

Prevention Is the Cure

By Karen Joy Miller

“ Industry and government cannot continue to ignore the links between this epidemic and the intentional pollution of our air, waterways and food sources. Cancer is a *societal* problem and can only be remediated if communities and policy makers act responsibly. ”

Since 1971, more than \$1 trillion has been spent on cancer research and treatment. Industry and government cannot continue to ignore the links between this epidemic and the intentional pollution of our air, waterways and food sources. Cancer is a *societal* problem and can only be remediated if communities and policy makers act responsibly. The President's Cancer Panel convened in 2010 and produced a report stating, "A more integrated, coordinated, and transparent system for promulgating and enforcing environmental contaminant policy and regulations, driven by science and free of political or industry influence, must be developed to protect public health," yet these reports are ignored. I've been privileged to serve the community for 20 years as a breast cancer activist. Diagnosed in 1987, I have seen many sisters, mothers, daughters and sons succumb to this epidemic. The need for science-based information, assistance, and access to care and support became the foundational mission for many breast cancer community groups. To increase our knowledge, the New York State Breast Cancer Support and Education Network was formed. Recently, the Environmental Committee of this network created the first powerpoint presentation regarding Hydrofracking and Breast Cancer. The following are facts that were presented in the state capital as well as nationally.

Breast cancer diagnosis can occur decades after exposure to environmental toxins. Over the past years, scientists have had a greater understanding of the conse-

quences of genetic and epigenetic mechanisms, and how they can alter genes to promote cancer. We know that an alteration in a growth promoting gene, known as an oncogene, can signal a cell to divide out of control; or an alteration to a tumor suppressor gene will signal a damaged cell to continue to divide rather than die. There are also additional mechanisms of cancer that occur through structural support cells, the extracellular matrix in which the cells live, and immune cells: collectively known as the microenvironment. There are many particular patterns of gene alterations as well as many combinations of environmental exposures that make one person more susceptible to cancer than another. Scientists have identified hundreds of altered genes that can contribute to tumor development. We know about BRCA1 and BRCA2 mutations that greatly increase breast cancer risk (1). What about other genetic mechanisms that have been altered due to combined environmental exposures?

Long term studies are critical and there have been no long term studies on the safety of hydro fracturing as it pertains to our health. "Hydrofracking" or "fracking" is a technique used to fracture shale in order to release the natural gas trapped within its layers. The fractured rock is kept open using a large volume of water mixed with sand and chemicals, injected horizontally under high pressure. New York State sits on top of one of the largest shale formations in the United States, the Marcellus Shale. The hydrofracking process can utilize 3-8 million

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gallons of freshwater for each well. There are over 630 chemicals used to extract natural gas. Many of these chemicals have not been well-described in the scientific literature.

We cannot move forward without a full understanding of the effects of high volume fracturing since it is a recent technology. Many of the hydro fracturing chemicals are kept as a trade secret. The NYS New York State SGEIS (Supplemental Generic Environmental Impact Statement) does not address cancer risk in its literature. However, we know 25% of the known chemicals in hydro fracturing fluids are carcinogens and 37% are known endocrine disruptors that may lead to tumor formation (2). Breast cancer rates have been significantly increased near drilling sites in Texas (3). From nosebleeds to liver damage, folks who have been living near hydro fracturing wells have documented ill health effects they believe are due to this process.

Of the daunting array of chemicals linked to breast cancer, PAHs (polycyclic aromatic hydrocarbons), benzene and toluene are specific ones we know are used in hydro fracturing. The hydro fracturing fluid, injected into the ground, includes known and suspected carcinogens; naphthalene, benzene, toluene, PAHs and acrylamide. The U.S. Environmental Protection Agency (EPA) has classified benzene as Group A, a human carcinogen (4). Benzene is released in the fracking process, creating air pollution and contaminating water. The Institute of Medicine (IOM) released a report in December, 2011 that links breast cancer exposure to benzene (5). Multiple studies have linked breast cancer incidence with PAH exposure particularly during certain windows of susceptibility (6). According to the study published in *Occupational and Environmental Medicine*, PAHs increase the risk of breast cancer in postmenopausal women. The risk is reported to be highest when women are exposed before the age of 36 (7). The *Journal of Cancer* identified toluene as one of the 216 substances that cause breast cancer in laboratory

animal studies (8).

The hydro fracturing process is occurring 24/7. Exposure to light at night on a regular basis leads to sleep disturbances and interferes with the release of melatonin. Melatonin is involved in the circadian regulation and facilitation of healthy, and reparative sleep. Dr. Richard Stevens, Ph.D., cancer epidemiologist at the University of Connecticut Health Center, Farmington, Connecticut, published extensive articles on this subject where he addresses that in the absence of reparative sleep the immune system is suppressed, and additionally there is an increased risk of developing a number of different types of cancer, including breast cancer (9).

Radioactive substances, carcinogenic vapors and toxic metals are mobilized during the fracking process. Radiation is a known carcinogen (10). The wastewater produced in Pennsylvania and New York showed 3,600 times more radioactivity than federal limits allowed for drinking water. And, 300 times over the limit of radioactivity than allowed at a nuclear plant facility (11).

Time and time again new technologies are fast tracked onto the marketplace, causing harmful effects. We continue to witness our elected representatives putting prevention-oriented approaches on a back burner to be argued and discussed. Policy must be enacted to reduce exposure to harmful chemicals on the basis of early credible evidence.

Until we have all the facts, could hydraulic fracturing prove to be the ultimate experiment on public health?

Karen Joy Miller is Founder & President of the Huntington Breast Cancer Action Coalition (HBCAC), established in 1992. Karen is a cancer survivor and for over 25 years has been a dedicated public health advocate focused on environmental triggers to breast cancer. Karen has received numerous awards, proclamations and special recognitions.

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In 2000, HBCAC initiated the “Prevention Is The Cure” campaign. Focusing on primary prevention and environmental links to disease, her organization secured legislation to ban the use of BPA in baby bottles and sippy cups in New York State. Most recently, they secured the first ban in the nation on thermal cash receipts containing BPA in Suffolk County. She is currently partnering with Mount Sinai on the Breast Cancer and Environmental Research Program—Windows of Susceptibility, a National Institute of Environmental Health Sciences Project.

For more information visit:

www.hbcac.org
www.preventionisthecure.org
www.ribbet.org

Karen has served on numerous advisory boards: Inter-agency Breast Cancer & Environmental Research Coordinating Committee; the National Conversation on Public Health & Chemical Exposures Education & Communication; Breast Cancer & Environment Research Centers; NYS Breast Cancer Network; NYS Breast Cancer Detection & Cervical Education Council; Governor’s Sustainability & Green Procurement Council; NYS Pollution Prevention Institute; Children’s Environmental Health Center, ICHAN School of Medicine, Mount Sinai; JustGreen Partnership; LI Neighborhood Network; and Suffolk County Cancer Awareness Task Force.

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