

## The History of Dioxin Exposure & EPA's Health Assessment of Dioxin

**1953** – Accident at BASF plant in West Germany releases dioxin into two nearby communities.

**1962-1970** – Agent Orange extensively sprayed in Southeast Asia during the Vietnam War.

**1965** – Dow Chemical holds closed door meeting with four rival chemical companies to discuss the health hazards of dioxin and after the meeting writes that it does not want its findings about dioxin made public due to fears of new regulations for the chemical industry.

**Mid 1960's** – Outbreak of reproductive and developmental effects noted in fish-eating birds of the Great Lakes.

**1970** – U.S. bans military use of Agent Orange in Vietnam.

**1971** – Dioxin (TCDD) found to cause birth defects in mice.

**1976** – Chemical plant explodes in Seveso, Italy, exposing 37,000 people to a toxic cloud that contains dioxin.

**1977** – Dioxin found to cause cancer in rats. Federal court bans U.S. Forest Service use of dioxin-contaminated herbicides on national forests.

**1978** – Dioxin discovered at Love Canal in Niagara Falls, NY. Two hundred forty families evacuated in August; less than two years later another 740 families will be evacuated.

**1978** – Study by Kociba, et al., shows cancer in rats exposed to TCDD; will be used as basis for future EPA risk assessments for dioxin exposure levels.

**1983** – In Times Beach, Missouri, EPA announces buyout of entire town of over 2,000 residents due to dangerous levels of dioxin in the soil. This was the result of the town regularly spraying dioxin-contaminated waste oil on its streets and parking lots to control dust.

**1985** – EPA completes the first health assessment of dioxin, finding that the cancer risk to humans from dioxin exposure is by far the highest defined for any man-made chemical.

**1986** – Dioxin found in paper products due to chlorine bleaching. The paper and chlorine industries pressure EPA to reconsider no threshold cancer risk model used by agency to establish “acceptable daily dose” of dioxin, which industry claims is too low.

**1986** – EPA Administrator asks staff to re-examine data and methodology used by EPA to derive 1985 cancer risk. First reassessment begins.

**1986** – EPA sets up internal working group to review models for estimating cancer risk. Group cannot agree on best model to use, so they decide to average the risks predicted by different models.

**1988** – EPA releases draft of first reassessment of dioxin that only addresses data and methodology used to estimate 1985 cancer risk.

**1988** – EPA Science Advisory Board (SAB) criticizes working group for combining risks from different models but finds no new data to support changing the cancer risk estimate. EPA maintains its 1985 cancer risk estimate.

**1991** – EPA Administrator William Reilly announces EPA will conduct a new (second) reassessment of the health effects of dioxins.

**1991** – NIOSH cancer mortality study of U.S. workers finds strong link between cancer and dioxin exposures. Scientists also report evidence that dioxin acts like a hormone, disrupting many systems in the body.

**1993** – Researchers in Italy find increased cancer in residents living near pesticide plant in Seveso that exploded in 1976 exposing thousands to dioxin in toxic cloud.

**1993** – Institute of Medicine of the National Academy of Sciences establishes list of diseases that Vietnam veterans can file claims for health damages caused by exposure to dioxin resulting from use of Agent Orange during the Vietnam War that includes chloracne, cancer from soft tissue sarcoma, Non – Hodgkin’s lymphoma, Hodgkin’s disease, respiratory cancer (lung, larynx, trachea), prostate, and multiple myeloma.

**1994** – EPA releases new draft reassessment report that confirms cancer risk estimate and finds that non-cancer effects may have greater impact on public health than cancer effects.

**1995** – EPA Science Advisory Board (SAB) completes its second review of EPA’s draft reassessment of dioxins and finds no major issues with report.

**1996** – EPA relocates community of 358 households living near “Mount Dioxin” in Pensacola, Florida, due to high levels of dioxin and other chemicals found throughout neighborhood.

**1996** – Study of German workers exposed to dioxin finds increased rate of death from cancer.

**1997** – IARC classifies dioxin (TCDD) as a human carcinogen.

**1998** – The World Health Organization (WHO) reduces its daily tolerable intake (TDI) for dioxins from 10 to 1 to 4 pg/kg body weight per day based on new findings of adverse effects at lower levels.

