
The University of Michigan Dioxin Exposure Study Report to Community Advisory Panel

Recalculation of Blood, Dust and Soil TEQs

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A large, semi-transparent watermark of the University of Michigan seal is centered in the background. The seal features the text "UNIVERSITY OF MICHIGAN" around the top, "1817" at the bottom, and "SCHOOL OF ENGINEERING" and "SCHOOL OF LITERATURE" on the sides. The seal is rendered in a light yellow/gold color.



Introduction

Multiple ways to calculate TEQ

- Using different TEFs (1998 vs. 2005)



Changes in TEF Values

Compound	1998 TEF	2005 TEF	Change
OctaCDD	0.0001	0.0003	↑
1,2,3,7,8-PeCDF	0.05	0.03	↓
2,3,4,7,8-PeCDF	0.5	0.3	↓
OctaCDF	0.0001	0.0003	↑
PCB 81	0.0001	0.0003	↑
PCB 169	0.01	0.03	↑
PCB 105	0.0001	0.00003	↓
PCB 114	0.0005	0.00003	↓
PCB 118	0.0001	0.00003	↓
PCB 123	0.0001	0.00003	↓
PCB 156	0.0005	0.00003	↓
PCB 157	0.0005	0.00003	↓
PCB 167	0.00001	0.00003	↑
PCB 189	0.0001	0.00003	↓



Introduction

Multiple ways to calculate TEQ

- Using different sets of congeners

7 dioxins

10 furans

12 PCBs

Comparison of TEQs

- TEQ_{DFP29-1998} }
- TEQ_{DFP29-2005} }
- TEQ_{DF17-2005} }



Blood Serum Median TEQs (parts per trillion)

POPULATION	TEQ DFP29 1998	TEQ DFP29 2005	% Change	TEQ DFP29 2005	TEQ DF17 2005	% Change
Floodplain	31.5	23.3	- 26%	23.3	18.6	- 20%
Plume	24.0	18.7	- 22%	18.7	15.8	- 16%
Near Floodplain	29.0	21.9	- 25%	21.9	17.4	- 21%
Other M/S	28.0	20.7	- 26%	20.7	17.5	- 16%
Jackson/Calhoun	24.8	18.5	- 25%	18.5	15.1	- 18%
OVERALL	26.4	19.6	- 26%	19.6	16.1	- 18%



Household Dust Median TEQs (parts per trillion)

POPULATION	TEQ	TEQ	% Change	TEQ	TEQ	% Change
	DFP29 1998	DFP29 2005		DFP29 2005	DF17 2005	
Floodplain	17.1	16.4	- 4%	16.4	14.7	- 10%
Plume	35.2	34.2	- 3%	34.2	27.3	- 20%
Near Floodplain	12.3	11.6	- 6%	11.6	8.4	- 28%
Other M/S	18.7	17.6	- 6%	17.6	14.5	- 18%
Jackson/Calhoun	14.4	13.8	- 4%	13.8	11.3	- 18%
OVERALL	17.3	16.2	- 6%	16.2	13.9	- 14%

