including epidemiology studies, cellular studies in mice or in humans, environmental studies, or genetic studies.

Dr. Yaswen emphasized the importance of using the scientific method rather than intuition to make decisions. We know we have succeeded if the models account for real world observations, are developed under experimentally controlled conditions, are predictive and provide confidence that the choices we make as a society are factually based.



Models to Study Mammary Stem Cells

Mary Helen Barcellos-Hoff, PhD
BABCERC Co-Principal Investigator
Biology Study
Senior Scientist and Deputy Director
Life Sciences Division
Lawrence Berkeley National Laboratory

Dr. Barcellos-Hoff, a radiation biologist, uses mice to study cancer as a disease of organisms. In her presentation to the Town Hall Meeting, she explained that while studying human epithelial cells is certainly interesting and important, by using mice she is able to do experiments that are not possible using human subjects.

The focus of Dr. Barcellos-Hoff's presentation was on stem cells and how her laboratory uses radiation to study the characteristics and distribution of mammary stem cells.

It is well known that radiation is a carcinogen. From the tragic occurrences of Hiroshima and Nagasaki during World War II, we know that radiation exposures can cause cancer in a wide number of organs, including the breast.

Radiation is not, however, a very efficient carcinogen. After exposure, it takes years to decades for normal cells to proceed from the **initiation** of genomic changes to the expansion of the damaged cell population (**promotion**), to **progression**, when the damaged cells escape the barrier of a particular tissue, invade surrounding normal tissues and even migrate to distant sites, i.e., **metastasis**.

The effect of radiation depends on the endpoint you are interested in studying. Radiation can cause molecular damage, such as double-strand breaks in the DNA. It can cause aberrations in the chromosomes and changes in the genome, which is the complete set of genes in an organism. These occurrences can lead to molecular mutations, which over a long period of time lead to cancer at the organism level. Radiation can also cause cell death, which in itself does not cause cancer, but is evidence that significant damage has occurred in the system.

One of the ideas prevalent in biology today is that cancer arises via alterations in the tissue stem cells. Dr. Barcellos-Hoff introduced to the attendees the hypothesis that cancer stem cells are a result of carcinogen-induced changes in normal stem cells. Why is that? Dr. Barcellos-Hoff explained that tissue-specific stem cells, for example, those found in the breast, live the longest. Normal stem cells are particular cells that can self-renew (make another of itself) and give rise to a daughter cell that is able to differentiate into all the cells represented in a specific tissue, including in the mammary gland, ER positive and ER negative cells.

The mammary gland is the perfect system for studying stem cells because it is the only organ that develops after the animal is born. At three weeks of age, under the influence of pubertal hormones, the epithelial duct expands into the mammary gland fat pad like a tree does. It has a primary branch, secondary branches and tertiary branches. And those can further proliferate under the hormones of pregnancy to give rise to milk-producing cells.

How do we know there are stem cells involved in this process? In order to study this in the laboratory, Dr. Barcellos-Hoff referenced the work of K. B. De Ome, who first demonstrated it was possible to create an experimental model in which the target cells (epithelial cells that give rise to cancer) can be manipulated independent of the environment. This model has created opportunities for scientists like Dr. Barcellos-Hoff to test various hypotheses, including the postulation that radiation causes DNA damage, which leads to mutations that give rise to cancer cells.

Using high-content microscopy and computer analysis of microscopic images, Dr. Barcellos-Hoff is currently studying the manner in which mammary stem cells are distributed throughout the system of ducts in the mouse mammary gland, how they are organized, where they are located, and whether they are clustered in a particular fashion or randomly. Recent analyses found that mammary gland stem cell distribution in mice is not random. At the local level, stem cells are preferentially found in large ducts in clusters of two. Globally, stem cells are predominately found near the origin of the tissue at the nipple, where the epithelium begins to bud out and grow to fill the fat pad.

Interestingly, these studies have been supported by studies on human tissue which also showed that human mammary stems cell are not randomly distributed but are predominately found at the junction of medium and large ducts.

By learning more about the location and distribution of mammary stem cells in mice, scientists can now study how alterations in life history (such as number and timing of pregnancies), carcinogenic exposures (such as radiation) and hormonal environments affect stem cell location, distribution and behavior.



