

Technical Memo
EPA's Reanalysis of Key Issues Related to Dioxin Toxicity and Response to NAS
Comments
February 27, 2012
By Peter deFur

Until just over two years ago, January 2010, EPA used a soil cleanup standard of 1 part per billion (ppb), and did not have an official Reference Dose (RfD). The only RfD in use by EPA, 1 pg/Kg-day, came from the Agency for Toxic Substances and Disease Registry (ATSDR). Both the RfD and the soil standard had been used for a number of years and may, in fact, date back decades.

Two years ago, EPA released draft soil cleanup standards for dioxin; the standards are called Preliminary Remediation Goals (PRGs). The PRGs, as is true for other chemicals, were based on protecting people against cancer or non-cancer effects. When EPA proposed these PRGs, the agency had not updated the cancer potency factor and had not published an RfD on which to base a PRG for non-cancer effects. The only way to calculate a soil PRG is with an RfD; so, in lieu of their own RfD, EPA used the one published by ATSDR and applied it on a case-by-case basis. This RfD is 1 pg/kg-day. EPA used this RfD to calculate a PRG of 72 parts per trillion (ppt) for non-cancer health effects.

Later in 2010, EPA finalized the agency response to the last scientific review by the National Research Council (NRC) of the National Academies, released in 2006 (NRC, 2006). The NRC report called for EPA to calculate an RfD, redo the cancer potency factor, and update all the toxicity numbers for dioxin and dioxin-like compounds. In the agency response, EPA indicated that the RfD would be 0.7 pg/Kg-day for non-cancer health effects. Using this updated RfD to calculate a soil standard would presumably result in a value lower than the 72 pg/Kg-day that had been published earlier, using the RfD of 1.0 pg/Kg-day.

The recently released RfD of 0.7 pg/Kg-day comes independent from a PRG value (US EPA, 2012). If we assume that the previous RfD was used to calculate a PRG of 72 pg/kg-day, then a new PRG should be reduced by the same amount as the reduction in the RfD or 30%, or 50.4 parts per trillion, for non-cancer health effects.

References:

National Research Council of the National Academies (NRC).2006. Health Risks from Dioxins and Related Compounds: Evaluation of the EPA Reassessment.
<http://www.ejnet.org/dioxin/nas2006.pdf>

United States Environmental Protection Agency (US EPA). 2012. EPA's Reanalysis of Key Issues Related to Dioxin Toxicity and Response to NAS Comments, Volume 1.
<http://www.epa.gov/iris/supdocs/dioxinv1sup.pdf>