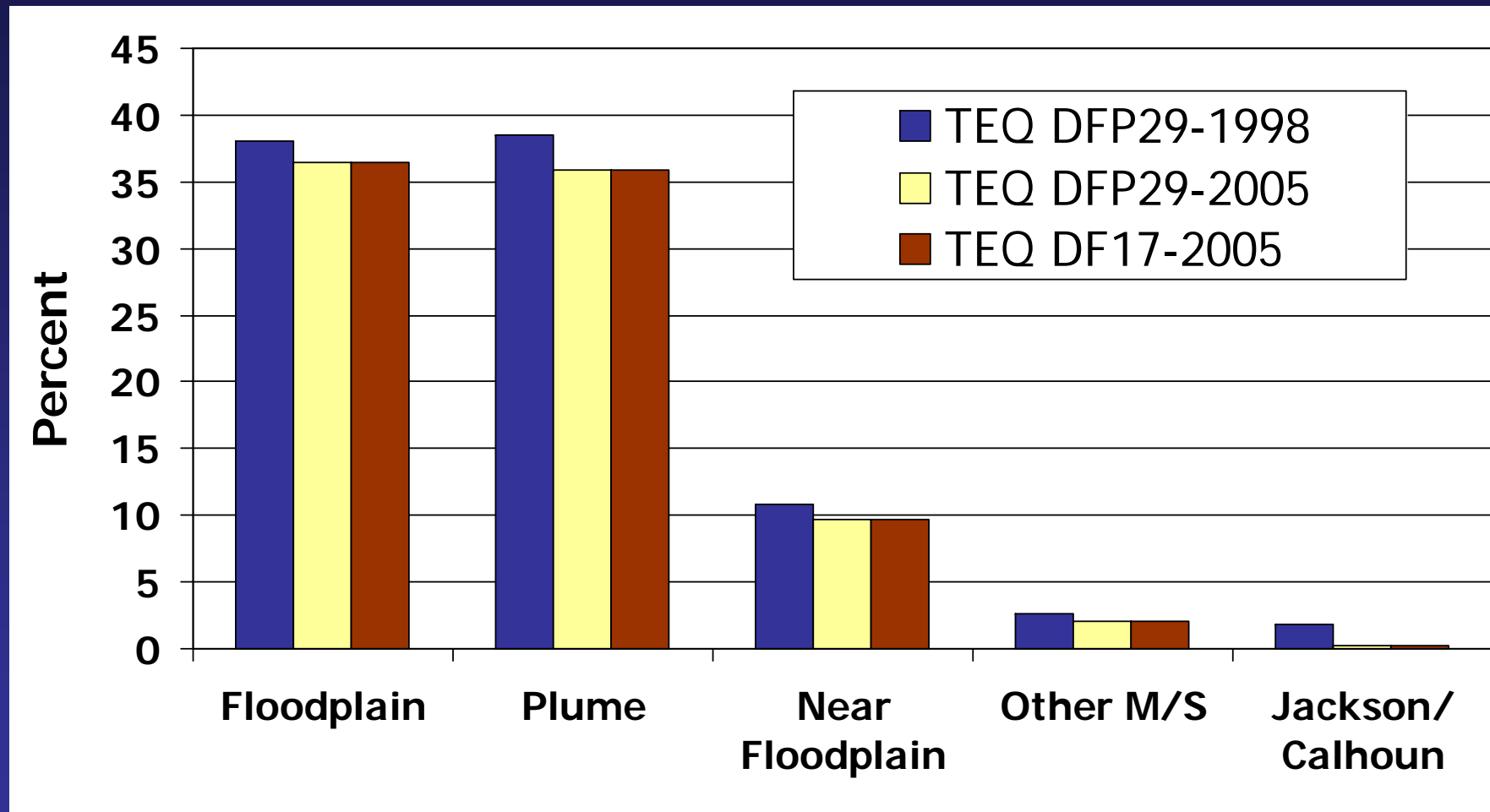


Soil Median TEQs House Perimeter 0-1 Inch (ppt)

POPULATION	TEQ DFP29 1998	TEQ DFP29 2005	% Change	TEQ DFP29 2005	TEQ DF17 2005	% Change
Floodplain	12.6	11.4	- 10%	11.4	10.6	- 7%
Plume	59.2	58.2	- 2%	58.2	57.6	- 1%
Near Floodplain	4.3	3.9	- 9%	3.9	3.6	- 8%
Other M/S	5.7	5.3	- 7%	5.3	4.5	- 15%
Jackson/Calhoun	3.6	3.6	- 0%	3.6	2.9	- 19%
OVERALL	4.8	4.5	- 6%	4.5	3.7	- 18%



Percent of Properties With at Least One Soil Sample Above 90 ppt





Conclusions

- $TEQ_{DFP29-2005}$ were calculated
Relative to $TEQ_{DFP29-1998}$
 - For blood, overall median TEQ decreased by 26%
 - For dust, overall median TEQ decreased by 6%
 - For soil, overall median TEQ decreased by 6%
- $TEQ_{DF17-2005}$ were calculated
Relative to $TEQ_{DFP29-2005}$
 - For blood, overall median TEQ decreased by 18%
 - For dust, overall median TEQ decreased by 14%
 - For soil, overall median TEQ decreased by 18%
- Drop in percent of properties with a soil sample over 90 ppt is about 2-3 percentage points in Floodplain and Plume



Blood Serum Average TEQs (parts per trillion)

POPULATION	TEQ DFP29 1998	TEQ DFP29 2005	% Change	TEQ DFP29 2005	TEQ DF17 2005	% Change
Floodplain	34.6	26.3	- 24%	26.3	21.0	- 21%
Plume	28.3	21.8	- 23%	21.8	18.2	- 17%
Near Floodplain	34.9	25.7	- 26%	25.7	20.0	- 22%
Other M/S	35.7	26.8	- 25%	26.8	21.3	- 21%
Jackson/Calhoun	29.7	21.3	- 28%	21.3	16.6	- 22%
OVERALL	32.4	23.9	- 26%	23.9	18.9	- 21%



Dust Average TEQs (parts per trillion)

POPULATION	TEQ DFP29 1998	TEQ DFP29 2005	% Change	TEQ DFP29 2005	TEQ DF17 2005	% Change
Floodplain	37.6	34.1	- 9%	34.1	30.3	- 11%
Plume	38.1	35.7	- 6%	35.7	31.7	- 11%
Near Floodplain	22.7	20.9	- 8%	20.9	18.9	- 10%
Other M/S	38.6	35.2	- 9%	35.2	29.0	- 18%
Jackson/Calhoun	46.0	38.8	- 16%	38.8	27.3	- 30%
OVERALL	41.9	36.7	- 12%	36.7	28.2	- 23%



Soil Average TEQs House Perimeter 0-1 Inch (ppt)

POPULATION	TEQ DFP29 1998	TEQ DFP29 2005	% Change	TEQ DFP29 2005	TEQ DF17 2005	% Change
Floodplain	72.2	56.5	- 22%	56.5	55.7	- 1%
Plume	127.8	114.8	- 10%	114.8	108.3	- 6%
Near Floodplain	67.8	52.0	- 23%	52.0	51.7	- 1%
Other M/S	16.0	13.9	- 13%	13.9	13.1	- 6%
Jackson/Calhoun	8.3	6.9	- 17%	6.9	4.8	- 30%
OVERALL	16.6	14.3	- 14%	14.3	12.7	- 11%