Authors and Disclosures

Journalist

Roxanne Nelson

Roxanne Nelson is a staff journalist for Medscape Oncology.

From Medscape Medical News

President's Cancer Panel: Environmental Cancer Risk Underestimated

Roxanne Nelson

May 13, 2010 — Exposure to environmental contaminants has a stronger impact on cancer risk than previously believed, according to a new report from the President's Cancer Panel.

Despite a growing body of evidence linking environmental exposures to cancer in recent years, the panel noted that it was "particularly concerned to find that the true burden of environmentally induced cancer has been grossly underestimated."

However, there has been a decidedly mixed reaction to the report. Some experts and organizations have applauded the effort and hailed it as a landmark document; others are concerned that it overstates the risks.

The report, entitled *Reducing Environmental Cancer Risk: What We Can Do Now* , points out that although there are nearly 80,000 chemicals currently on the market in the United States, many of them have not been studied, have been understudied, and are largely unregulated.

Exposure to potential environmental carcinogens is widespread, and the National Cancer Program has not adequately addressed "the grievous harm" from this group of carcinogens, the panel concludes.

"There remains a great deal to be done to identify the many existing but unrecognized environmental carcinogens and to eliminate those that are known from our daily lives — our workplaces, schools, and homes," said panel chair LaSalle D. Leffall, Jr., MD, professor of surgery at Howard University College of Medicine in Washington, DC.

"The increasing number of known or suspected environmental carcinogens compels us to action, even though we may currently lack irrefutable proof of harm," he said in a statement.

The panel advises President Obama "to use the power of your office to remove the carcinogens and other toxins from our food, water, and air that needlessly increase healthcare costs, cripple our nation's productivity, and devastate American lives."

Panel vs ACS?

Michael J. Thun, MD, vice president emeritus, epidemiology and surveillance research, at the American Cancer Society (ACS), feels that the perspective of the report is unbalanced because it implies that pollutants are the major cause of cancer, and because of its "dismissal of cancer prevention efforts aimed at the major known causes of cancer," which include tobacco use, obesity, alcohol, infections, hormones, and sunlight.

"The report is most provocative when it restates hypotheses as if they were established facts," Dr. Thun said in a statement. "For example, its conclusion that the true burden of environmentally induced cancer has been grossly underestimated does not represent scientific consensus. Rather, it reflects one side of a scientific debate that has

continued for almost 30 years."

Although there is no doubt that environmental pollution is critically important to the health of humans and the planet, Dr. Thun said, "it would be unfortunate if the effect of this report were to trivialize the importance of other modifiable risk factors that, at present, offer the greatest opportunity in preventing cancer."

However, Jonathan Samet, MD, MS, professor and Flora L. Thornton Chair in the Department of Preventive Medicine at the Keck School of Medicine at the University of Southern California, Los Angeles, emphasized that these comments should not be viewed as "the panel vs the ACS," even though some of mainstream media has portrayed it as such.

Many elements of this report are entirely in synch with the ACS's own recently published paper on environmental factors and cancer risk, said Dr. Samet, who is cochair of the ACS Cancer and the Environment Subcommittee.

Issues that are highlighted and consistent in both reports include the accumulation of certain synthetic chemicals in humans and in the food chain, possible combination effects of low doses of multiple chemicals, potential radiation risks from medical imaging devices, the large number of industrial chemicals that have not been adequately tested, and the potentially greater susceptibility of children (*CA Cancer J Clin*. 2009;59:343-351).

"This is an old debate, dating back to the 1970s," Dr. Samet told *Medscape Oncology*. "The dilemma is that there have literally been thousands of new chemicals coming into the marketplace, and we have limited knowledge of their toxicity."

Because many of these agents have not been screened, it is not known what health effect, if any, exposure to these chemicals will have, he added.

"Do we assume that something is safe until it causes harm, or vice versa?" Dr. Samet asked. "That is a key point in this paper."

The panel writes that the "prevailing regulatory approach in the United States is reactionary rather than precautionary," meaning that human harm must be proven before action is taken to remove or reduce exposure to an environmental toxin. This approach should be reversed, and replaced with a precautionary prevention-oriented strategy, according to the report.

"Whether one takes a precautionary approach before all the data are in is an important question," said Dr. Samet, adding that this particular viewpoint comes across very strongly in the report.

We are not facing the next asbestos.

Improvements are needed in testing for toxicity, and there is "no doubt that we are not on top of testing yet," he explained. "But this paper will reopen the discussion and raise questions that have been asked before; namely, what strategies are needed to provide assurance to the public."

But for right now, there is no reason "to push an alarm button," Dr. Samet said. "We are not facing the next asbestos."

"This paper is the beginning of a discussion and not the final word on it," he said.

Redirect Efforts?

