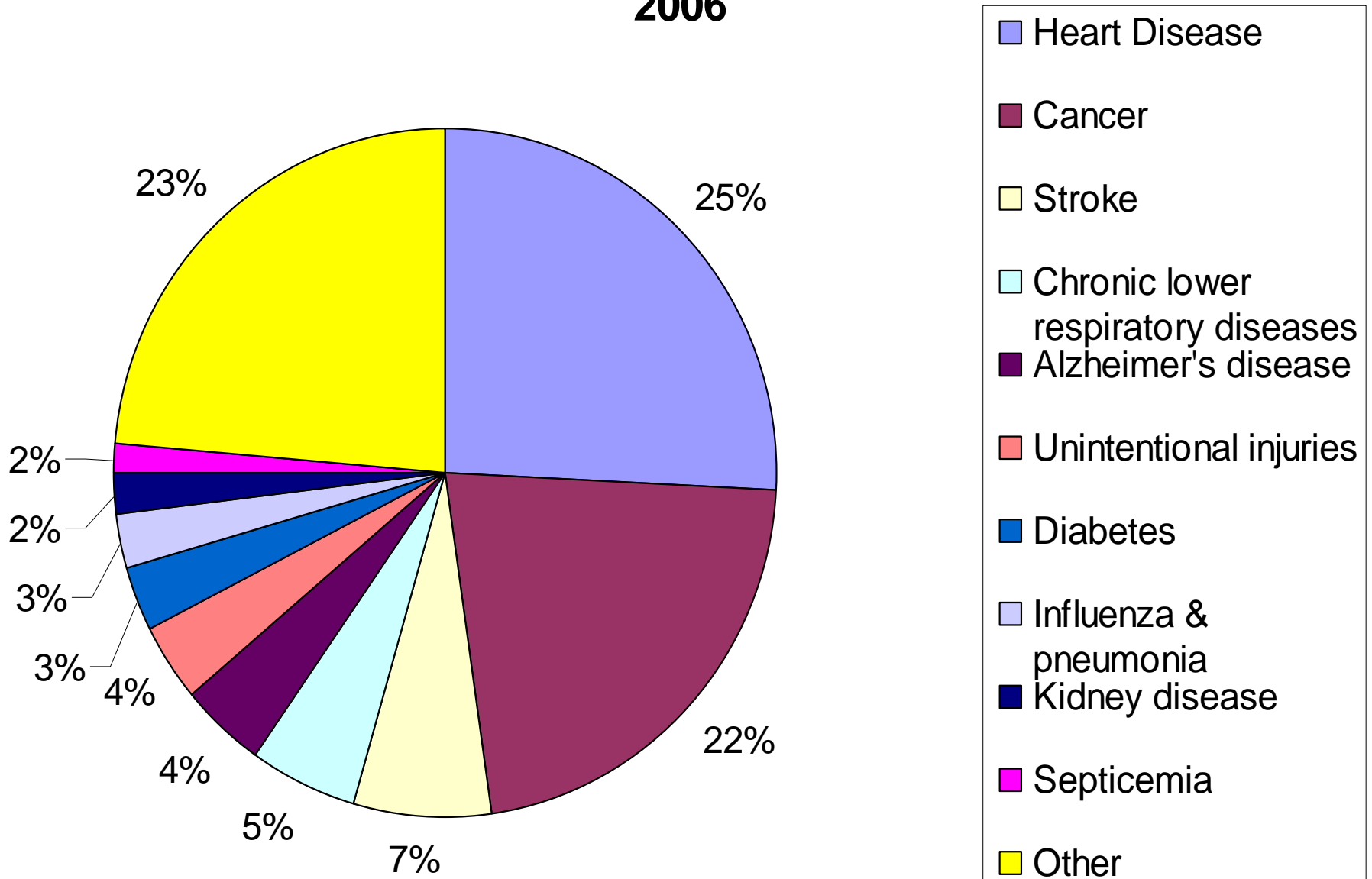


Chronic Disease in Women and Environmental Exposures

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Leading Causes of Death in Women in the United States, 2006



Causes of global mortality in 2000

Millions of Years of Life Lost (WHO, World Health Report 2002)

- childhood & maternal malnutrition (**POVERTY**) 200
- high blood pressure, cholesterol, overweight,
- low physical activity (**CONSUMPTION**) 150
- unsafe sex (**IGNORANCE, DENIAL**) 80
- tobacco (**IGNORANCE, DENIAL**) 50
- unsafe water (**POVERTY, TECHNOLOGY**) 50
- war & revolution, 20th century avg (**CONFLICT**) 40
- indoor smoke from solid fuels (**TECHNOLOGY**) 35
- alcohol (**IGNORANCE, DENIAL**) 30
- urban air pollution (**CONSUMPTION, TECHNOLOGY**) 6
- climate change (**CONSUMPTION, TECHNOLOGY, DENIAL**)