Location! Location! Location! How the Neighborhood Contributes to Breast Development and Cancer

Zena Werb, PhD
BABCERC Principal Investigator
Biology Study
Professor and Vice-Chair of Anatomy, UCSF
Member, UCSF Comprehensive Cancer Center

Zena Werb, PhD, began her presentation by emphasizing that it is the environment in which the epithelial cells find themselves that plays a significant role in whether a cell decides to progress to cancer or just remains in a quiescent state. The parallel she drew was the difference in environments that children grow up in and the influences they have upon those children. For example, does the environment determine whether a child grows up to be a drug dealer or a scientist? Similarly, the way in which a cell behaves has a lot to do with the unique environment in which it develops.

We have millions and millions of cells in our bodies that undergo mutations throughout the course of everyday life. Why do all of these millions of cells not become cancer? Why will only one in three or four of us actually get cancer even though each one of us has millions of cells that have received mutations? The changing ecology or the environment those cells find themselves in may be the thing that pushes a cell in one direction or another.

Dr. Werb presented this hypothesis: during normal mammary gland development, cells are dividing, invading the mammary fat pad and moving around, but they do us no harm. Cancer cells act similarly, but eventually do cause us harm. What forces are at work? If we can understand what happens during normal breast development, we may begin to understand the changes in those same events that lead to the creation of cancer environment.

Dr. Werb focuses her research on pubertal development, mostly in mice. During early pubertal development, only the nipple and the beginning of early mammary ducts or tubes are apparent. A few weeks later, there is a fine network of ducts that fill the entire mammary fat pad. At the end of each of these ducts, there is a sub-organ that is pushing and dividing to fill up the fat pad. The ducts are bilayered. You have cells that are tightly attached to each other forming the inside of the tube where eventually milk will be produced, and they are surrounded by other cells, myoepithelial cells, muscle cells, which are going to squeeze the milk out during lactation. At the ends of these stable ducts where the growing and pushing is occurring, you see a much different configuration. There are multiple cell layers in a different organization without a duct. This is where most of the cell division is occurring. Why, in one case, is it part of the normal developmental process, and in another case, it may be the beginning of abnormal cell growth?

This leads directly to the hypothesis that maybe it is the neighborhood—the other cellular structures in the ducts—that contribute to whether a duct develops normally or develops cancer.

All neighborhoods are composed of many different things, including the extracellular matrix, which creates a structure or scaffolding that holds everything together. Fibroblasts make up some of that scaffolding material, as well as being important in wound healing. Macrophages eat bacteria and also produce factors that make these cells grow. There are many other kinds of cells present in addition to the blood supply that feeds the system. This is referred to as the microenvironment. It has been found that if some of these cells are missing, the organ in question will develop more slowly or poorly.

During puberty, and to some degree during menstrual cycles, a normal duct changes from its resting state to become multilayered. It begins to divide and proliferate. The microenvironment allows that to happen and it also allows the duct to go back to its resting state. The changes are reversible.

One of the questions Dr. Werb and other scientists hope to answer is: what is it in the microenvironment that allows the normal developing duct to stop proliferating and revert back to a resting state? What is different in the microenvironment of the cancerous duct that prevents its return to a resting state?

High-density breast tissue is considered to be a risk factor for breast cancer in post-menopausal women. Some of that risk is due to the scaffolding that holds the mammary ducts together. Researchers are asking whether this scaffolding helps cancer cells move. When normal and cancerous ducts are placed in the abnormal environment of a dense breast, each type of duct subsequently acts abnormally. This outcome suggests that the abnormal environment causes normal cells to behave abnormally, though researchers have not yet discovered the answer as to why this happens.

This question returned us to Dr. Werb's initial premise, which asked how the microenvironment might be altering cell behavior and how that contributes to breast and breast cancer development.

Environmental and Genetic Determinants of Puberty

A Mid-Project Report from the CYGNET Study

Lawrence H. Kushi, ScD
BABCERC Principal Investigator
Epidemiology Study
Associate Director for Etiology and Prevention Research
Division of Research
Kaiser Permanente Northern California



Dr. Lawrence Kushi provided an update of the CYGNET Study (Cohort Study of Young Girls' Nutrition, Environment, and Transitions), which is one of three prospective epidemiology studies nationwide to examine environmental, lifestyle and genetic determinants of puberty.

