

TALKING POINTS

Healthy from the Start: Campaign to Include Women, Children, and Future Generations in Environmental Health Standards

- Many federal radiation protection standards, such as limits on how much residual radiation will be allowed in contaminated soil, are based on "Reference Man."
- *Reference man is defined as being between 20-30 years of age, weighing 70 kg [154 pounds], is 170 cm in height [5 feet 7 inches], and lives in a climate with an average temperature of from 10° to 20°C. He is a Caucasian and is a Western European or North American in habitat and custom.* (International Commission on Radiological Protection, 1975)
- The problem is that groups other than adult males – including women, children, and the embryo/fetus – are often more sensitive to the harmful effects of radiation or toxic materials. For instance:
 - For the same radiation dose, women have a 52% greater chance of getting cancer.
 - A female infant drinking milk contaminated with radioactive iodine is 70 times more at risk of thyroid cancer than an adult male for the same radiation exposure.
 - Radioactive hydrogen (called tritium) crosses the placenta and can cause early miscarriage as well as malformations.
- Women's higher cancer risk per unit of radiation exposure is not properly reflected in current regulations. Neither are early miscarriages or fetal malformations potentially caused by radiation exposure.
- The Reference Man model is built into the main computer program, called ResRad, widely used by government to assess risks from radioactivity in the environment and set environmental health standards.
- The reliance on the Reference Man model is inconsistent with Executive Order 13045, *Protection of Children From Environmental Health Risks and Safety Risks*, which was issued in 1997 by President Clinton and endorsed with amendments in 2003 by President Bush. The Order acknowledges that children are disproportionately vulnerable to environmental hazards and directs federal agencies to ensure their policies address the disproportionate risks.

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- Combined exposure to radiation and synthetic chemicals may contribute to increasing rates of breast cancer. Exposure to ionizing radiation could increase the number of cells that have the potential to proliferate to form breast cancers later in life, and exposure to chemicals that mimic estrogen could preferentially enhance the survival of such cells. Such combined risks are ignored in U.S. environmental health standards.
- U.S. regulations have not kept pace with developments in the scientific understanding of radiation risks. For instance, the International Commission on Radiological Protection, the U.S. Environmental Protection Agency, and the Committee to Assess Health Risks from Exposure to Low Levels of Ionizing Radiation of the National Research Council of the U.S. National Academies of Science (the BEIR committee) have all developed age- specific and sex-specific dose and risk factors, but many regulations remain focused on Reference Man. Further, concepts to solve much of the problem already exist, in the form of the "maximally exposed individual" and of the "critical group," but they have not been widely applied.
- In summary, environmental health regulations have improved over the years, but neither the regulations nor the research has yet been fully oriented to protecting the most vulnerable. This must be changed.
- In 2006 a broad coalition of scientists, physicians, cancer prevention leaders, children's health organizations, environmental justice advocates, and women's groups launched a national campaign to shift the basis of many U.S. radiation health protection standards from Reference Man to those most at risk, specifically including children and pregnant women. The coalition would like for President Obama to direct all federal agencies – including the Department of Energy, the Nuclear Regulatory Commission, and the Environmental Protection Agency – to review and update their exposure standards.
- In addition to seeking a broad executive order, the coalition is pressing one particular federal agency – the Environmental Protection Agency – to adopt an approach of protecting the most vulnerable. Further, the coalition is working in select states to tighten drinking water limits for tritium as one way to reduce risks of early miscarriages and to gain leverage for similar change at the national level.

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