Anniston, Alabama

- Anniston is a city of about 24,000 people. It is the home of one of two US plants operated by the Monsanto Corporation for the manufacture of polychlorinated biphenyls, which were sold under the trade name, Aroclor, from 1929-1971.
- We have studied blood pressure in relation to serum PCB and pesticide levels in 772 residents, ages 18-93 years.
- PCB/pesticide analysis done by CDC

Figure 2. Linear regression of systolic and diastolic blood pressure on total PCBs concentration. The dashed lines show cut-off pressures for systolic (a) and diastolic (b) hypertension.

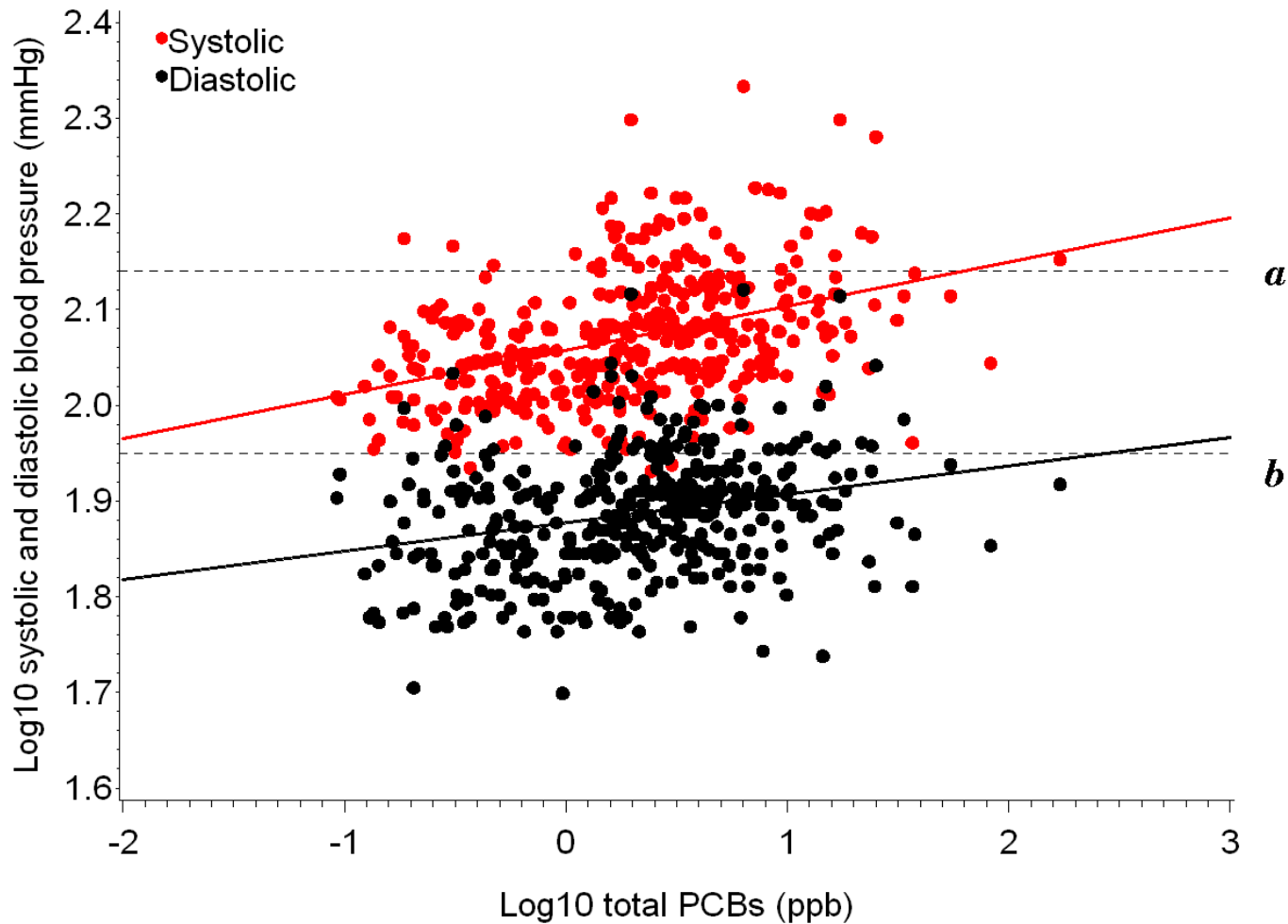
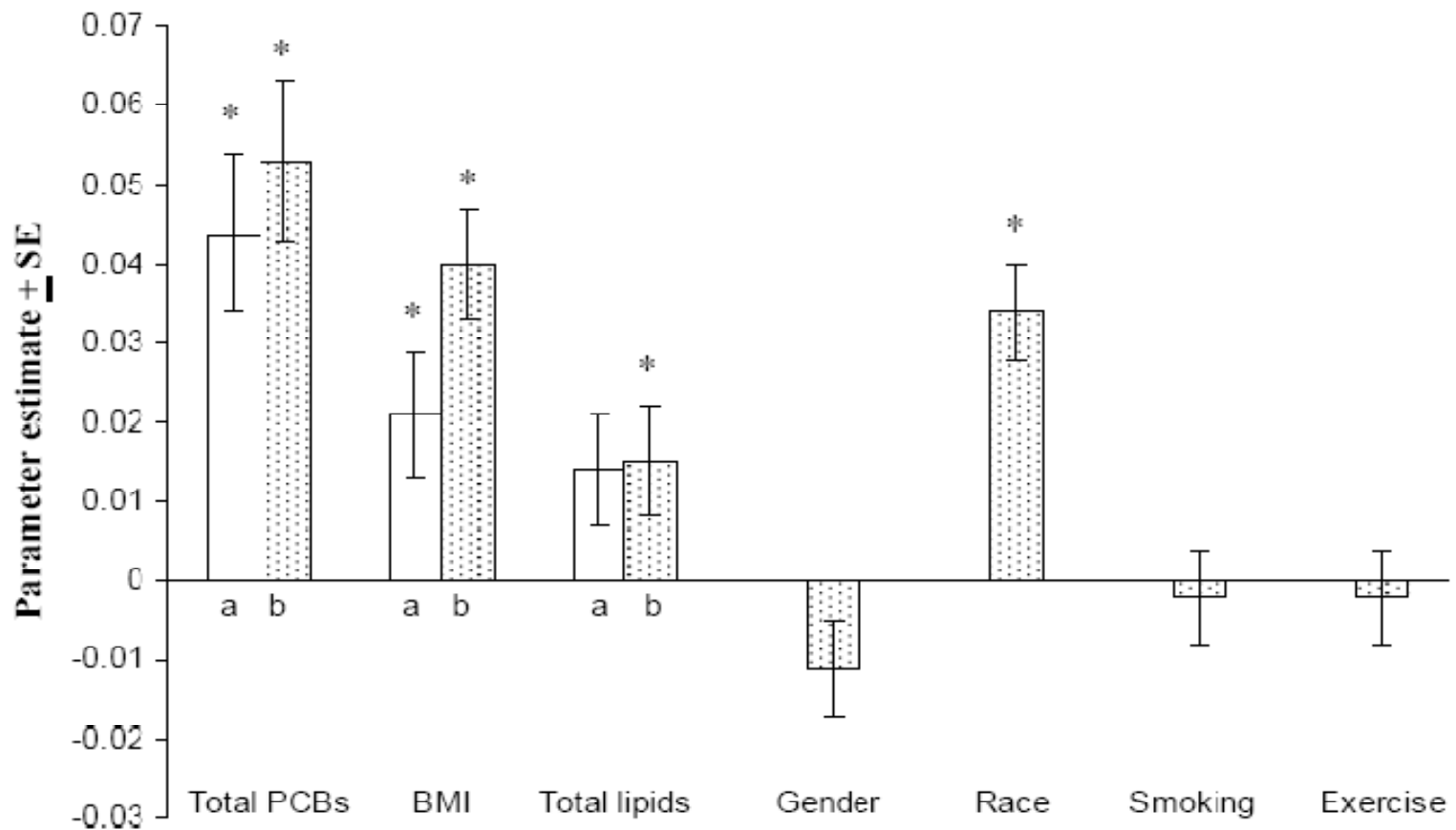


Figure 1. Parameter estimates and (\pm SE) of mean diastolic blood pressure in relation to total PCBs and principal risk factors after adjustment for age



^asecond tertile PCB (1.23 – 3.65 ng/g), second tertile BMI (24.9 – 29.9 kg/m²), second tertile total lipids (553.1 – 665.5 mg/L).

^bthird tertile PCB (3.66 – 170.4 ng/g), third tertile BMI (30.0 – 65.0 kg/m²), third tertile total lipids (665.6 – 1436.2 mg/L).

*p < 0.05.

