What We Know About Bay Fish Contamination

Fish Intake, Contaminants, and Human Health

Evaluating the Risks and the Benefits

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Context Fish (finfish or shellfish) may have health benefits and also contain contaminants, resulting in confusion over the role of fish consumption in a healthy diet.

Conclusions For major health outcomes among adults, based on both the strength of the evidence and the potential magnitudes of effect, the benefits of fish intake exceed the potential risks. For women of childbearing age, benefits of modest fish intake, excepting a few selected species, also outweigh risks.

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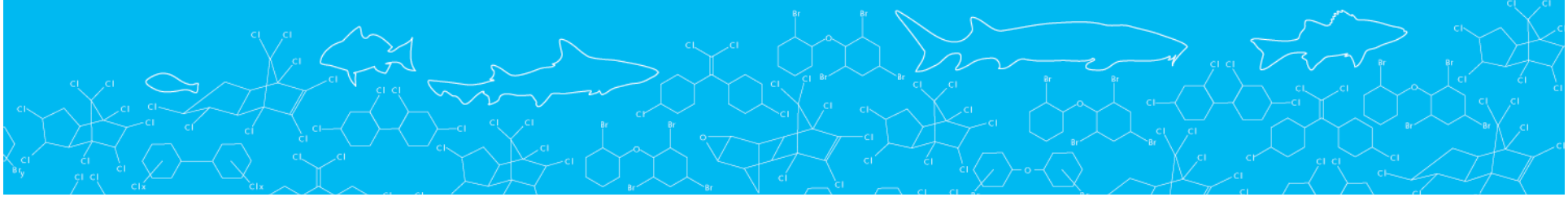


Table 2. Levels of n-3 Fatty Acids and Contaminants in Commonly Consumed Fish, Shellfish, and Other Foods*

	EPA + DHA, mg/serving (Serving Size†)	EPA + DHA, mg/100 g (3.5 oz)	Selenium, µg/g (ppm)	Mercury, µg/g (ppm)	PCBs, ng/g (ppb)	Dioxins, TEQ pg/g (ppt)‡
FDA action level[33,102]	NA	NA	NA	1.0	2000	None§
			Fish			
Anchovy	1165 (2 oz)	2055	0.68	<0.05		0.35 (1997-1998)[108]
Catfish, farmed	253 (5 oz)	177	0.15	<0.05	<50 (1997)[104]	0.53 (1995-1997)[105] 0.51 (1996)[106] 2.09 (1995-1996)[107] 1.65 (1995)[108]
Cod, Atlantic	284 (6.3 oz)	158	0.38	0.10		0.05 (1995-1997)[105] 0.15 (1995-1996)[107]
Fish burger, fast food	337 (2.2 oz)	546	0.17‡	<0.05	8 (2001)[109]	0.01 (2001)[110] 0.11 (2001)[109]
Fish sticks, frozen	193 (3.2 oz)	214	0.17	<0.05		0.04 (2001)[110]
Golden bass (tilefish), Gulf of Mexico	1358 (5.3 oz)	905	0.52	1.45		
Golden bass (tilefish), Atlantic	1358 (5.3 oz)	905	0.52	0.14		
Halibut	740 (5.6 oz)	465	0.47	0.25		1.00 (1995-1997)[105]
Herring, Atlantic	1712 (3 oz)	2014	0.47	<0.05		0.97 (1995-1998)[105]
Mackerel, Atlantic	1059 (3.1 oz)	1203	0.52	0.05		0.87 (1997-1998)[108] 0.32 (1995-1998)[105]
Mackerel, King	618 (5.4 oz)	401	0.47	0.73		
Mahimahi	221 (5.6 oz)	139	0.47	0.15		
Pollock, Alaskan	281 (2.1 oz)	468	0.43	<0.05		0.01 (1998)[105] 0.24 (1998)[111]
Salmon, farmed‖	4504 (6 oz)	2648	0.41	<0.05	21 (2001-2003)[112] 15 (2002)[113] 40 (2002)[115]¶ 26 (2001)[110] 25 (2001)[116] 51 (1999-2000)[117]¶ 38 (1999)[116]	0.50 (2001-2003)[112] 0.87 (2002)[114] 0.45 (2002)[115] 0.33 (2001)[110] 0.50 (1997)[105]
Salmon, wild‖	1774 (6 oz)	1043	0.46	<0.05	3 (2002)[115]¶ 0.5 (2002)[113] 5 (2000)[117]¶	0.03 (2002)[115] 0.34 (2002)[114]

