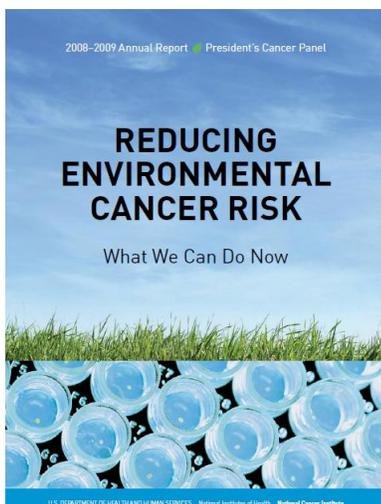


Highlights from the President's Cancer Panel's *Reducing Environmental Cancer Risk* Report



The President's Cancer Panel, established in 1971, is tasked with monitoring the development and execution of the activities of the National Cancer Program. Every year, the Panel holds public meetings and submits a report to the President on an issue of relevance to the National Cancer Program. Past reports have addressed cancer and race, promotion of healthy lifestyles and cancer survivorship. The 2008-2009 report explores environmental factors in cancer. Four meetings were held between September 2008 and January 2009, and over 45 invited experts – representing academia, government, industry, environmental and cancer advocacy communities and the public – contributed testimony on research, policy and programs concerning environmental contributions to cancer.

The Panel is mandated to include one physician, one scientist and usually one leading cancer advocate. The current panel, which oversaw the 2008-2009 process, only has two members: LaSalle Leffall, Jr., M.D., a highly distinguished cancer surgeon from Howard University School of Medicine; and Margaret L. Kripke, Ph.D., a prominent immunologist from the University of Texas M.D. Anderson Cancer Center. Both were appointed by former President George W. Bush and have substantial experience in cancer research. Dr. Leffall is also former president of the American Cancer Society.

The final report, *Reducing Environmental Cancer Risk: What We Can Do Now*, was officially published on May 6, 2010. The 240-page document offers a multi-layered analysis of more than 450 scientific studies as well as a number of recommendations related to research, policy, programs and individual actions.

This fact sheet provides highlights of the report's findings and recommendations. The full report can be found at http://deainfo.nci.nih.gov/advisory/pcp/pcp08-09rpt/PCP_Report_08-09_508.pdf.

Key Findings from the Report

The overall cancer burden in the United States is significant. The Panel reports that 41 percent of Americans are diagnosed with cancer in their lifetimes and 21 percent of Americans will die from cancer. In addition, between 1975 and 2006, cancer rates in children increased, even as advances in treatment reduced childhood cancer mortality. The report highlights the high economic toll of cancer on families, communities and the healthcare system. The National Institutes of Health estimated cancer-related costs to be \$243.4 billion in 2009 alone.

Impact Underestimated

The Panel found that the true burden of environmentally induced cancer has been “grossly underestimated” and that the incidence of various cancers will only continue to increase if environmental pollutants are not considered in addition to other factors that contribute to cancer, such as lifestyle choices, socioeconomic status and genetics. The report emphasizes that the widely quoted estimates of cancer deaths from environmental factors are completely outdated because:

The President's Cancer Panel report was written solely by the Panel itself. The Collaborative on Health and the Environment (CHE) (www.healthandenvironment.org) and the Breast Cancer Fund (www.breastcancerfund.org) followed the process closely, but had no input into the report beyond testimony we provided at the Panel's public meetings. Any specific questions about the report or its findings should be directed to the Panel's staff at <http://deainfo.nci.nih.gov/advisory/pcp/pcp.htm>. This fact sheet highlights the Panel's findings and recommendations.

- They fail to incorporate new knowledge about environmental and occupational risk factors and our current understanding of how cancer develops through complex, multifactorial and multistage processes.
- Older estimates do not consider how different environmental factors interact with each other, in ways that maybe synergistic. In other words, multiple exposures at different times may amplify their collective effects.
- New research indicates that there are critical periods of development when individuals are particularly susceptible to damage, including prenatal development, infancy and puberty.
- New research indicates that while single-gene cancers account for only a small fraction of cancer cases (approximately 5 percent), other aspects of individuals' genetic makeup can affect their susceptibility to environmental contaminants.
- The effects of some exposures persist across generations.

Mechanisms for Action

Environmental exposures may increase cancer risk by interfering with biological processes, such as altering hormone production and function, increasing inflammation, damaging DNA, and causing gene suppression or over-expression.

Sources and Types of Exposures

The panel explored environmental exposures from a variety of sources, including industrial, occupational, agricultural, medical practices, military activities, modern lifestyles (such as car/airplane travel, dry cleaning, tap water contaminants, cellular communications), and naturally occurring sources.

Among the concerns cited in the report are asbestos, chromium, perchlorethylene and trichloroethylene, formaldehyde, pesticides and herbicides, air and water contamination, electromagnetic fields, medical radiation (in particular, concern for exposures from CT scans, which deliver higher radiation doses than other medical procedures), exposure from military sources (which include many of the chemicals listed above), as well as radioactive contamination and naturally occurring substances, such as radon and arsenic.

Endocrine disrupting compounds (EDCs), chemicals that can interfere with animal or human hormone systems, are also specifically discussed. The report, while acknowledging that many of these chemicals have not been classified as carcinogens, calls for a precautionary approach to EDCs based on the existing evidence and for more research, particularly looking at low-dose and early-life exposures. Bisphenol A (BPA) is called out a number of times in the report as a chemical of concern because extensive toxicological research indicates an association between BPA and breast cancer, obesity, diabetes, learning disabilities and other significant health concerns. While the Panel recognized that animal studies do not always predict human responses, the Panel stated that “an environmental health paradigm for long-latency diseases is need to enable regulatory action based on compelling animal and *in vitro* evidence before cause and effect in humans has been proven.”

