

# U-M Dioxin Study

## What You Need to Know

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In 2006, the University of Michigan-Ann Arbor conducted the “Dioxin Exposure Study” in the Midland/Saginaw area. An updated version of this study has just been released, which contains a number of revised findings that will be of interest to you.

The original U-M study measured human exposure to “dioxins.” Dioxins are a family of toxic chemicals that are produced by combustion and by some industrial processes. One of the chemicals, TCDD, has been known to cause cancer in humans.

This study will give you some basic information about the updated study. You can read the whole study online at [www.umdioxin.org](http://www.umdioxin.org).

If you have any questions about this study, please email us at [um-dioxin@umich.edu](mailto:um-dioxin@umich.edu).

## Summary of key findings in the updated version:

### NUMBER OF PARTICIPANTS

	Floodplain	Near Floodplain	Midland Plume	Other Midland/Saginaw	Jackson/Calhoun	Total Across All Areas
Interviews	326	264	71	304	359	1324
Blood Samples	251	197	48	199	251	946
Household Dust Samples	207	159	37	163	198	764
Soil Samples	203	164	37	168	194	766
Interview, Blood, Dust, and Soil Samples	195	156	35	162	183	731
Estimated Number of Eligible Persons	2070	1955	6550	90270	101330	202175

You can read full details on the study design, field and laboratory methods, and study findings on the study’s website at [www.umdioxin.org](http://www.umdioxin.org).

#### AGE

Older people have higher levels of dioxins in their blood.

#### GENDER

Women tend to have higher levels than men.

#### TIME PERIOD AND LOCATION

People who lived in the Midland/Saginaw area in the 1960s and 1970s have higher levels of the dioxin chemical TCDD in their blood than people who lived in the same area after 1980. The TCDD is likely from airborne emissions from the Dow Chemical plant in Midland during that era.

#### SOIL AND HOUSE DUST

People whose houses are on contaminated soil or who have contaminated dust in their homes do **not** have higher levels of dioxins in their blood.

#### FISH

People eating fish from the Tittabawassee River, Saginaw River, and Saginaw Bay do not have higher levels of dioxins in their blood. But you should still follow government advisories about eating fish from contaminated areas.

# Dioxin Study Details

Age is by far the most important factor for dioxin levels in blood. All people everywhere have some dioxin in their blood, and as they age they usually are exposed to more. People in Midland/Saginaw tend to be older, on average, than a control group living about 100 miles away in Jackson and Calhoun counties, where there is no Dow plant.

People who lived in Midland/Saginaw for the entire 20 years from 1960 through 1979 on average have 86 percent higher blood TCDD levels than people who did not live in the area during that period. The U-M researchers believe that these higher levels are consistent with past airborne emissions from Dow facilities. Dow's pre-1980 emissions of TCDD and other dioxins likely contributed to contamination of parts of the Midland/Saginaw area. In later years, enforcement of environmental legislation and regulations have resulted in reduced emissions from Dow.