Fish Monitoring

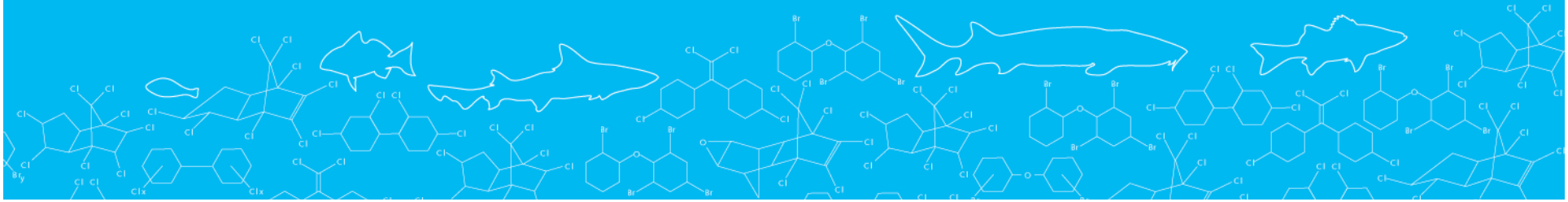
- Began in 1994, but some data from 70s
- Every 3 years
- 7 species for trends analysis
- Legacy and emerging contaminants
- Why is there concern?
  - Human Health
  - Wildlife Health

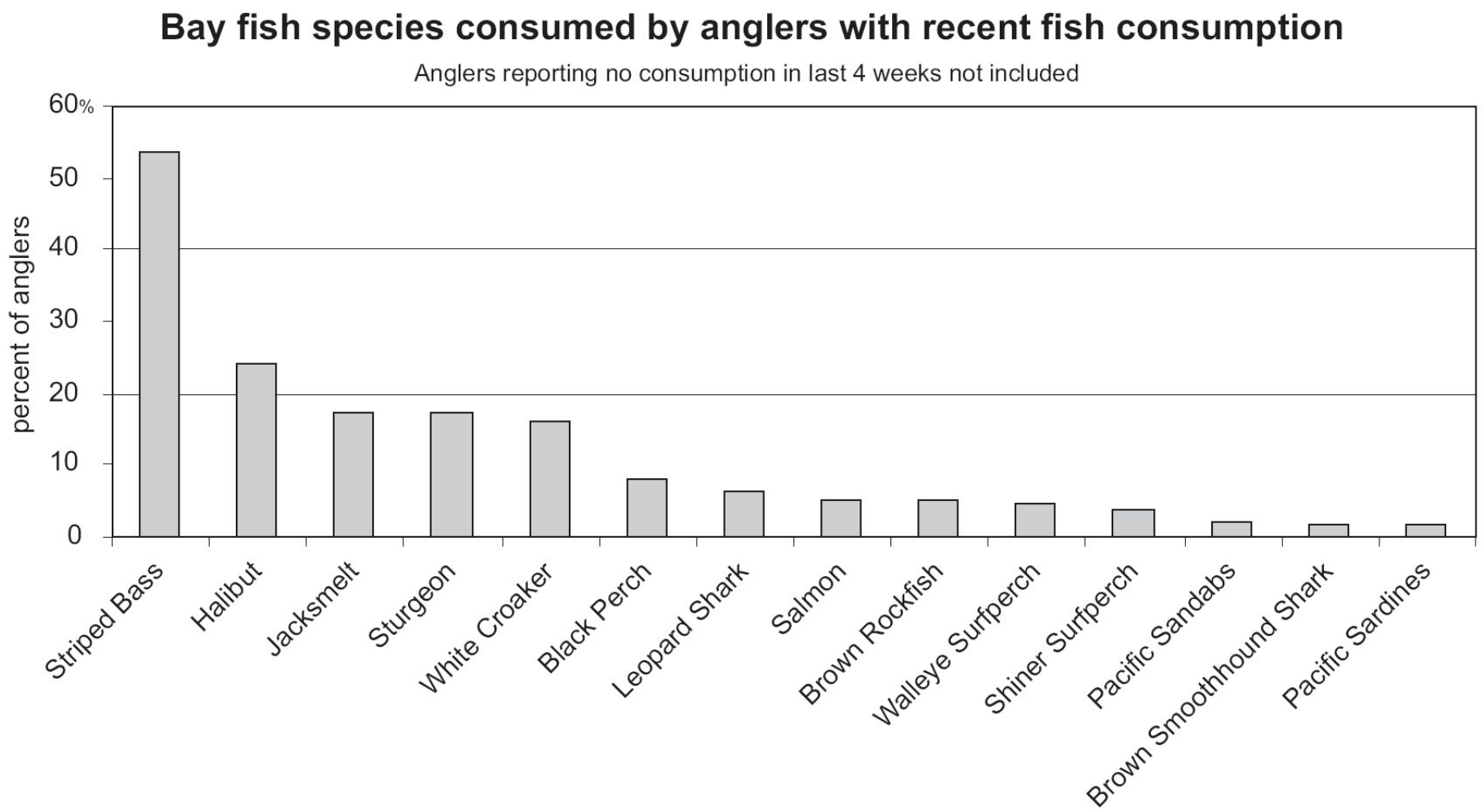
Who Utilizes RMP Data?

