

# Breast cancer and work: the urgency of international social mobilisation

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## Introduction

Millions of women across the globe fundraise, march and lobby under the banner of the pink ribbon in the 'war' on breast cancer. However, despite the enormous sums collected for breast cancer research and awareness, we seem to be no closer to reducing the incidence of the disease. In Europe, 464,000 women were diagnosed with breast cancer and 131,000 died from this feared disease in 2012 (Ferlay *et al.* 2013). It is the most common cancer among women in all industrial countries, including the United States and Canada where the 'rates are amongst the highest in the world' (Canadian Cancer Society 2007: 71). Meanwhile, according to the American Cancer Society (2001: 11), the worldwide rate continues to rise.

It may be disappointing for some pink ribbon event participants to learn that very little of the money raised will go towards prevention and still less to addressing occupational and environmental risk factors. Most breast cancer charities seem to be instead focused on early detection, genetics and treatment, while generally ignoring – or even dismissing – research into the primary prevention of breast cancer.

Many scientists contend that the environment is playing a role in the disease's increasing incidence, which is a powerful argument as less than 50 per cent of breast cancers cases can be explained by the known or traditionally suspected risk factors (Gray *et al.* 2010). However, the prevention research and education campaigns that are carried out tend to ignore environmental factors, such as the chemical hazards in many communities, farms, homes and workplaces. Instead, the predominant prevention efforts currently focus on such personal habits as diet, smoking, alcohol use and exercise. The mainstream media also generally reinforce these messages when they should instead be informing the public about the scientific evidence of the likely connection between involuntary environmental exposure and cancer. In other words, the predominant messages suggest that if you get breast cancer, it is because of something you personally did or did not do – something you individually could control.

Because research into environmental causes is poorly funded, there are gaps in the evidence linking breast cancer to work and other environments, providing employers and legislators with a ready excuse to wriggle out of eliminating breast cancer hazards in the work environment. This lack of research and resulting evidence also gives employers and compensation

systems the justification to deny compensation for women who have developed breast cancer after working with carcinogens, i.e. cancer-causing chemicals or conditions such as working at night. In the UK, for example, the Health and Safety Executive estimates that 2,000 women develop breast cancer each year due to shift work, and yet no woman has ever been compensated (O'Neill and Watterson 2015).

This lack of attention to occupational risks relating to breast cancer may seriously hinder prevention efforts, not only for the many thousands of women employed in potentially high-risk jobs but also for the broader public. Many of the chemicals produced or utilised in the workplace also end up in the general environment and in consumer goods. As cancer researcher, Sandra Steingraber (2010: 65), has said, 'Understanding occupational cancers is important not only because people spend so many hours of their lives in the workplace but also because it yields critical clues about cancers beyond the factory wall and the office door'.

Dr Lorenzo Tomatis, the former Director of the International Agency for Research on Cancer (IARC) acknowledged, 'Much of the early understanding of the aetiology of human cancer originated from studies of occupational groups exposed to high concentrations of chemical carcinogens' (Tomatis *et al.* 1997). Yet despite Tomatis' recognition of the importance of occupational exposures in cancer causation, almost all national cancer agencies and breast cancer charities continue to ignore or deny that workplace exposures and conditions contribute to a woman's breast cancer risk.

In 2010, the United States President's Cancer Panel expressed concern that the establishment of precautionary regulations was being hindered by 'undue industry influence' and, furthermore, that the environmental causes of cancer had been 'grossly underestimated' (Reuben 2010).

Research that addresses occupational and environmental risks may unfortunately reflect gender and social class bias; there are fewer studies on and less attention given to breast cancer than other cancers. In 1996, Goldberg and Labrèche reported that 'Few high quality occupational studies directed specifically toward women have been carried out to allow the unambiguous identification of occupational risk factors for breast cancer' (Goldberg and Labrèche 1996).

Over a decade and a half later, the American Breast Cancer Foundation review of the evidence about environmental links to breast cancer found that 'Although women make up nearly half the workforce in the United States, relatively few studies have been conducted to identify occupational exposures associated with breast cancer'.