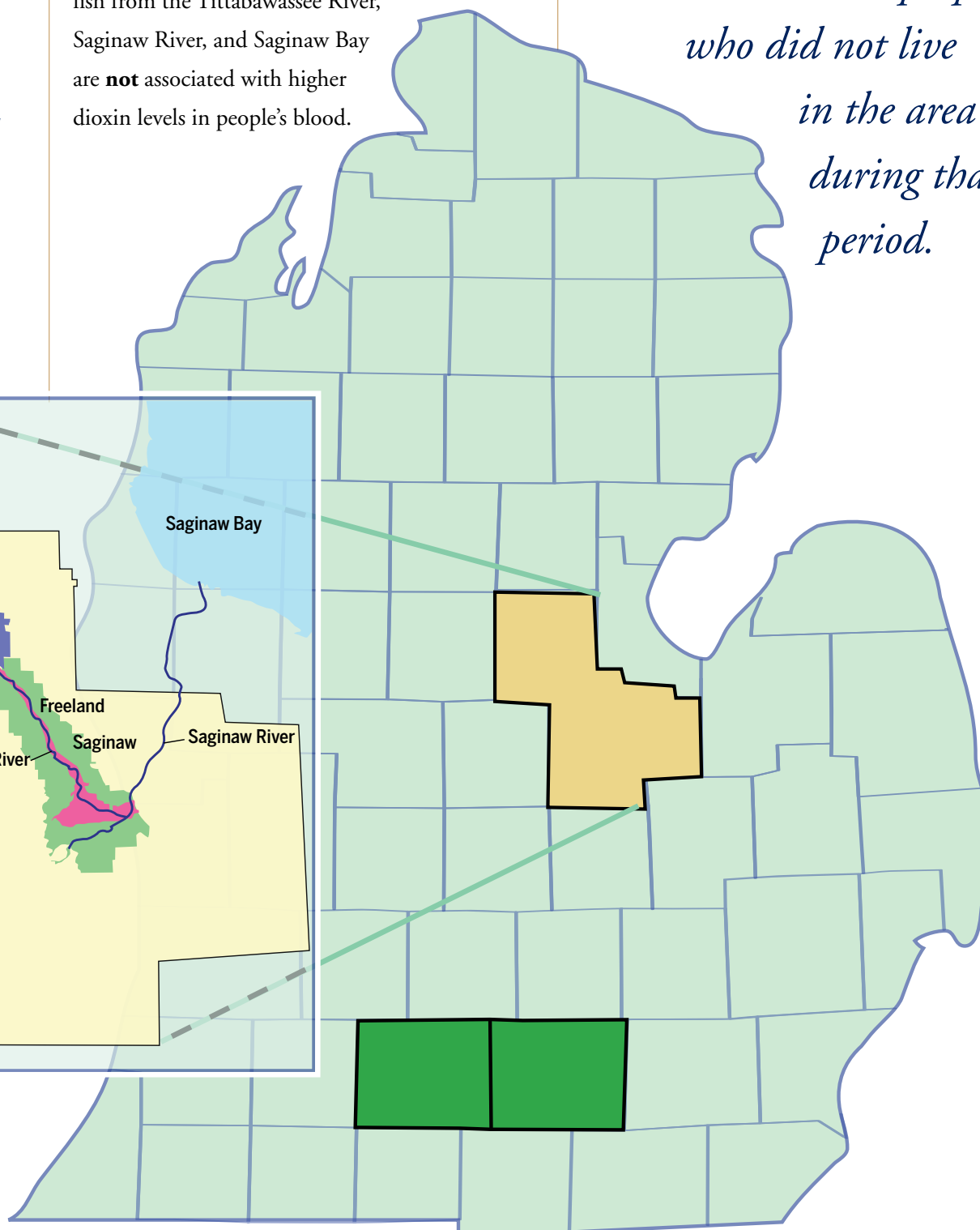
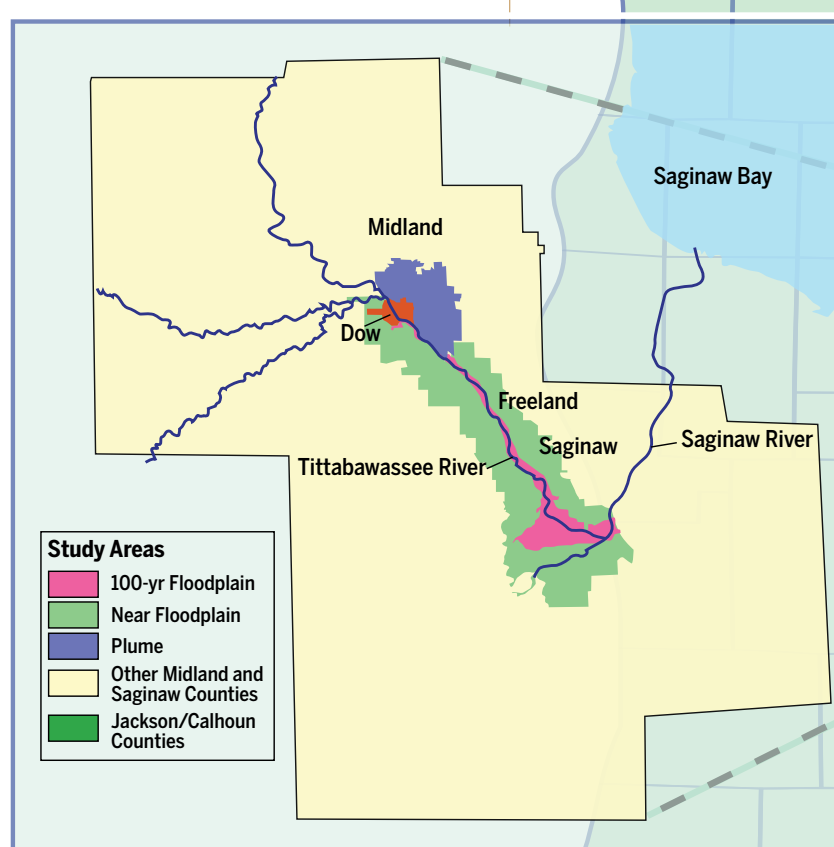
**People who lived in Midland/Saginaw after 1980 do not have higher TCDD dioxin levels than people in Jackson/Calhoun.**