- Water Board assessment of Bay Impairment
- OEHHA Consumption Advisories
- Department of Health Services - Risk Communication

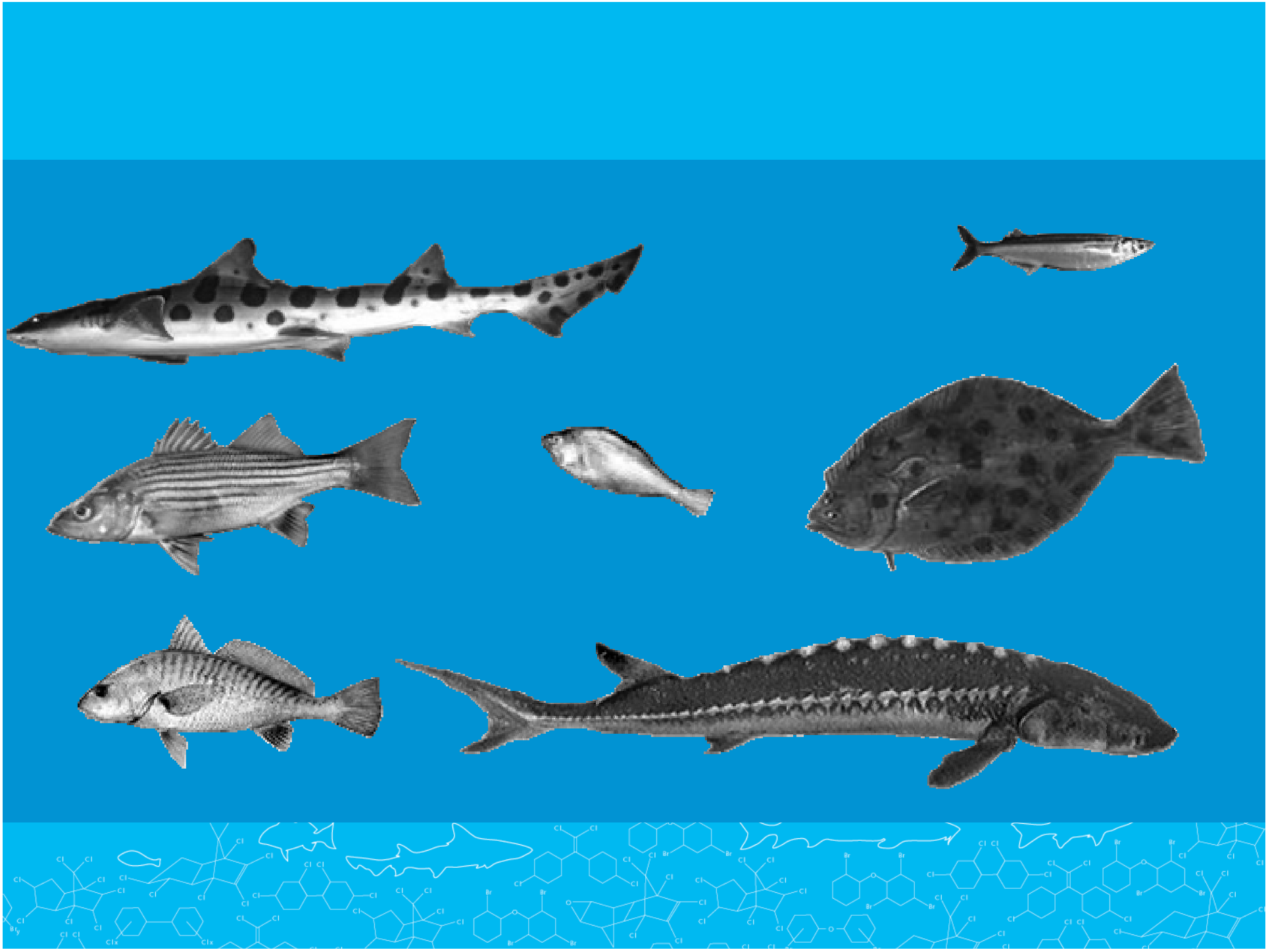
Current Tissue Guidelines

	Aroclors ppb	Mercury ppm	DDT ppb	Chlordane ppb	Dieldrin ppb
OEHHA Screening Value	20	0.3	100	30	2
Water Board TMDL	10	0.2			

