

The University of Michigan Dioxin Exposure Study
University of Michigan School of Public Health
109 South Observatory, Ann Arbor 48109-2029
Toll Free Line: 1.888.689.0006
Website: <http://umdioxin.org>

Date

Name & Address

Dear Mr/Ms XXX:

Thank you for participating in the University of Michigan Dioxin Exposure Study. You have indicated that you wish to receive results of chemical analyses of house dust collected from your home. This letter summarizes the results of analyses of dioxins and dioxin-like chemical compounds that were measured in dust collected from your home.

You also may have given a blood sample or had soil sampled from around your home. If you indicated that you wanted to receive the results of analyses from those samples, you will receive separate letters containing those results.

There are hundreds of different dioxin-like chemicals. We selected 29 of these chemicals because they are believed to have the most potential for affecting health. The total dioxin toxic equivalent (TEQ) concentration is the most important index of the combined effect of these 29 compounds, and is expressed in parts per trillion (ppt) of house dust. (See Technical Details, below.)

In the house dust sample collected from your home, the TEQ is ____ ppt. That means that for every gram of dust there are ____ trillionths of a gram of these dioxin-like chemicals.

We also calculated how heavily dioxins are concentrated over the area of flooring that we vacuumed. For every square meter vacuumed there were ____ picograms of dioxin-like chemicals. (A picogram is the same as one trillionth of a gram. A gram is 0.04 ounces.)

The University of Michigan Dioxin Exposure Study seeks to understand how people are exposed to dioxin-like chemicals. It will examine the impact of where people have lived, what they eat, their jobs, their hobbies, and their environment, including their soil and household dust, on levels of dioxins in their blood. In order to have scientifically valid results about the relationship between levels of dioxins in soil, household dust and blood, the entire study must be completed and analyzed. Individual or partial results do not permit scientists to make valid conclusions about the population. This means that it is not possible at this time to make any judgments about the association between levels of dioxins in soil and household dust and levels of dioxins in your blood. We anticipate that the full results of the study will be available in late 2006. The University of Michigan Dioxin Exposure Study will not look at the effects of dioxins on people's health.

So, what do your numbers mean? Although it is possible that finding dioxins in your house dust may cause harm, at this point, we do not yet know. There are no published data from Michigan or elsewhere in the United States to provide a comparison for your results for house dust. There are no government regulations concerning dioxins in house dust. It is likely that most homes in the U.S. have some measurable levels of dioxin-like compounds. One negative consequence that may result from finding a measurable level in your home is that it could affect the value of your home. For example, at the time of sale of the home you may be obligated to divulge your knowledge of these results to potential buyers. We encourage you to share your house dust results with other people who may have exposure to the house dust in your home.

We greatly appreciate your participation in the University of Michigan Dioxin Exposure Study. If you have any questions or would like more information, you can visit our web site, or contact us using the information shown below.

Sincerely,

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TECHNICAL DETAILS

There are hundreds of different dioxin-like chemicals. They fall in three broad classes that share similar chemical structures: dioxins, furans and polychlorinated biphenyls (PCBs). Within each class the individual members are called 'congeners'. Your house dust sample was analyzed for 29 different PCBs, furans, and dioxins. These 29 congeners were chosen because they have been identified by the World Health Organization (WHO), the United States Environmental Protection Agency (USEPA), and the Michigan Department of Environmental Quality (MDEQ) as having dioxin-like toxicity, and are believed to be the most important in terms of potential health effects. Table 1 provides the concentration of each of the 29 congeners found in your house dust. If the level of a congener in your house dust was below the level at which the laboratory can reliably provide a measurement, one half of the reliably measurable level is shown in Table 1.

Scientists have assigned relative potency values, or Toxic Equivalency Factors (TEFs), to each of the 29 dioxin-like compounds; the TEFs are also listed in Table 1. The TEF for each congener relates its toxicity to that of 2,3,7,8-tetrachlordibenzo-p-dioxin (2,3,7,8-TCDD), the best characterized of these chemicals. The total dioxin toxic equivalent (TEQ) concentration is calculated by multiplying the concentration of each congener by its TEF and adding up the products. The TEQ is the most important index of the combined effect of these 29 compounds, and is expressed in parts per trillion (ppt) of house dust. (The number of parts per trillion is the same as picograms per gram. One picogram is one trillionth of a gram.)

The concentration of total dioxin TEQ in the house dust sample collected from your home, based on these 29 congeners, is ____ ppt of house dust.

The total dioxin TEQ in your house dust sample can also be expressed as an area concentration. The area concentration is the concentration of dioxins per unit area and is expressed in picograms of dioxins per square meter of floor surface that was vacuumed (pg/m^2). The area concentration is often called the 'loading'.

The area concentration of total dioxin TEQ in the house dust sample collected from your home, based on the 29 congeners, is ____ pg/m^2 .

Table 1: Concentrations of Dioxin-like Compounds in House Dust

Congener	TEF	House Dust Concentration*	Contribution to TEQ
Dioxins:			
2,3,7,8-TCDD	1		
1,2,3,7,8-PentaCDD	1		
1,2,3,4,7,8-HexaCDD	0.1		
1,2,3,6,7,8-HexaCDD	0.1		
1,2,3,7,8,9-HexaCDD	0.1		
1,2,3,4,6,7,8-HeptaCDD	0.01		
OctaCDD	0.0001		
Furans:			
2,3,7,8-TetraCDF	0.1		
1,2,3,7,8-PentaCDF	0.05		
2,3,4,7,8-PentaCDF	0.5		
1,2,3,4,7,8-HexaCDF	0.1		
1,2,3,6,7,8-HexaCDF	0.1		
1,2,3,7,8,9-HexaCDF	0.1		
2,3,4,6,7,8-HexaCDF	0.1		
1,2,3,4,6,7,8-HeptaCDF	0.01		
1,2,3,4,7,8,9-HeptaCDF	0.01		
OctaCDF	0.0001		
Polychlorinated biphenyls (PCBs):			
3,4,4',5'-TetraCB (81)	0.0001		
3,3',4,4'-TetraCB (77)	0.0001		
3,3',4,4',5'-PentaCB (126)	0.1		
3,3',4,4',5,5'-HexaCB (169)	0.01		
2,3,3',4,4'-PentaCB (105)	0.0001		
2,3,4,4',5'-PentaCB (114)	0.0005		
2,3',4,4',5'-PentaCB (118)	0.0001		
2',3,4,4',5'-PentaCB (123)	0.0001		
2,3,3',4,4',5'-HexaCB (156)	0.0005		
2,3,3',4,4',5'-HexaCB (157)	0.0005		
2,3',4,4',5,5'-HexaCB (167)	0.00001		
2,3,3',4,4',5,5'-HeptaCB (189)	0.0001		
			Your Overall TEQ:

* All results shown are expressed as parts per trillion (ppt) of house dust, which is the same as picograms per gram (pg/g) of house dust.

** The level of this congener in your house dust was below the level at which the laboratory can reliably provide a measurement so one half of the reliably measurable level is shown.

Abbreviations:

- CDD - chlorinated dibenzodioxins
- CDF - chlorinated dibenzofurans
- CB - chlorinated biphenyls
- TEF – toxic equivalency factor
- TEQ – toxic equivalency