The American Public Health Association (APHA), the largest public health organisation in the world, stated in 2014 in their ground-breaking resolution on breast cancer and work: 'Notwithstanding the high incidence of breast cancer among women and calls for primary prevention of cancers linked to

work and other environments, the two topics seldom cross paths. The dominant epidemiological paradigm behind research and public policies remains firmly focused on individual lifestyles, genetics, and treatment options. The exogenous (i.e. involuntary and commonly shared) hazards and risk factors associated with chemicals – the causes of breast cancer that can be prevented or reduced – are passed over, ignored, and/or downplayed’ (APHA 2014).

## **Workplace risks**

Even with the paucity of research on occupational causes of breast cancer, there is still much we do know. There are many chemicals (at least 216) that have been identified as breast carcinogens. As Rudel and colleagues found, these include a long list of industrial chemicals, pesticides, products of combustion, pharmaceuticals and hormones (Rudel *et al.* 2007).

Oestrogen, a known human carcinogen, is understood to be the principal causative factor in the development of breast cancer (Travis and Key 2003). ‘For more than 200 years, scientists have appreciated that breast cancer cannot arise without hormonal influences’ (Davis and Sieber 1997). The traditionally accepted risk factors include age, reproductive history, hormone replacement therapy and family history, amongst others. All are related to a woman’s total lifetime oestrogen load. There is particular concern about the potential significance of exposures to synthetic oestrogenic compounds (Brody and Rudel 2003).

Over 870 chemicals have been shown to mimic such hormones as oestrogen, and they are all part of the group of chemicals called endocrine disruptors (EDCs). Even very small amounts of exposure have been found to have negative effects. The Endocrine Society suggests that the increasing incidence of breast cancer over the past five decades may be the result of EDCs (Diamanti-Kandarakis *et al.* 2009).

A recent study by the World Health Organization found links between exposure to EDCs and health issues such as: testicular problems; breast, prostate and thyroid cancer; developmental effects on the nervous system in children; and attention deficit hyperactivity disorder (ADHD) in children. There may also be a combined impact from exposure to carcinogens and hormonally active substances.

American public health advocate, Dr Ted Schettler (2013), stated in his paper entitled ‘The Ecology of Breast Cancer’ that ‘it appears increasingly likely that workplace exposures to known or suspected carcinogens and endocrine disrupting chemicals can increase the risk of breast cancer. Specific occupations including chemical, rubber, plastics, and textile manufacturing, agriculture, and nursing deserve urgent attention’.

## Human research findings

The number of human studies that have examined the links between breast cancer and workplace chemicals is limited. This is partly because most studies have been on men in the workplace rather than women, so the cancers studied are generally ones that could appear in significant numbers among the male population, while the cancers that are the most prevalent among women are often ignored (Zahm and Blair 2003).

There are, however, significant new findings of associations between occupational exposures and breast cancer in women, indicating that past neglect of working women in occupational health research has been costly in terms of damage to health and lives lost.

In a landmark review of the scientific literature, the American Breast Cancer Foundation found evidence of increased risk among women employed as nurses, teachers and other education professionals, radiological technicians and chemical workers. There were also 'less frequently studied' occupational groups, such as dry-cleaning and laundry workers, firefighters, flight attendants, food and beverage production workers and others that were found to bear elevated risks (Breast Cancer Fund 2015).

The IARC has recognised the association between shift work and breast cancer risk. According to Dr Coglianò of the IARC, 'nearly 20 per cent of the working population in Europe and North America is engaged in shift work, which is most prevalent in the healthcare, industrial, transportation, communications, and hospitality sectors. To date, most studies have focused on breast cancer in nurses and flight attendants. Now more studies are needed to examine this potential risk in other professions and for other cancers' (Watterson 2009).

To date, Denmark is the only country to have granted shift workers' compensation claims for breast cancer.

A French epidemiological study identified increased breast cancer risk among some white-collar occupations, among textile, plastics and rubber workers, and among women employed for more than 10 years as nurses. They also found elevated risk among women employed in the manufacturing of chemicals and non-metallic mineral products (Villeneuve *et al.* 2011).