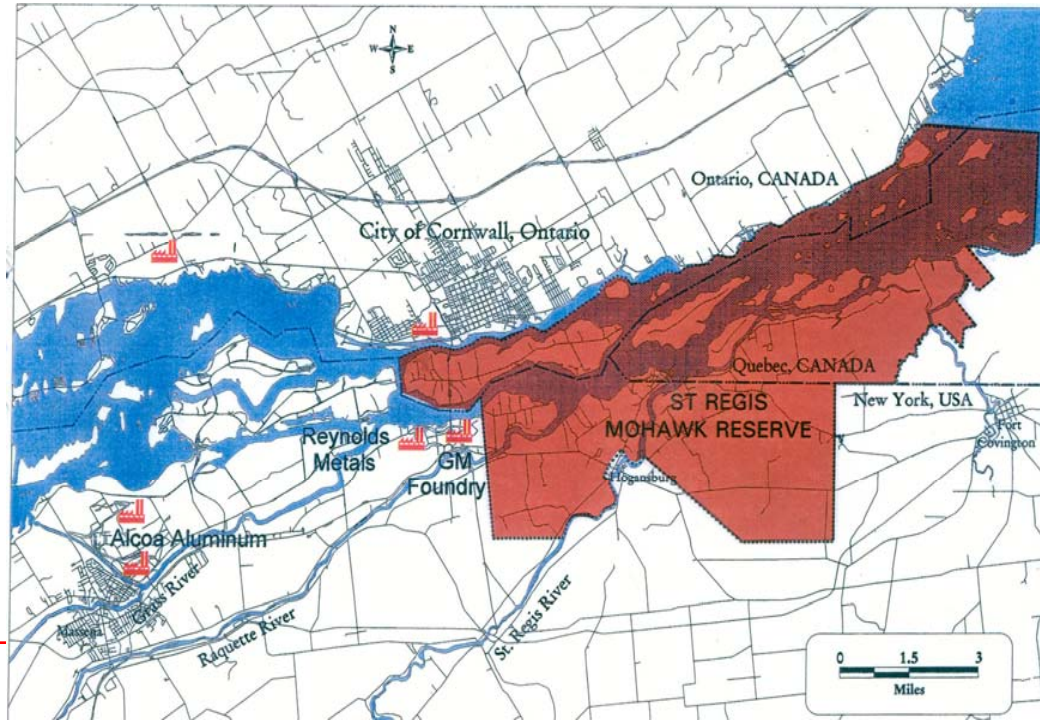
Population Characteristics - Site History

• Akwesasne Mohawk Nation:

- A Native American community of nearly 10,000 people.
- Comprises approximately 28,000 acres in New York, Ontario, and Quebec.
- Home for many generations of Mohawk people; community members place special value on the environment and engage in subsistence activities (fishing, hunting).

• Industrial sites:

- General Motors - Central Foundry Division (GM-CFD). A US Federal Superfund Site in 1983.
- ALCOA
New York State Superfund Site.
Upstream from the GM plant.
- Reynolds Metals, Inc.
New York State Superfund Site.