One of the concerns of the ACS, reiterated by Graham A. Colditz, MD, DrPH, is that the "excitement and fear this report is likely to stir up could direct efforts away from combating known lifestyle factors that have a much larger effect on cancer risk than environmental contaminants."

Dr. Colditz, the Niess-Gain Professor of Surgery and professor of medicine at Washington University School of

Medicine, in St. Louis, Missouri, has coauthored a book on cancer prevention.

In an interview with *Medscape Oncology*, he questioned the need to focus so much effort exploring a topic that has such a modest risk on cancer development, particularly at a time "when we know we're in the midst of an obesity epidemic, we know that we're not as physically active as we should be, and we know that 20% of the population still smokes."

The numbers for environmental exposures were rigorously reviewed in the mid-1990s, Dr. Colditz pointed out. Current evidence shows that pollutants cause only 1% to 4% of all cancers. This is in contrast to obesity and tobacco, which cause 20% and 30%, respectively.

"Even when occupational exposures are added in, lifestyle factors trump environmental factors by at least a factor of 6," he said. "More than half of all cancer can be prevented with what we know today, and pollutants make up only a small part of this."

"The precautionary principle is fine, but should still be based on some amount of data so as to prioritize our efforts and where we put our focus," he said.

How this issue is covered has an impact on the public's overall perception of prevention and preventability of cancer, Dr. Colditz added. "Our social strategy should be to reduce the cancer burden in society — and where we can make the greatest gains."

Support for the Findings

Other scientists and physicians have embraced the findings and praised the report.

"The report was certainly comprehensive and clearly outlined," Samuel S. Epstein, MD, professor emeritus of environmental and occupational medicine at the University of Illinois at Chicago School of Public Health and chair of the Cancer Prevention Coalition, told *Medscape Oncology*. "I have no criticisms of it, and I do think that it will have a significant impact on public policy."

He added that concerns about avoidable causes of cancer were summarized in a January 23, 2009 press release from the Cancer Prevention Coalition, which was endorsed by 20 leading scientists and public policy experts. That statement urged President Obama to prioritize prevention in his comprehensive cancer plan.

At a news conference sponsored by the Breast Cancer Fund, Richard Clapp, DSc, MPH, professor of environmental health at Boston University's School of Public Health, in Massachusetts, and one of the experts who submitted testimony to the panel, stated that a shift is needed to a more proactive and precautionary approach. This would put the responsibility on the manufacturer to ensure that products are safe, and give more incentive to the development of safer chemicals.

Jeanne Rizzo, RN, CEO of the Breast Cancer Fund, said in a statement that the panel "levels a hefty critique of failed regulation of environmental contaminants, undue industry influence, and inadequate research and funding."

She noted that the government and the institutions that advise it have been "locked in a cancer-fighting paradigm that has failed to look at the complexity of cancer causation and, in so doing, have missed the opportunity to create a national campaign for cancer prevention."

However, the American Council on Science and Health, which receives industry funding along with funding from various other sources, was highly critical of the report, saying it "practically plagiarizes the work of antichemical activist groups, including the Environmental Working Group's catchphrase that babies are 'prepolluted'."

Difficulty in Studying Causality

Research on environmental causes of cancer has been limited by low priority and inadequate funding and, as a result, the cadre of environmental oncologists is relatively small, according to the panel's report.

Ted Schettler, MD, MPH, science director of the Science and Environmental Health Network, agrees, but acknowledges the difficulty in studying causality when it comes to environmental toxins.

This is because of the very nature of cancer biology, he told *Medscape Oncology.* "The disease has a long latency period in most cases, which makes it inherently difficult to study and figure out causal events."

People often do not recall or know what they might have been exposed 10 or 20 years ago, or early in life, he said. "We can't really pull one thread of the web."

This is in contrast to defining smoking as a cause of lung cancer, which was far more straightforward. "It was easy to study exposure levels and to ask people about their smoking habits," he said in an interview. "But if you ask someone with leukemia if they were exposed to benzene, chances are they wouldn't have any idea."

One of the strengths of the report is that it takes into account mixtures of chemicals, which many studies fail to do, Dr. Schettler pointed out. "Exposure to mixtures of substances, combined with lifestyle factors, can alter susceptibility to carcinogens," he said. "We don't live in a world of single causal events, and it is much too simplistic to single out individual factors."

It is much too simplistic to single out individual factors.

With respect to the criticism that has been offered, Dr. Schettler emphasized that he has a "hard time buying the argument that people will ignore the detrimental effects of smoking and obesity because we're talking about environmental pollutants."

"People are capable of understanding that there are multiple causes for things," he said. "Automobile accidents are a prime example of that."

Clinicians should be routinely asking about workplace exposures.