The Bay Area study participants (440 girls) were enrolled at 6 to 7 years of age, live in Alameda, Marin, and San Francisco counties, are members of Northern California Kaiser Permanente, and are being followed longitudinally. The study seeks to understand why some girls develop earlier than others. The underlying rationale is that early menarche (first menstrual period) and earlier sexual maturation may be associated with future risk of breast cancer.

From previous studies, we know there is wide variation in age at onset of puberty. Some girls develop relatively early and some girls develop relatively late. In addition, there are substantial differences in age of onset of puberty among the different racial/ethnic groups. This study hopes to shed light on some of the reasons for the variability and diversity.

The participants in the CYGNET study are seen at about the same time each year and are entering the third year of data collection. Most girls have agreed to participate in Tanner Staging assessments, which is a sexual maturity rating system based on breast and pubic hair development. Ninety-five percent of the girls have given urine samples. Not as many girls (slightly over 70%) have agreed to give blood samples. Urine and blood are the biospecimens we are using to measure environmental exposures. We have DNA (for genetic testing) from either saliva or blood from the vast majority of girls in the study.

Other information, some of which was collected earlier in the study but has not been ongoing due to budgetary constraints, was derived from pedometer logs and dietary assessments. Psychosocial information is continuing to be collected from questionnaires.

In order to explain one of this study's initial findings, Dr. Kushi first explained that Tanner stage is assessed from stage one (totally immature breast) to stage five (totally mature breast). Stage two is the first evidence of breast budding or mammary gland development. Sometimes stage two is visually noticeable but sometimes can only be detected through palpation.

The data presented by Dr. Kushi showed some ethnic variation in the Tanner Staging. African American girls showed the earliest onset of pubertal signs, followed next by Hispanic girls, then Caucasian girls, girls categorized as "Other", and concluding with Asian girls, who were lowest on the Tanner scale. This follows expected patterns, although onset of puberty in all racial/ethnic groups is occurring earlier at all study sites.

Since the project is funded by NIEHS, there is a strong interest in the role of chemical exposures. Dr. Kushi presented data recently received from the Centers for Disease Control (CDC), which showed levels of various chemical compounds secreted in the urine of study participants. Some of these compounds are used in nail polish, printing inks, fragrances, dental sealants, plastics, antimicrobial agents and other commonly used products.

A series of slides on various chemicals tested were shown. For each chemical Dr. Kushi compared the levels of the CYGNET girls with national levels from NHANES. For the various phthalates tested and for bisphenol A, CYGNET girls' levels were not much different from the 6-11 year old girls from NHANES. Adult phthalate levels were somewhat lower than the young girls. Only triclosan (found in antibacterial soaps) levels were relatively high in CYGNET girls in comparison to the 2001-2002 group. It is not clear at the moment what these findings mean.

For all of these chemicals there were wide variations in individual exposure levels. There are girls with high levels and some girls with low levels, relatively speaking. The variation will allow us to ask: "are these girls with high levels different from these girls with low levels?"

The participants of the study will continue to be followed in the upcoming years, as long as funding for the project continues. It is hoped that the data in hand and that which will be collected in the future will help us to understand why some girls are developing earlier than others.

In closing, Dr. Kushi emphasized that the CYGNET study is not studying breast cancer. Rather, it is studying one part of the life span that may have some implications in the long-term risks for breast cancer. This is, he said, "one of the pioneering studies about why there is a variation of time and age in the onset of puberty."

California Breast Cancer Research Program Community-Based Participatory Research Grants and Initiatives

Marion H.E. Kavanaugh-Lynch, MD, MPH
Director, California Breast Cancer Research Program



The California Breast Cancer Research Program (CBCRP) was created in 1993 as a result of a collaboration of breast cancer advocates, scientists, health care professionals, state legislators, and University of California officials. CBCRP is funded, in part, by a \$0.02 per pack cigarette sales tax, generating approximately \$38 million per year. Other funds are raised from a breast cancer tax check-off on state income tax forms, and from individuals, corporate and foundation support.

Dr. Kavanaugh-Lynch is the program's director and gave an overview of its goals and a few of CBCRP's achievements through their Community Research Collaboration (CRC) awards. Since the inception of those awards, 59 teams have been funded for a total of \$14.2 million. What these teams have in common is that they use community-based participatory research (CBPR) and they address the needs of under-served groups, such as women of color, disabled, rural, and lesbian communities.

CRC was established to create a bridge between community concerns and research, so that community members would understand more about research design and researchers would gain understanding of community needs and issues. It is important for these groups to work as equal partners to "identify the research question, develop the research plan, carry out the research, interpret the results, and disseminate the results".