**1999** – Follow-up of NIOSH cancer mortality study of U.S. workers finds stronger link between deaths from all cancer types and dioxin exposures.

**June 2000** – EPA releases revision of 1994 Reassessment Report. The revision finds even stronger links between exposure to dioxins and adverse impacts on human health. The EPA found the cancer risk to be 10 times higher than in the 1994 report.

**January 2001** – The National Toxicology Program (NTP) concludes that dioxin (TCDD) is *known to be a human carcinogen*.

**May 2001** – EPA Science Advisory Board completes third review of EPA’s draft reassessment of dioxins and recommends that the “agency proceed expeditiously to complete and release” the dioxin reassessment.

**September 2001** – EPA announces it will send draft reassessment of dioxin to the White House’s Interagency Working Group for review.

**April 2002** – Government Accounting Office (GAO) report supports scientific methods used by EPA in draft reassessment of dioxin.

**January 2003** – Institute of Medicine of the National Academy of Sciences adds diabetes to the list of diseases that Vietnam veterans can file claims for health damages caused by exposure to dioxin resulting from use of Agent Orange during the Vietnam War.

**February 2003** – A rider to the 2003 EPA appropriations bill by Rep. James Walsh requires the National Academies to review the EPA's reassessment if the White House's Interagency Working Group does not come to consensus on the dioxin report within 60 days.

**April 2003** – White House's Interagency Working Group fails to come to consensus on the draft dioxin reassessment and supports request for the National Academy of Sciences to review the EPA's reassessment of dioxin.

**December 2003** – EPA releases revision of 2000 Reassessment Report and continues to conclude that there are strong links between dioxin exposure and adverse impacts on human health. This draft is sent to the NAS for review.

**November 2004** – The National Academies holds first meeting of the Committee to Review EPA's Exposure and Human Health Reassessment of TCDD and Related Compounds.

**July 2006** – The National Academies releases a [report](#) confirming earlier studies that found dioxin to be a potent cancer-causing chemical.

**October 2008** – Weeks before leaving office, President George W. Bush's EPA orders the formation of another EPA Science Advisory Board to review the EPA's response to the National Academies report.

**May 2009** – EPA Administrator [Lisa Jackson releases EPA's Science Plan](#) for activities related to dioxin including its intent to release the final Dioxin Health Assessment by December 2010.

**November 2009** – EPA releases study showing "widespread contamination" of dioxin in fish across the United States.

**December 2009** – The Chlorine Chemistry Division of the American Chemistry Council asks EPA to postpone the development of new Dioxin soil cleanup guidelines until the Dioxin Reassessment is finalized.

**December 2009** – EPA misses deadline to release to the public its response to the NAS report, but does release Draft Recommended Interim Preliminary Remediation Goals for Dioxin in Soil at CERCLA and RCRA Sites.

**January 2010** – EPA and Michigan launch comprehensive Superfund evaluation of Dow Chemical dioxin contamination in Michigan.

**May 2010** – EPA releases to the public their official response to the National Academies report on dioxin, which for the first time includes a reference dose (RfD) or a safe daily dose for dioxin

**June 2010** – EPA misses their self-imposed deadline to finalize the dioxin preliminary remediation goals (PRG's).

**July 2010** – Analyses by Environmental Working Group show that consuming EPA’s proposed reference dose for dioxin over time would result in an incremental dose of the carcinogen that would be 270 times greater than what EPA considers acceptable for the general population and that a breast-fed infant three to six months old consumes up to 77 times more dioxin than EPA’s proposed safe daily dose (RfD).

**July 2010** – EPA Science Advisory Board begins fourth review of dioxin, this time focusing on EPA’s response to the National Academies.

**December 2010** – EPA misses their self-imposed deadline to complete the Dioxin Reassessment and release it to the public.

**January 2011** – Animal feed containing high levels of dioxin forces closure of more than 1,000 farms in Germany and the slaughter of at least 8,000 egg-laying chickens in Europe’s largest dioxin food scare.