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Comments for EPA Science Advisory Board Dioxin Review Panel
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For the Breast Cancer Fund

Good morning. My name is Janet Gray and I am the Director of the Program in Science, Technology and Society at Vassar College. I am also the science advisor and a member of the Board of Directors for the Breast Cancer Fund, the only national organization dedicated to the identification and elimination of environmental and other preventable causes of the disease.

We are an organization invested in translating the complex science linking environmental toxicants and risk for breast cancer into policy reform. As such, the Breast Cancer Fund is particularly concerned about the long-standing evidence that dioxins are carcinogens, and in particular, the growing evidence linking exposures to dioxins to the development of breast cancer. For example, long-term follow-up of women, especially younger women, exposed to dioxins following occupational accidents in Seveso, Italy (Pesatori, 2009) and Germany (Manz, 1991) show that women are vulnerable to the later development of, and early death from, breast cancer.

As you know, dioxin has been classified as a known human carcinogen by the World Health Organization's International Agency for Research on Cancer (IARC) and the US Department of Health and Human Services National Toxicology Program (NTP). It is critical to the health of the citizens of our country that the EPA complete the dioxin reassessment process that has now being dragging on for more than 20 years, and expedite the regulatory process that will lead to protecting Americans from this known carcinogen.

And it is imperative that in its final determinations, the EPA include cancer, in addition to other non-cancer related health endpoints, in its determinations of preliminary remediation goals (PRGs). To not include cancer as an endpoint would be to ignore decades of scientific evidence linking exposures to dioxins to development of cancer, and the conclusions of international and national regulatory agencies, including the EPA, that dioxins are the most potent man-made carcinogens existing on our planet.

Of particular concern to the Breast Cancer Fund is the realization that TCDD, the most potent dioxin, is an endocrine disruptor that is found almost ubiquitously in people's bodies across the world. The most recent data of a cross-section of Americans indicates that over 95% have measurable levels of dioxins in the bodies (Patterson, 2009).

A number of laboratory studies have demonstrated that when looking at later changes in mammary cancer rates, the timing of exposures to dioxins matter. As is true for other endocrine disrupting compounds more generally, TCDD is a cancer-causing agent that

exerts its most powerful effects on later risk for breast cancer when people and animals are exposed early in life, from fetal through early adult periods of development, and during pregnancy and lactation.

Several studies have shown that administration of dioxin (especially TCDD) to pregnant rats leads to structural abnormalities in the development of their pups' mammary tissues and higher incidence of tumors when the pups grow to adulthood (Brown, 1998; Fenton, 2002; Lewis, 2001; Jenkins, 2007; La Merrill, 2009). TCDD may exert its cancer causing effects both by decreasing the efficacy of tumor suppressor mechanisms and by enhancing the estrogenic signaling within the mammary cells (Seifert, 2009).

In women, concentrations of dioxins in breast tissue may change dramatically over the reproductive span of a woman's life. Data indicate that there is a substantial decrease in the amount of dioxin remaining in a woman's breast fat tissue after she has breastfed (Massart, 2005), unfortunately because the chemicals have been passed on to her newborn via breast milk. In addition to potential transfer of dioxins to breastfeeding infants, the very process of releasing the chemicals from storage in breast fat cells during the synthesis of milk may actually trigger genotoxic effects in the breast tissue (Dip, 2008). So ironically, in the presence of dioxins, breastfeeding may increase risk for breast cancer for both the infant and the mother. To be clear, we are not arguing against breastfeeding; it is absolutely the most biologically natural and healthiest source of nutrition for a young infant. Rather we believe that no infant should have to be exposed to TCDD during the process of breastfeeding, and no woman, or man, should face the later diagnosis of cancer because of preventable exposures to this known cancer-causing agent.

It is absolutely critical that the EPA take an immediate stand on this potent carcinogen. The Breast Cancer Fund strongly urges you to release the Dioxin Reassessment document without delay and to move forward quickly to set appropriately stringent guidelines to protect us all from the cancer causing and other detrimental outcomes of exposures to this potent toxicant. Our children and grandchildren deserve no less, and can wait no longer.

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