Kavanaugh-Lynch gave brief synopses of three projects that have been funded with CRC awards. The first, Marin Breast Cancer Watch (now known as Zero Breast Cancer), was one of the leaders of the Town Hall Meeting.

Zero Breast Cancer, formed in 1995 as a local grassroots organization, has become a national leader in conducting community-based participatory research. With community involvement, Zero Breast Cancer conducted the first breast cancer study in Marin County, The Adolescent Risk Factor Study and the Development of Breast Cancer, which looked at whether adolescent experiences and exposures are

different between women who have breast cancer and those who do not. Zero Breast Cancer has become a successful research collaborator and leads the Community Outreach and Translation Core of the Bay Area Breast Cancer and the Environment Research Center (BABCERC).

The second group that was discussed was the Orange County Asian and Pacific Islander Community Alliance (OCAPICA), which was founded in 1997 with the mission of building a healthier and stronger community by enhancing the well-being of Asians and Pacific Islanders. They are now involved in global health research.

One of OCAPICA's milestone achievements was to file for and be granted a license to run its own community Institutional Review Board. As a result, all research done in Orange County passes through their review process to ensure that human subject protections are in place and that under-represented communities have a voice regarding research.

The final group that Dr. Kavanaugh-Lynch highlighted was the Cancer Resource Center of Mendocino County (CRCMC), which was created in 1995 by a small group of women living with cancer who had sought information and resources and found there was no place to go locally. Since then they have become a central and essential part of their rural community. This year the Robert Wood Johnson Foundation is honoring Sara O'Donnell, one of the founders and the current executive director of CRCMC for her leadership in providing accessible support services for cancer patients, their families and caregivers, and for her environmental health advocacy.

The value of funding community-academic partnerships has been far reaching. Research questions have been unique and more relevant. Under-served groups have become involved and there has been better recruitment and retention of research participants. There has been a more rapid translation of research results to the community and to scientific audiences. Finally, it has led to the formation of lasting collaborations between communities and academic researchers.

Community-Based Research for Environmental Justice

Carla M. Perez
Northern California Program Director
Communities for a Better Environment

Carla M. Perez, Northern California Program Director for Communities for a Better Environment (CBE), began her presentation by providing an overview of their community-based research and how it has benefited the CBE members and communities.

CBE's collaborative study was involved in taking indoor air and dust samples in three communities. The first was Cape Cod, Massachusetts, a primarily white, affluent community with no point sources of pollution but with a history of spraying with DDT for pest control.

Indoor and outdoor air samples were taken in the other two communities, Richmond and Bolinas, California. There are a large number of polluting industrial sites in the Richmond area, whose population is 80% people of color with 15% of them being at or below the poverty line. Bolinas is a primarily white, affluent coastal town with no point sources of pollution.

What these three communities have in common, however, is a high rate of breast cancer. While the study was not a health outcome study, it did have many benefits for CBE and the community members who were involved.

Perez explained that the study was an important outreach and organizing tool for CBE that offered empowering education to community members. It started people thinking about the toxic exposures in their homes and workplaces, about the consumer products they use, and the choices available to them. By bringing data collection into the homes of research participants, they were able to learn more about science. During the report-back process, participants also learned how to read charts and graphs, which helped them to better understand scientific results in general.

An important outcome to community participation, Perez affirmed, is that it develops strong advocates. They are making personal connections between the chemicals known to be collected in their homes, their illnesses and their symptoms. Rather than depending on an organization to speak for them, community members are taking their concerns to the podium at city council meetings and planning commissions and speaking for themselves. They are supporting policies that can help their communities.

In conclusion, Perez explained the concept of cumulative impact policy, which seeks to include more than just individual toxic loads when determining what regulations should be adopted. In addition to multiple sources of many chemicals to which people are exposed, in order to achieve environmental justice, other life stressors must also be considered as well. Rather than setting caps on individual, potentially harmful chemicals, Perez emphasized that there needs to be a pollution cap for all toxins to which a community is exposed.



The Right to Know in an Era of Toxic Ignorance

Ethical and Scientific Challenges for Reporting Back Personal Exposures to Environmental Chemicals

Rachel Morello-Frosch, PhD, MPH
Associate Professor
Department of Environmental Science
Policy and Management and School of Public Health
University of California, Berkeley

Referring to the study of which Carla Perez spoke in the previous presentation, Rachel Morello-Frosch approached the research results from a different perspective - that of the research participants' right to know about chemical burdens.