The Midland/Saginaw residents who were surveyed as part of this study—and who eat fish from the Tittabawassee River, Saginaw River, and Saginaw Bay—do not have higher levels of dioxins in their blood. This is a revision of the finding in the earlier U-M report, which said “people who eat fish from the Tittabawassee River, Saginaw River, and Saginaw Bay have higher levels of dioxins in their blood. . .” Why this difference? The later report included new data about the actual levels of dioxins in fish that were simply not available at the time of the earlier report. Taking account of the actual levels of dioxins in fish allows us to get a more accurate result.

Because the earlier report did not adjust for the actual levels of dioxins in fish, it concluded eating fish from the contaminated waters was associated with higher blood dioxin levels in people. After adjusting for the actual levels of dioxins in fish, though, it is clear that typical patterns of eating fish from the Tittabawassee River, Saginaw River, and Saginaw Bay are **not** associated with higher dioxin levels in people's blood.



*People who lived in Midland/Saginaw for the entire 20 years from 1960 through 1979 on average have 86% higher blood TCDD levels than people who did not live in the area during that period.*





But, to be on the safe side, you should follow government advisories about eating fish from contaminated areas.

The Midland/Saginaw residents who were surveyed by this study and whose houses are on contaminated soil—or whose homes contain contaminated dust—do **not** have higher levels of dioxins in their blood. This is a revision of the finding in the earlier, 2006 U-M report, which said: “People who have higher levels of dioxins in their soil have a higher TEQ (total dioxin-like activity) and higher levels of some specific dioxins in their blood.”

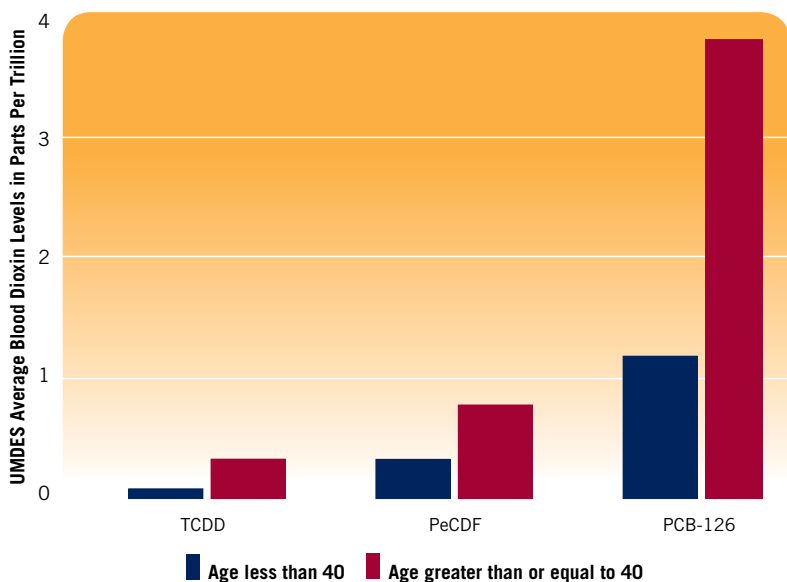


*The Midland/Saginaw residents who were surveyed in this study and whose houses are on contaminated soil—or whose homes contain contaminated dust—do not have higher levels of dioxins in their blood.*

