

**Working Women
and Breast Cancer**
The State of the Evidence



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Working Women and Breast Cancer: The State of the Evidence

Introduction

No one should face a breast cancer diagnosis because of their job. Unfortunately, workers across a wide range of sectors, from teachers to firefighters, have a significantly higher chance of facing the disease than the general population does. Which occupations, and which exposures on the job, put women at greatest risk for breast cancer? What can we do to protect workers and prevent the disease? The Breast Cancer Fund has been working to prevent breast cancer through elimination of toxic chemicals and radiation linked to the disease for over a decade.

With this report, we are making three major contributions to this effort:

- 1) A first of its kind scientific literature review of the research on women's work and breast cancer
- 2) An overview of the regulatory landscape and the U.S. government's failures to protect workers
- 3) Recommendations for research and policies that prioritize workers' health over industry profits or political gains

At home, work and leisure, we are all exposed to toxic chemicals and radiation. A compelling body of scientific evidence tells us that some of these exposures can increase breast cancer risk.

Because workers are often exposed to carcinogenic or toxic substances at regular doses for long periods of time, they are the modern-day canaries in the coal mine. Though research on occupational hazards provides important data, we must create a regulatory system that will ensure that workers are not exposed to these dangers in the first place.

We believe workers have these rights:

- To know what substances they are exposed to on the job
- To know the potential health impacts of those substances
- To be included in efforts to improve their working conditions

We are confident that there is a better way forward, and that a cancer-free economy is within our grasp. It's time to put breast cancer out of work.

Executive Summary

Based on the current evidence, action to reduce workplace exposures linked to breast cancer is imperative. The Breast Cancer Fund has spent nearly 15 years translating the science that links environmental exposures to breast cancer, and advocating for change. In the past several years, it has become increasingly evident that the workplace may be a substantive source of many of these exposures and of the resulting risk for breast cancer.

Occupations Linked to Breast Cancer

A well-established body of scientific evidence has identified five occupational groupings that are associated with considerably increased risk of breast cancer compared to the risk for the general population.

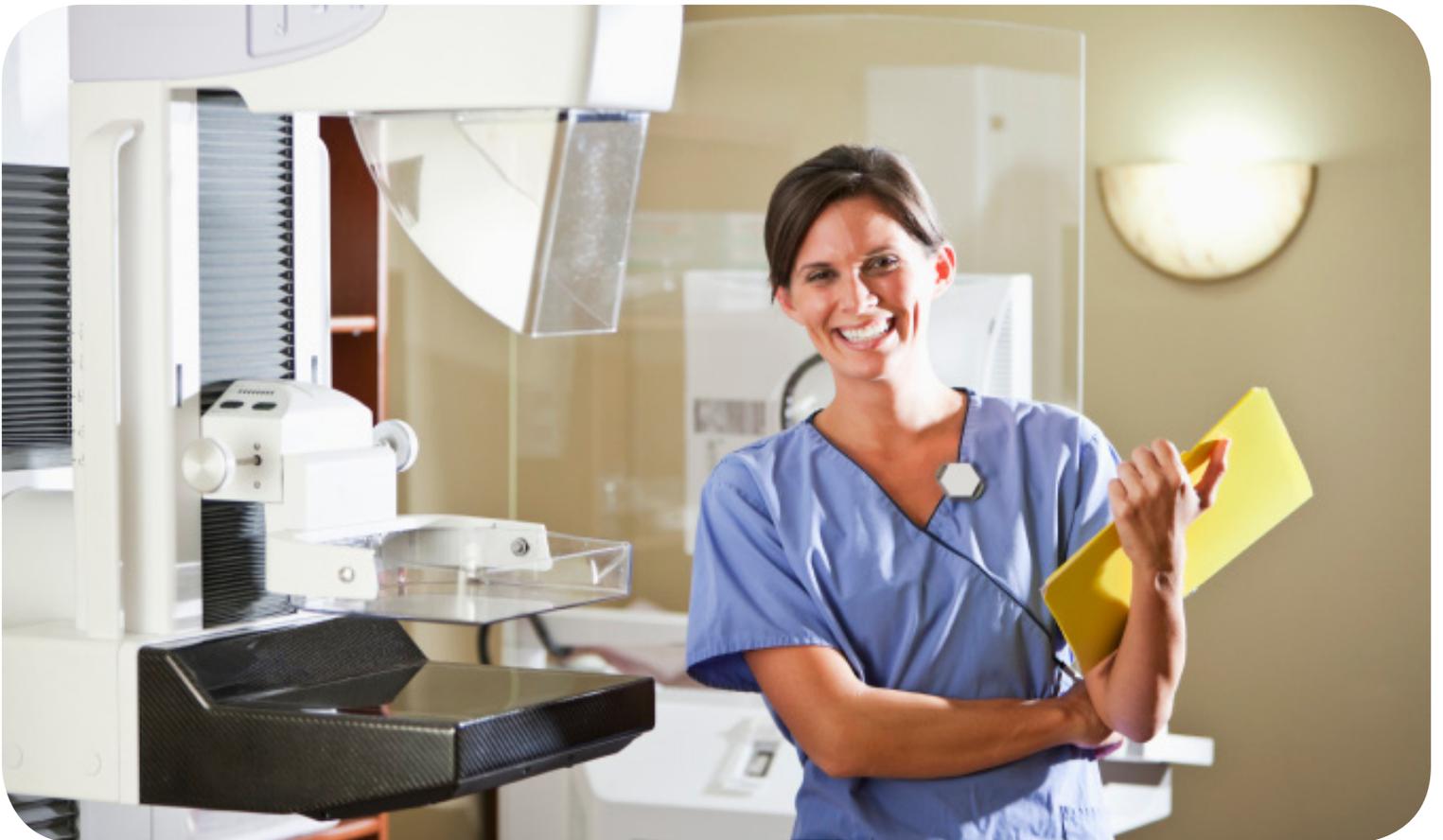
Our literature review confirms the scientific consensus on these occupations:

- Nurses – Up to 50% higher risk than for the general population
- Teachers – Up to double the risk
- Librarians, lawyers, journalists and other professionals – Up to 4 times higher risk
- Radiological technicians – Up to double the risk
- Lab technicians, factory workers and others who work with chemical solvents – Up to 3 times higher risk

In addition, our review uncovered a wide range of overlooked professions that deserve additional research and protections.

Professions that require additional research and protections:

- First responders (police, firefighters, military personnel) – Up to 2.5 times higher risk than for the general populations
- Food and beverage production workers – Up to 5 times higher risk
- Hairdressers and cosmetologists – Up to 5 times higher risk
- Manufacturing and machinery workers – Up to 3 times higher risk
- Doctors, physicians and other medical workers excluding nurses – Up to 3.5 times higher risk
- Flight attendants – Up to twice the risk
- Dry cleaning and laundry workers – Up to 4.5 times higher risk
- Paper and printing workers – Up to 3 times higher risk
- Retail and sales personnel – Up to 4 times higher risk
- Rubber and plastic products workers – Up to twice the risk
- Textile and clothing workers – Up to 3 times higher risk



Work Exposures Linked to Breast Cancer

Some of the strongest evidence for concerns about occupational health risks emerges from studies that examine the links between specific occupational exposures – such as benzene, pesticides and radiation – and breast cancer risk.

Workplace exposures of concern include:

Chemical Exposures

- Benzene and other solvents (Industries affected: chemicals/plastics/rubber, firefighting, health and science technology, military, printing, household services and more).
- Polychlorinated biphenyls (PCBs) (Industries affected: manufacturing, first responders)
- Polycyclic aromatic hydrocarbons (PAHs) (Industries affected: firefighting; industrial chemicals manufacture; iron and steel; metal industries; motor vehicle manufacture; nonmetallic mineral products manufacture; printing; surgeons; mastectomy personnel)
- Ethylene oxide (Industries affected: health care; medical equipment manufacturing; nurses)
- Pesticides (Industries affected: agriculture, glasswork, pottery, enamelware, wood preparation)
- Tobacco smoke (Industries affected: gambling; hospitality/food services; wholesale and retail trade; restaurants and hotels)