Dr. Morello-Frosch provided a historical framework for the concept of biomonitoring and health surveillance, indicating some of the positive outcomes that followed such activities. In the past, lead testing and biomonitoring in homes and workplaces indicated high exposures to lead, with African American children bearing the highest burdens. By utilizing the knowledge to effect change, lead exposure has diminished. This has been the traditional use for biomonitoring.

Now, she explained, we have better and less expensive testing techniques that are becoming more available and can test for lower levels of more chemicals. However, Morello-Frosch elaborated, this has created another dilemma. Now it is possible to test for more chemicals and emerging pollutants in order to look for trends and disparities, but it is not necessarily known from where these chemicals are coming. They have "no return addresses".

There are approximately 100,000 chemicals registered for commercial use in the United States, but only about 10% have been tested for things like cancer or developmental and reproductive impacts. The current capacity to detect chemicals is better than the capacity to know what it means for health.

The environmental justice community considers issues related to biomonitoring, yet there is also some concern that biomonitoring may make stakeholders focus myopically and "over-scientize" issues of environmental health disparities and prevent researchers and advocates from looking for the causes of those disparities.

Dr. Morello-Frosch continued, saying that some scientists are thinking about report-back issues from a clinical and ethical perspective. When should researchers report back the study levels to participants? Often report-back doesn't happen or only happens when there is a regulatory benchmark to say that there may or may not be a problem. This may then

preclude the ability of the community to take precautionary action. Since people are becoming more proactive in directing their own health care, it is suggested that they be told their levels even if there is not a clinical benchmark. This may give them the ability to take precautionary action to reduce their exposures, even if it is not known exactly what it means for their health.

Another report-back issue Morello-Frosch discussed was advocacy science linked with biomonitoring. Groundbreaking studies in the Bay Area have spotlighted the idea of toxic trespass and its affects on people's bodies. This has pushed a new era of research ethics by getting research participants to talk publicly about their experiences and share their results with the community at large.

"We don't need a lot of epidemiological studies before we begin to act," she said. "The fact that chemicals are turning up in people's bodies should be sufficient to push the regulatory arena to take action, even before the impact of the substances is definitively known." She spoke of specific policy goals: "to build constituencies, to promote environmental health, to improve chemicals policy and to expose the inadequacies of current regulatory policies in the US and push for bans of certain chemicals like brominated fire retardants."

In her collaborative research, Dr. Morello-Frosch said she uses the participatory research model as described by Marion Kavanaugh-Lynch in a previous presentation and works closely with community members for report-back. It begins with reporting back to individual participants, then in community meetings, and to both English and Spanish media outlets.

It has been said that reporting back to participants will "stress them out" and "paralyze them" because there's nothing they can do to change the outcomes. In Morello-Frosch's experience, nearly every participant wanted their results even though it was made clear to them that it was not known how these chemical burdens might affect their health. Many people are simply curious; others want to use the information as part of their advocacy strategies. Either way, Dr. Morello-Frosch affirms that she has taken a right-to-know approach in her report-back strategy.

Julia Liou, MPH
Co-Founder
California Healthy Nail Salon Collaborative
Planning and Development Manager
Asian Health Services

Julia Liou is a co-founder of the California Healthy Nail Salon Collaborative, which advances a preventive agenda to assure the health and safety of nail and beauty salon communities. The Collaborative integrates policy advocacy, research, outreach and education. It is composed of over 20 public health and environmental advocates, nail salon workers and owners, community groups and allies in public agencies.

As the Planning and Development Manager of Asian Health Services (AHS), a comprehensive community health center located in Oakland Chinatown, Liou became aware of the health problems of nail salon workers while doing outreach in the Vietnamese community. AHS found that there were an unexpectedly high number of cases of chronic asthma, dermatitis, and respiratory illnesses, as well as anecdotal evidence of high levels of birth defects and spontaneous miscarriages in nail salon workers.

Liou noted that many nail and personal care products contain chemicals known to be carcinogenic and harmful to reproductive health. Although some of these chemicals have already been banned in Europe, cosmetics manufacturing is not regulated in the United States.