In 2012, a study involving 2,100 Canadian women found an overall increased breast cancer risk of 42 per cent among women across various occupations and industries in which they had been highly exposed for ten years or more to breast carcinogens or EDCs. It further found that women employed in agriculture, metal-working, restaurants and casinos, automotive plastics, and food canning bore an elevated risk. It was especially noteworthy that premenopausal women in both automotive plastics and food-canning industries had an almost fivefold risk. The study authors found that women are often exposed to a 'toxic soup' of chemicals in a number of these

occupations that include such mammary carcinogens and EDCs as phthalates, bisphenol A and flame retardants (Brophy *et al.* 2012).

In addition to concerns about workplace exposure to chemicals, there is evidence that excessive radiation exposure, experienced by unprotected medical radiology workers, increases the risk of breast cancer. There is also limited evidence that electromagnetic fields (EMFs) may induce greater risk.

## **Animal research findings**

As experiments cannot be carried out on humans, researchers have relied on experiments on animals to find out about the risks of chemicals. For example, over 200 years ago, the British physician Percival Potts documented the link between soot and scrotal cancer among young chimney sweeps. Although a significant amount of time would elapse before the chemical components of soot were identified, by the 1930s it had been recognised that a major component of soot and vehicle exhaust were various polycyclic aromatic hydrocarbons (PAHs). Animal experimentation showed that many of these PAHs can cause breast cancer (Russo and Russo 1996).

One particular PAH called dimethylbenzanthracene (DMBA) has been extensively used in animal experiments to induce breast cancer in order to investigate the factors that can modify how long it takes to produce mammary tumours and how many tumours are produced. For example, in rat experiments an interaction was revealed between exposure to DMBA and exposure to light at night, resulting in a 36 per cent shorter development time of the mammary tumours and a 60 per cent increase in the number of tumours (Shah *et al.* 1984).

Strangely, the extensive evidence from these rat experiments on mammary cancer has only been slowly applied in occupational health and safety practice to protect women workers from conditions likely leading to breast cancer, such as exposures to PAHs and shift work. Moreover, despite the advice of Dr Tomatis that precautionary measures should be implemented when a substance is identified by animal testing to be cancer causing, such preventative steps are rarely taken.

## **The resistance grows**

In the past decades we have seen the enactment of neoliberal, anti-regulatory policies, job cuts, and increasing globalisation, with the result that fear has been instilled among workers that the economy upon which they depend is becoming unstable. These conditions result in greater pressure to accept working conditions, regardless of the impacts on health, as long as there is a continuing pay cheque. Female workers – who arguably have even less security than their male colleagues – are particularly vulnerable.

However, women throughout the industrial world are increasingly asking questions and demanding answers. The growing challenge by the global women's health movement of the traditional understanding of breast cancer causation is bolstering the efforts of working women and their trade unions to challenge employers and government regulators.

The NGO Women in Europe for a Common Future (now called Women Engage for a Common Future, WECF) published a pamphlet titled 'Politics and Prevention: Linking breast cancer and our environment' that stated: 'It is encouraging that as more women enter the workforce, they also have the opportunity to join their trade union and become actively involved in determining health and safety legislation which protects a woman at all stages of her working life. But there needs to be better enforcement of the legislation which does exist and a rethink about how to make research more women-focused to prevent occupational cancer' (Lynn 2007).

A US coalition of trade unions and environmental organisations has sponsored a campaign called 'Let's Put Breast Cancer Out of Work' (Blue-Green Alliance 2013). They have developed educational materials and are informing female trade unionists and members about workplace exposures that might increase risks for women.

These actions are encouraging. The identification and elimination of occupational risk factors for breast cancer is a monumental undertaking. It will require global campaigns involving trade unions, women's health organisations, environmental activists, independent media and progressive researchers. It promises to be an uphill battle, but, as is the case with any social movement, with enough willpower and the right strategies it is a winnable one. We should take inspiration from the words of social activist and author Greg Jobin-Leeds: 'When we fight, we win!'

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