Other Exposures

- Ionizing radiation (Industries affected: aircraft; health and science technology; health care; lab work; nuclear power/nuclear fuel fabrication; nursing; radiological technology, radiology and medical specialties; radiation work)
- Night–shift work (Industries affected: any involving night-shift work)

Research Recommendations

Sociopolitical issues such as gender, race and economic factors must be taken into account when studying workers and breast cancer. This report provides recommendations for researchers and policymakers to incorporate these considerations into their work. For example, it is imperative that researchers and workers partner throughout the full research process, following the tenets of Community-Based Participatory Research (CBPR). This approach considers research to be a collaborative partnership that can lead to knowledge and action that benefit all partners. Since workers may be concerned about both their health (and that of their family) and their job security, it is vital that their expertise and needs be central.

Furthermore, knowledge from occupational research must be widely translated, disseminated and communicated in ways that are clear and meaningful for workers, employers, health care providers and all other stakeholders in occupational health. Ultimately, the research should support health-protective policies and activities.

We recommend a number of specific approaches that could fill gaps in the current literature on occupation and breast cancer:

1. Include workers throughout research
2. Include women in occupational studies
3. Study young working women and, when possible, follow their children
4. Measure exposures directly
5. Understand other characteristics that might affect risk
6. Include or add occupational information in studies that are already under way
7. Examine early indicators of health effects
8. Consider breast cancer subtypes
9. Bring research full circle by reporting results back to communities and individual study participants

Occupational Health Policies

The U.S. occupational safety system is broken, and the system has failed to protect the people who toil in American fields, teach our children and serve us when we're sick. The United States' complicated history of worker protections is riddled with failed attempts to meaningfully protect the workforce. The Occupational Safety and Health Agency (OSHA) and the National Institute of Occupational Safety and Health (NIOSH) are the primary federal agencies with authority to regulate and research occupational exposures. A complex history of legal challenges by industry has paralyzed OSHA in particular, and the agency admits on its own website that current regulatory limits are inadequate.

As a result of these insufficient standards, the U.S. is willing to accept far more cases of cancer resulting from occupational exposures than cases resulting from environmental exposures. The EPA offers the general public 100 to 1,000 times more protection from chemicals than OSHA provides for workers. OSHA estimates that 50,000 workers die each year as a result of past exposure to hazardous agents. Workers should never have to fight for their benefits while they fight for their lives, but oftentimes work-related illnesses go uncompensated.

Policies surrounding chemical use need to consider the full scope of product life cycles, including resource extraction, chemical production, industry utilization, consumer use and disposal.

As a result, fundamental updates to occupational health policy are indispensable to protect current workers and future generations from work-related disease, including breast cancer. These updates need to specifically take account of women in the workplace. It is past time for investment in prevention of workplace exposures and occupationally induced disease in general and breast cancer in particular.

Policy Recommendations

Policies should operate based on the fundamental principles of protecting workers and prioritizing prevention of breast cancer:

1. Research must explore breast cancer risk at work
2. Federal workplace protections must prioritize worker health via these measures:
 - a. Modernize OSHA
 - b. Promote and incentivize voluntary actions to protect workers
 - c. Convene a Workshop on Occupation and Breast Cancer, in order to establish a national agenda on worker health and the disease
4. State OSHAs should act on their power to protect workers now, in advance of federal regulations
5. Employers should provide financial compensation to workers with illnesses related to workplace chemical exposure
6. Federal agencies, companies and researchers should collaborate with workers to develop viable methods to monitor workplace exposures
7. Health care providers should ask about work and workplace exposures
8. All stakeholders should understand and mitigate the adverse impacts of night-shift work
9. Workplaces need to fully disclose exposures of concern, regardless of trade secrets, and communicate with workers about their personal exposures when they are measured.
10. Workers should be engaged in finding solutions to reduce exposures
11. Broad coalitions and collaborations across movements and nations should be formed to improve workplace conditions globally.

Conclusions

Research is inadequate, but there is enough to raise alarm about women's work, occupational exposures and breast cancer. At the same time, policies are severely insufficient to protect worker health. Collectively, these concerns indicate it is well past the time for investment in prevention of workplace exposures and occupationally-induced disease in general and breast cancer in particular.