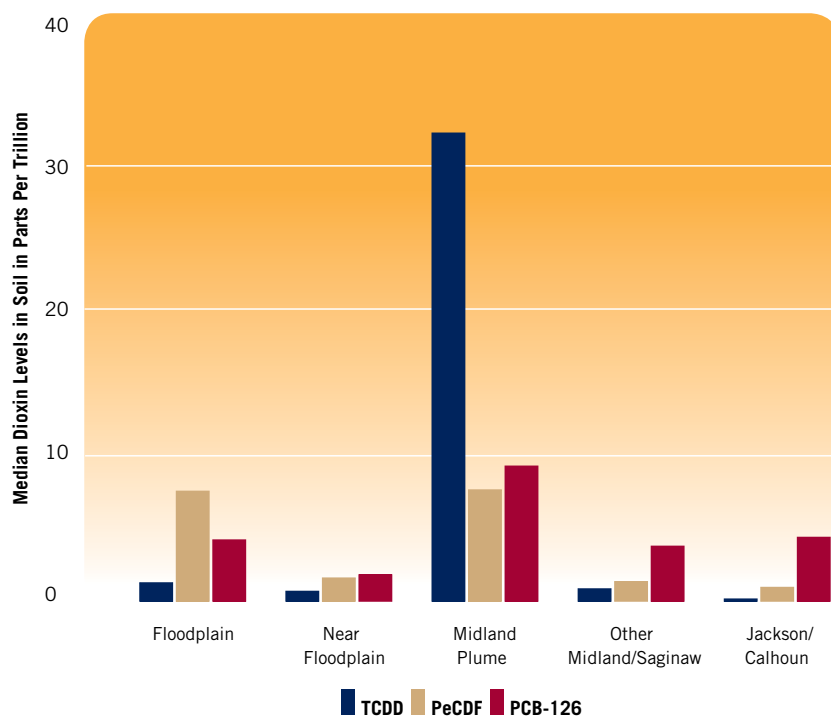
In this new report we found that the 2006 association was due to a single soil sample that was high in TCDD. This association was not seen for any other dioxin compound including those that had much higher levels in soil. The

absence of an association for every other compound is a strong argument that the single influential observation for TCDD was an anomaly.

Levels of dioxins in blood increase with age.



Soil samples from around houses in the Floodplain and the Midland Plume have higher median levels of dioxins than in Jackson/Calhoun.



# Study Background

The U-M Dioxin Exposure Study was financed by a grant from The Dow Chemical Company and was developed and conducted entirely by U-M researchers. Research decisions were reviewed by an independent scientific advisory board.

U-M researchers spent six years studying residents in five geographic areas:

- The Tittabawassee River floodplain, extending from the Dow plant in the city of Midland through Midland and Saginaw counties, an area known to be contaminated by emissions from Dow.



- Areas near the floodplain.

- An area downwind of the Dow plant in the city of Midland.

- Other areas of Midland and Saginaw counties, and nearby Williams Township in Bay County.

- Jackson and Calhoun counties, areas with similar demographics (and dioxin levels in residents similar to national averages) but no nearby Dow plant. This area was surveyed as a comparison to the other four locations nearer to the Dow plants.

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U-M scientists studied levels of dioxins in people's property soil, household dust, and blood samples, and interviewed residents about their age, body mass, dietary habits, land use, occupation, and other personal details. A total of 695 Midland/Saginaw residents and 251 Jackson/Calhoun residents gave blood samples. Participants in the study were at least 18 years old.



The U-M study looked only at the *extent* of human exposure to dioxins, not the *health effects* of that exposure.

The study was conducted by U-M researchers from the School of Public Health, College of Engineering, Center for Statistical Consultation & Research, and Institute for Social Research.

Print copies of the report may be found in Midland/Saginaw at local libraries, Chamber of Commerce offices, churches, and local government offices.

You can read the online version of the full report on the U-M study's website, [www.umdioxin.org](http://www.umdioxin.org). This site includes links to other websites, including the Centers for Disease Control and Prevention, which has general information about dioxins and health.



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