Some of the concerns of the Collaborative have to do with the population at risk. As Yvonne Beals mentioned earlier in the Town Hall Meeting, most nail salon workers are Vietnamese immigrants and most of them are of reproductive age. Workers have indicated that they develop breathing problems, skin irritations, chronic structural pain, and irritations of the nose and throat. There is insufficient ventilation in the shops and a lack of culturally and linguistically appropriate educational materials.

Many of the workers have already experienced homeland exposures to chemical warfare in Vietnam and may already have unacceptably high toxic burdens. They are unfamiliar with U.S. legal and health care systems, and work very long days with no benefits or job security.

A survey taken by the Nail Collaborative showed that workers believed the products with which they work have adverse health effects, they prefer not to remain in the business for too long because of health concerns, and report that they will leave their work when they become pregnant saying that it is not a healthy environment for a child.

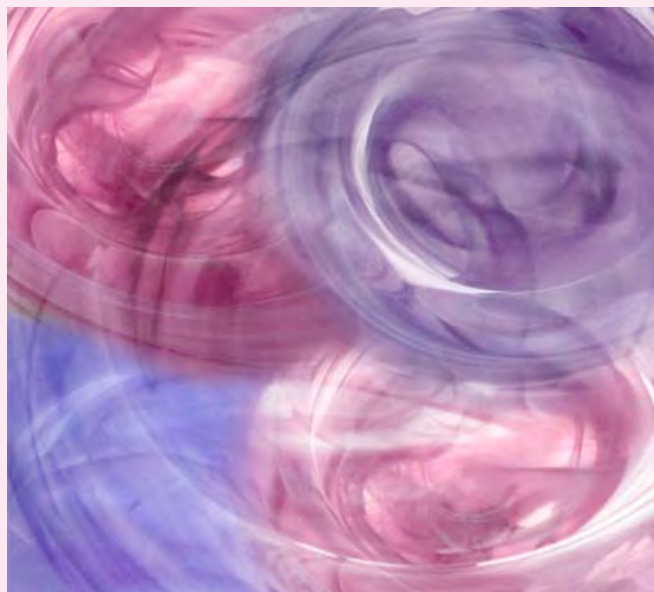
These young women are drawn to their work by the low barriers to entry: short training period, inexpensive, does not require high proficiency in English, flexible work schedules, and because there are many other Vietnamese doing work in the industry as instructors and shop owners.

Liou applauded the work of Senator Carole Migden in the passage of the Safe Cosmetics Act, which was moved forward with the assistance of the Collaborative and other groups and individuals.

Currently, the AHS and Northern California Cancer Center are collaborating on a community research project to better characterize the workforce and understand their concerns. A second phase of the research will do an air ventilation study with workers and match breast cancer registry and nail shop licensee files.

AHS is guided by the following principles: to identify practices that benefit both workers and small employers; to target manufacturers of harmful products; to unify their collective voices and respective strengths to leverage greater power.

Liou closed her presentation by appealing to the Town Hall Meeting participants to help the Collaborative by identifying nail salon workers, owners, students and family members who are willing to tell their stories. She asked that people participate in legislative visits, write letters, help raise awareness and support legislation to counteract the powerful cosmetics lobby that opposes chemical bans.





SB484 and the California Nail Salon Collaborative's Efforts to Advance Worker Health and Safety in Nail and Beauty Salon Sectors in California

California State Senator Carole Migden
Senate District 3
Chair, Senate Labor & Industrial Relations Committee
Represented by Yvonne Beals
Senate District Representative

Yvonne Beals, Senate District Representative, provided an update on some of the legislation introduced by State Senator Carole Migden in the California State Senate.

In 2005, Senator Migden authored SB 484, which was sponsored by Breast Cancer Action and Breast Cancer Fund. The bill established the Safe Cosmetics Act, which requires manufacturers to disclose to the Division of Environmental and Occupational Disease Control any cosmetic product that contains any ingredient that is a chemical identified as causing cancer or reproductive toxicity. The bill was passed on September 7, 2005 and is currently being implemented.

One third of cosmetic products contain one or more known cancer-causing ingredients and are linked to birth defects and reproductive harm. Still, women continue to use them since this information is generally unknown to the public. Of particular concern to the Senator are three hazardous chemicals used in nail polishes, dibutyl phthalate or DBP, toluene, and formaldehyde. While this is of significance for the general population, this exposure is especially high for women working in beauty and nail salons. There are approximately 100,000 nail workers in the State of California and about 80,000 of them are young Vietnamese immigrants of reproductive age. These women are often unaware of the dangers to which they are being exposed.