Dr. Schettler pointed out the recent episode with Toyota, in which vehicles were recalled for sticking gas pedals. "Having a stuck gas pedal can cause an accident, but nobody thinks the stuck gas pedals are the major cause of automobile accidents," he said. "It's just one of many causes."

He also agrees that better testing and evaluation are needed. "With chemical regulation, we don't even begin to do the job we should be doing," Dr. Schettler explained. "We have a program for pesticides, but other chemicals get on the market without any safety data at all."

"Clinicians should be routinely asking about workplace exposures," he added. "This is something that is not typically included when taking a medical history."

Panel Report

The President's Cancer Panel was established by the National Cancer Act of 1971, and is charged with monitoring the National Cancer Program and reporting annually to the president. The panel normally has 3 members, appointed by the president, but currently there are only 2 — Dr. Leffall, the chair, and Margaret L. Kripke, PhD, emeritus professor at the University of Texas MD Anderson Cancer Center in Houston.

Champion cyclist and cancer survivor Lance Armstrong has previously served on the panel, but did not work on this year's report.

Between September 2008 and January 2009, the panel held 4 meetings to evaluate the state of environmental cancer research, policy, and programs addressing the known and potential effects of environmental exposures on cancer. They received testimony from 45 invited experts from academia, government, industry, the environmental and cancer advocacy communities, and the public

Dr. Leffall told the *New York Times* that the panel stands by their report, and that it is an "evenhanded approach, and an evenhanded report," and that they "didn't make statements that should not be made."

He acknowledged that even though it is currently impossible to pinpoint how many cancer cases stemmed from environmental exposure, he is confident that after sufficient research has been conducted, the panel's assertion that the problem has been grossly underestimated will be confirmed.

The panel recommends concrete actions that government, industry (health, research, advocacy), and individuals can take to reduce cancer risk related to environmental contaminants, excess radiation, and other harmful exposures. The recommendations for individuals include filtering tap water and eating organic foods, as previously reported.

Other key recommendations are to:

- Increase, broaden, and improve research regarding environmental contaminants and human health.
- Raise consumer awareness of environmental cancer risks and improve understanding and reporting of known exposures.
- Raise healthcare provider awareness of environmental cancer risks and the effects of exposure.
- Enhance efforts to eliminate unnecessary radiation-emitting medical tests and to ensure that radiation doses are as low as reasonably achievable without sacrificing quality.
- Aggressively address the toxic environmental exposures the American military has caused, and to improve response to associated health problems among both military personnel and civilians.

On the Legislative Horizon

Independent of this report, there has been a recent flurry of activity on the local, state, and federal levels, addressing potential health risks from chemicals and environmental toxins. One is the Safe Chemicals Act of 2010, introduced by Sen. Frank R. Lautenberg (D-New Jersey) on April 15, which would overhaul the 1976 Toxic Substances Control Act.

The bill requires safety testing of all industrial chemicals, and puts the burden on manufacturers to develop and submit a minimum dataset for each chemical they produce. The Environmental Protection Agency would have full authority to request additional information needed to determine the safety of a product.

There has also been activity focused on bisphenol A (BPA), which is widely used in the production of polycarbonate plastics and epoxy resins, and is found in plastic food and drink containers. In its report, the panel notes that over the past decade, more than 130 studies have linked the chemical to breast cancer, obesity, and other disorders.

The nation's first ban on BPA was passed in Suffolk County, New York; it eliminated the use of the chemical in children's products. Several states, including Washington, Maryland, Wisconsin, Minnesota, and Connecticut, have recently banned BPA from baby bottles and other children's food and beverage containers. California, Vermont, New York, and Illinois have similar legislation pending. In addition, Sen. Dianne Feinstein (D-California) has introduced legislation to ban BPA from nearly all food and beverage containers.

Outside of the United States, Canada has prohibited the use of BPA in baby products, and Denmark has banned its use in any food containers for young children. The French senate has backed a proposal to ban its use in baby bottles.

The US Food and Drug Administration (FDA) has reviewed the safety of BPA in 3 separate sessions, and in the last

review reversed its previous position, stating that it now has "some concern about the potential effects of BPA on the brain, behavior, and prostate gland in fetuses, infants, and young children." The FDA will be conducting in-depth studies, in conjunction with the National Toxicology Program, to address and clarify the risks that have been associated with BPA.

Coincidentally, the American Heart Association released an update to its 2004 initial statement on air pollution and cardiovascular disease, almost simultaneous to the release of the panel report. They report that the "body of evidence has grown and been strengthened substantially" since their earlier statement was published, and that the overall evidence is consistent with a causal relation between exposure to fine particulate matter and cardiovascular morbidity and mortality.

Medscape Medical News © 2010 Medscape, LLC
Send press releases and comments to news@medscape.net.