B

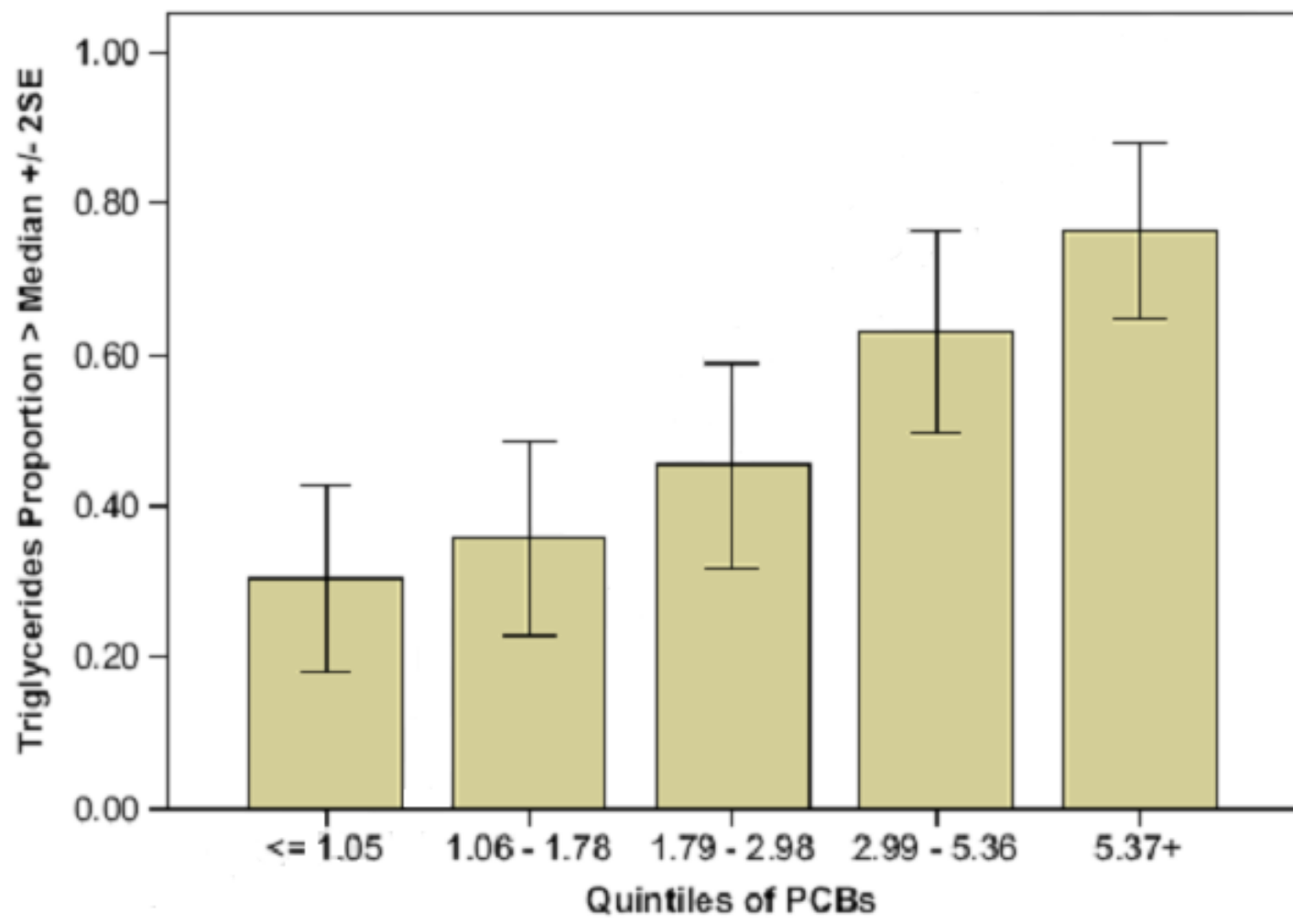


Table 3. Association between diabetes, wet-weight and lipid-adjusted total PCBs, mirex, HCB and DDE after adjustment for age, gender, body mass index and smoking status in Mohawk adults.

	Tertile	Odds Ratio (95% CI) Wet Weight	Odds Ratio (95% CI) Lipid Adjusted
Total PCBs	Lowest	1	1
	Medium	2.15 (0.80 – 5.80)	1.87 (0.79 – 4.44)
	Highest	3.9 (1.46 – 10.43)	3.29 (1.42 – 7.64)
Mirex	Lowest	1	1
	Medium	1.21 (0.57 – 2.58)	0.82 (0.40 – 1.7)
	Highest	0.98 (0.45 – 2.12)	0.89 (0.43 – 1.82)
HCB	Lowest	1	1
	Medium	0.94 (0.33 – 2.67)	2.64 (1.01 – 6.87)
	Highest	6.22 (2.29 – 16.94)	6.79 (2.65 – 17.44)
DDE-85	Lowest	1	1
	Medium	1.83 (0.65 – 5.19)	2.44 (0.87 – 6.81)
	Highest	6.43 (2.25 – 18.37)	6.79 (2.65 – 17.44)

NHANES, Lee et al.

- Data from 2 dioxins, one PCB and three pesticides. (Diabetes Care 29: 1638: 2006)
- When risk of diabetes was classified according to the sum of all six POPs, adjusted ORs were 1.0, 14.0, 14.7, and 38.3.

Obesity and Diabetes

- Lee et al. (2006) looked at obese persons (BMI > 30 kg/m³) in relation to sum of 6 POPs:
 - <25th% 1 of 129 people
 - 25th to 50th % 14 of 153 people
 - 50th to 75th % 29 of 176 people
 - 75th to 90th % 32 of 87 people
 - >90th % 31 of 80 people

Conclusion: Obesity does not cause diabetes!

Conclusions:

- Exposure to PCBs and other POPs is ubiquitous.
- These chemicals increase the risk of the major chronic diseases, hypertension, cardiovascular disease and diabetes.
- The concentrations that increase risk are common in the general population.
- It is very important to find ways to reduce the risk of exposure to these chemicals.