Senator Migden has introduced SB 1712 and SB 1713 in order to eliminate environmental toxins found in children's products and women's cosmetics.

SB 1713, which Senator Migden co-authored with Senate President pro tem Don Perata, expands upon earlier legislation, AB 1108 authored by Assemblywoman Fiona Ma. In addition to Ma's ban on phthalates in children's products, SB 1713 enlarges that prohibition to include personal care products such as shampoos and lotions. SB 1713 also bans any detectable level of bisphenol A from all toys and children's care products.

A recent survey of 33 lipsticks conducted by the Campaign for Safe Cosmetics found that 20 of them contained detectable levels of lead, known to be a powerful neurotoxin. However, lead was not listed as an ingredient in any of these lipsticks, nor was it required to be. Women ingest a large amount of lipstick through its normal use and Beals emphasized that there is no safe level for lead in the human body. SB 1712 would ban lead in lipstick.

Beals closed her update by thanking the audience for their advocacy and expressed special gratitude on the part of the Senator for the work of Julia Liou and the California Nail Salon Collaborative for their assistance in getting SB 484 passed and implemented. Beals encouraged audience members to pick up complimentary copies of "A Citizen's Guide to Lobbying" provided by Senator Migden in order to encourage the continuation of the advocacy that helps make these important changes possible.

AB 1108 Protecting Children from Toxic Toys Local and State Victories Lead to a National Campaign

California Assemblywoman Fiona Ma, CPA
Assembly District 12
Majority Whip



Assemblywoman Fiona Ma chronicled the work that led to the passage of AB 1108, which she authored. The landmark legislation was signed into law by Governor Schwarzenegger on October 14, 2007 and made California the first state in the country to ban the use of certain phthalates in children's toys and child care products intended for use by children under the age of three.

Prior to her election to the State Assembly, Ma was a member of the San Francisco Board of Supervisors, which worked under a precautionary principle that says if something is thought to cause harm then consumers and manufacturers should err on the side of caution. Because of that, she was able to write an ordinance banning phthalates that was unanimously passed.

After that, she began to receive calls and letters from the Chamber of Congress, California retailers, toy manufacturers and others who said they would oppose the ordinance and would oppose her election to the State Assembly. Nevertheless, she won her seat and committed to continue her work on some of the issues she had begun to pursue while on the Board of Supervisors, especially that of phthalates.

Her sponsors for AB 1108 were Environment California and Breast Cancer Fund, who recognized that there would be a great deal of opposition to the bill, but who were committed to helping her get it passed. The opponents of the bill hired seven lobbyists from different industries to work against it, which was eye-opening for Ma. The opposition drew upon vast resources to deter its passage.

At the time, the bill included a ban on two chemicals, phthalates and bisphenol A. The first makes plastics softer; the second makes them harder. There was a great deal of scientific evidence concerning the dangers of phthalates, but far less about bisphenol A. Some of Ma's colleagues informed her they wouldn't support the bill if it included bisphenol A. She believes they had been convinced by the lobbyists to take that stand, so she amended the bill to focus exclusively on phthalates.

As the bill was going through the legislative process, it was almost defeated multiple times. Lobbyists worked hard to discredit the research she presented. They used research that had been sponsored by the industries that opposed the bill. Ma credited passage of the bill to the assistance of Fabio Nuñez in the Assembly and Don Perata in the Senate, Environment California, Breast Cancer Fund, and the pioneering work of her mentor Assemblywoman Wilma Chan. Ma affirmed that without all the advocates and experts who came to Sacramento to testify and without public pressure from around California and from parents in particular, the bill never would have been passed.

Since the passage of AB 1108, 12 other states are looking at passing similar bans and Senator Dianne Feinstein is considering a proposal for a national ban. Assemblywoman Ma is currently sponsoring a bill to ban lead in baby products. She reminded the audience that legislators depend on advocates like the people in the Town Hall Meeting to help pass important laws to ensure public health and safety.



Exposing a Toxic U.S. Policy

Mark Schapiro
Editorial Director
Center for Investigative Reporting
Berkeley, CA
Author

*Exposed: The Toxic Chemistry of Everyday
Products and What's at Stake for American Power*

As a journalist long interested in issues surrounding toxic chemicals, Mark Schapiro sought to cast a light on the “mysterious shadows” lurking behind our every day consumer products. In his presentation to the Town Hall Meeting, Schapiro focused on power—who has it and how it is being used in the struggle around toxic compounds.