The panel also noted its concern about the increasing use of medical radiation—in particular, exposures from CT scans, which deliver higher radiation doses than other medical procedures. The use of CT scans has grown in use by about 10 percent each year, nearly doubling the total average dose of radiation per individual.

Research Inadequacies

Research on environmental causes of cancer has not been robust because of inadequate funding and interest from government and academic insitutions. Research on environmental links to cancer, in fact, accounts for only

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14 percent of the National Cancer Institute's budget, and funding for cancer-related work at the National Institute of Environmental Health Sciences has not increased since 1999. Research thus far has not adequately explored how environmental pollutants may interact with other factors, such as lifestyle choices, socioeconomic status and genetics.

A lack of coordination across federal and international agencies engaged in research on environmental toxicants has led to multiple approaches to measuring and categorizing environmental exposures. In most cases, U.S. agency standards are less protective than international values. Different U.S. agencies may also set different exposure limits for the same environmental toxicant.

Research on environmental toxicants has suffered from methodological weaknesses, including a lack of inclusion of women in studies, lack of information related to exposures in both home and work environments, and a lack of an integrated data-collection process regarding health and environmental exposure data (commonly referred to as health tracking). In addition, toxicity testing on animals tends to rely on high-dose exposures in adolescence. Such methodological conventions do not test for early-life exposures (including exposures *in utero* and in the first weeks after birth), which are significantly more likely to lead to later-life cancers than the same exposures in adult animals, nor do they test for low-dose exposures and mixtures of chemicals which may have even more impact on health outcomes.

Weak Laws

The report calls out the failure of government chemical policy regarding exposure to known or suspected environmental carcinogens. According to the report, five major problems limit the efficacy of regulation of environmental contaminants: "1) inadequate funding and insufficient staffing; 2) fragmented and overlapping authorities coupled with uneven and decentralized enforcement; 3) excessive regulatory complexity; 4) weak laws and regulations, and 5) undue industry influence." The report specifically reveals how industry interests have exploited the reactionary approach to chemicals management—one that requires incontrovertible evidence of harm before action is taken. This has engendered an emphasis on secondary prevention of cancer (such as early detection) over primary prevention, which removes hazards from the environment.

The report also points out that current regulatory approaches are overly complex and simultaneously ineffective. Many agencies share responsibilities for regulating a single chemical, depending upon the particular use. In many cases, agencies with shared responsibilities do not coordinate with each other to make regulatory decisions. Internal review processes within a given agency may be prohibitively complex, involving numerous offices and divisions within the agency.

Many laws regulating environmental toxicants are weak or ineffective. The report cites the Toxic Substances Control Act of 1976 (TSCA), which grandfathered in 62,000 chemicals that were already registered when the Act was passed, as an "egregious example of ineffective regulation of environmental contaminants." TSCA has no true proof-of-safety provision and the Environmental Protection Agency, which enforces TSCA, can only call for testing of a chemical if there is already significant evidence that the chemical poses a health risk to the public. Since TSCA was passed, the EPA has required testing of less than 1 percent of the chemicals in commerce, and has only regulated five specific chemicals.

Report Recommendations

In its cover letter to President Obama, the Panel "urges you most strongly to use the power of your office to remove the carcinogens and other toxins from our food, water, and air that needlessly increase health care

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costs, cripple our Nation's productivity, and devastate American lives. ... All levels of government, from federal to local, must work to protect every American from needless disease through rigorous regulation of environmental pollutants." Other specific recommendations are listed below.

Policy, Research and Programs

- Precautionary, prevention-oriented approaches should replace current reactionary approaches to environmental contaminants.
- New assessment of workplace chemical exposures are needed to revise outdated, inaccurate estimates.
- More integrated and coordinated systems for environmental safety policies are needed across agencies, driven by science and free of political or industry influence.
- Epidemiologic and hazard-assessment research need to be strengthened to address workplace exposures, *in utero* and childhood exposures, and exposures likely to have intergenerational effects. Current funding is inadequate to address these needs.
- New research models are needed to better quantify exposures and to create methods to assess chemicals more rapidly, including developing high-throughput screening technologies.
- Cancer risks attributable to household radon exposures need to be better addressed.
- Medical sources of radiation exposure must be minimized.
- Inequitable exposures to suspected carcinogens should be addressed.
- Workplace and home exposures should be included as part of a patient's standard medical history.
- Green chemistry approaches that consider health and environmental impacts in the design process should be pursued. At the same time, better testing of new products must be well-studied before introduction.
- Public health messages should be developed to raise awareness of environmental cancer risks.

Individuals

- Protect children from environmental carcinogens and endocrine-disrupting compounds. Both mothers and fathers should avoid exposure to EDCs and carcinogens prior to conception, throughout pregnancy and during early life of the child.
- Individuals and families should reduce or eliminate exposures where possible. Strategies including removing shoes and washing work clothes separately, filtering home tap or well water; storing and heating food in non-toxic containers, particularly avoiding plastics containing BPA or phthalates; eating organic food; disposing of hazardous waste properly; reducing use of electricity (turn off lights) and fossil fuels (reduce driving); and others.
- Reduce exposure to radiation from radon in homes, medical radiation, UV light from the sun and electromagnetic energy from cell phones.
- Advocate for policies and products that will reduce exposure to endocrine-disrupting or carcinogenic compounds, both in the marketplace and with policymakers.

*The **Breast Cancer Fund** is a national nonprofit working to prevent breast cancer by identifying and eliminating the environmental links to the disease.*

*The **Collaborative on Health and the Environment (CHE)** is a diverse partnership of individuals and organizations working collectively to advance knowledge and effective action to address growing concerns about the links between human health and environmental factors.*

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