“There is an abundance of knowledge about chemicals,” he affirmed, “but what is happening to it?” For the first time in American history, we are able to assess this information, but industry in the U.S. is battling to ignore it, at best, or discredit it completely by claiming a lack of scientific evidence for potential and actual dangers.

Contrary to American inertia, the European Union has taken a very different approach to environmental and consumer protection. The E.U., a body of 27 countries, has become the world's largest economic market that wants to “win the global competition”. They have recognized the dangers of these uninvited guests—toxic chemicals found in our blood—and have chosen to act aggressively. Their epidemiological evidence is no different than our own. Cancer, endocrine disruption, low sperm counts, and other conditions are being linked to toxic chemicals in our bodies.

In response, the E.U. passed a Cosmetics Directive in 1976, which now bans all carcinogens, mutagens, and reproductive toxins. In the U.S., the Safe Cosmetics Act, which was just recently passed with the help of many of the activists present at the Town Hall Meeting, only requires that the presence of certain toxic chemicals be disclosed, as described earlier in the meeting by Yvonne Beals and Julie Liou.

Similarly, the battle that Fiona Ma fought to ban phthalates from children's toys was fought 10 years earlier in the E.U. There it was determined that phthalates were so potentially dangerous that they were totally banned. The result was that the Chinese toy manufacturers make their products for the E.U. without phthalates, but they are still included in toys sold in the U.S.

Schapiro went on to explain that while corporate interests in the U.S. say that consumer advocates are being alarmists and that banning these chemicals will be disastrous for the economy, the E.U. experience has been quite different. They have found the economic fears expressed by manufacturers have been “a great bluff”. Rather having negative impacts, the chemical bans have created opportunities for growth and development.

Many companies sell their products in both the E.U. and in the U.S., but do so using different formulations in order to comply with the applicable regulations. Schapiro described his experience of visiting the Brussels office of the largest U.S. personal care products company. When he asked how the company was responding to the chemicals ban, he was told that the company had hired toxicologists, removed the offending ingredients and replaced them with safer alternatives.

When he returned to California, Schapiro went to the Safe Cosmetics Act hearing in Sacramento. There he met the chief lobbyist against the Act, who was from the above-mentioned personal care products company. This man was testifying that just reporting the presence of toxic chemicals would be too onerous for the company, even though the company was clearly able to produce their products without them, as demonstrated in their E.U. formulations.

Currently, there is no controlling authority in the U.S. for cosmetics. The cosmetics manufacturers have established an advisory board, but its opinions are not binding. Schapiro recommended that we follow the example of the E.U., which has an independent testing authority whose results are binding and are available online to the public.

Schapiro warns that “Power has shifted...American citizens are being put in a position that would have been unimaginable a decade ago: in some instances (we are) a dumping ground for goods not wanted elsewhere in the world.”



THE BAY AREA BREAST CANCER AND THE ENVIRONMENT RESEARCH CENTER

The Bay Area Breast Cancer and the Environment Research Center (BABCERC) is one of four national Breast Cancer and the Environment Research Centers (BCERC) funded by NIEHS and NCI. The overall objectives of the Centers are to:

- Increase our understanding of how in utero, early postnatal and pubertal environmental exposures impact the development of the mammary gland at the cellular, molecular, organ and population level to influence future breast cancer risk.
- Develop public health messages designed to educate young girls and women who are at high risk of breast cancer about the role(s) of specific environmental stressors in breast cancer and how to reduce exposures to them.

The Bay Area BCERC is based at the University of California San Francisco (UCSF) Comprehensive Cancer Core. In addition to the Administrative Center, the center includes two research projects, a laboratory study based at UCSF and Lawrence Berkeley National Lab and an epidemiology study based at Kaiser Permanente Division of Research, and a community outreach and translation core based at Zero Breast Cancer.

COMMUNITY OUTREACH AND TRANSLATION CORE MEMBERS

Alameda County Public Health Department
Bayview Hunters Point Health and Environment Assessment Project
Breast Cancer Fund | Marin County Public Health Department
San Francisco County Public Health Department | UCSF Comprehensive Cancer Center
UCSF Breast Cancer Spore



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