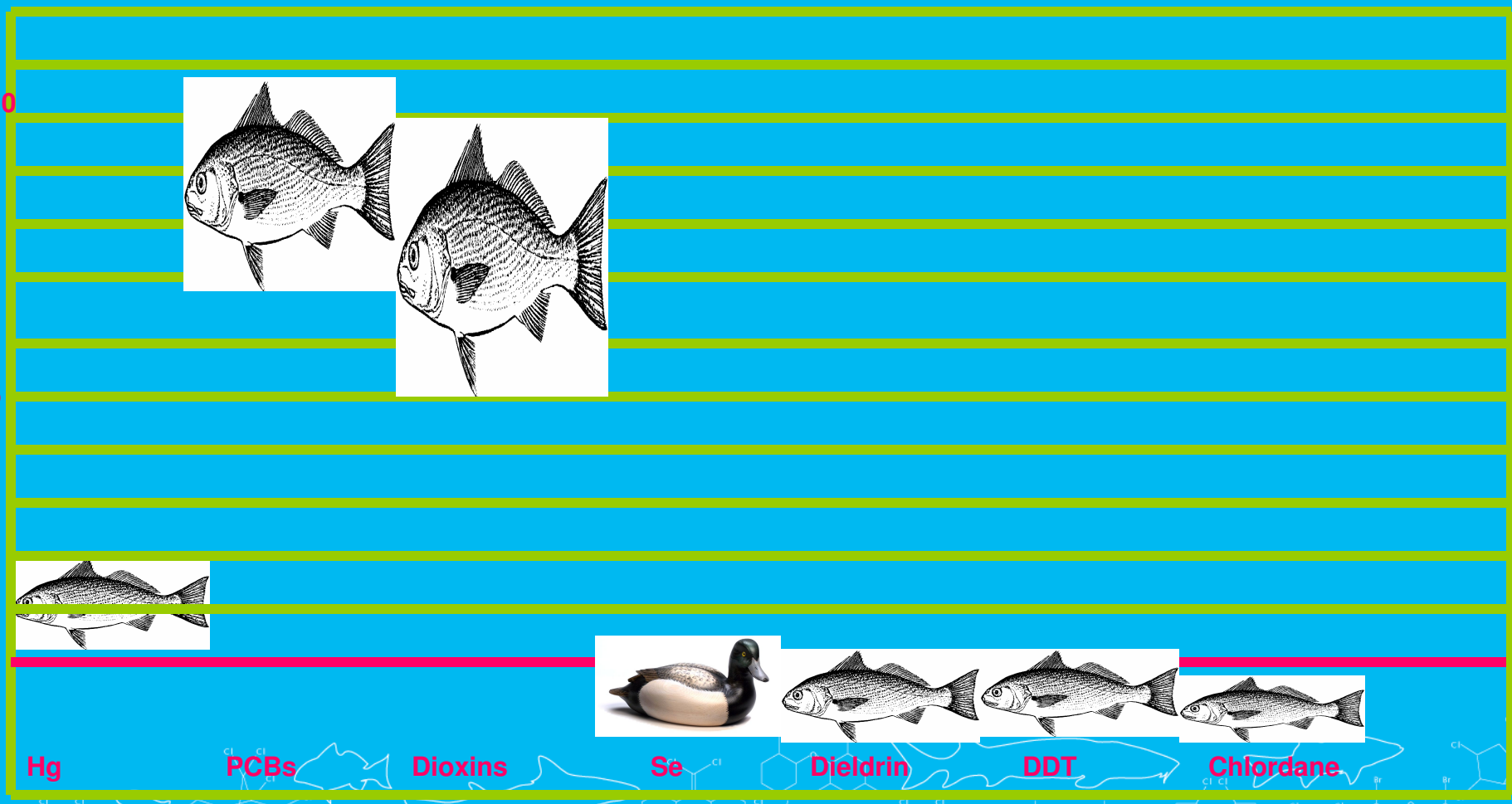




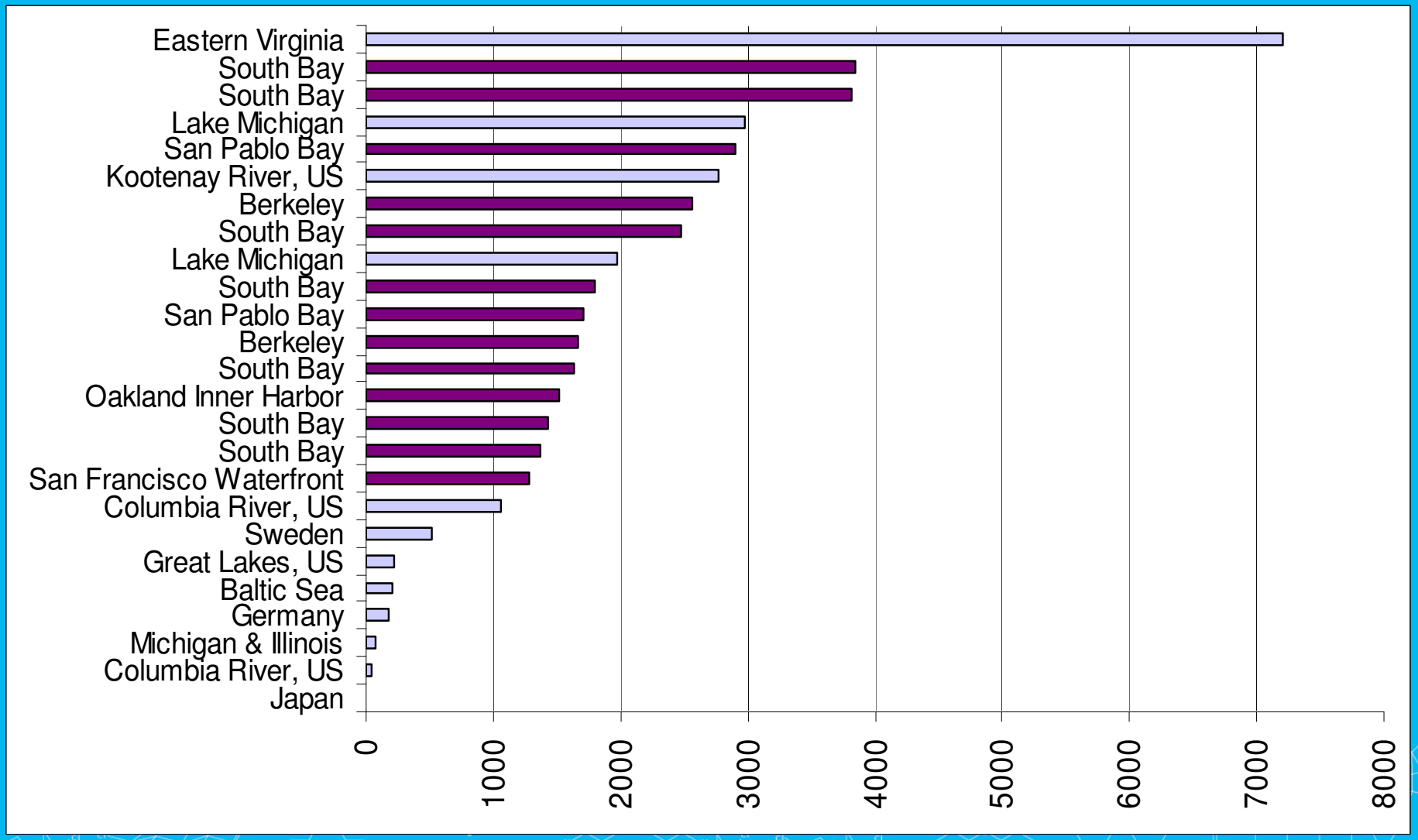
From The San Francisco Bay Seafood Consumption Study—Public Summary



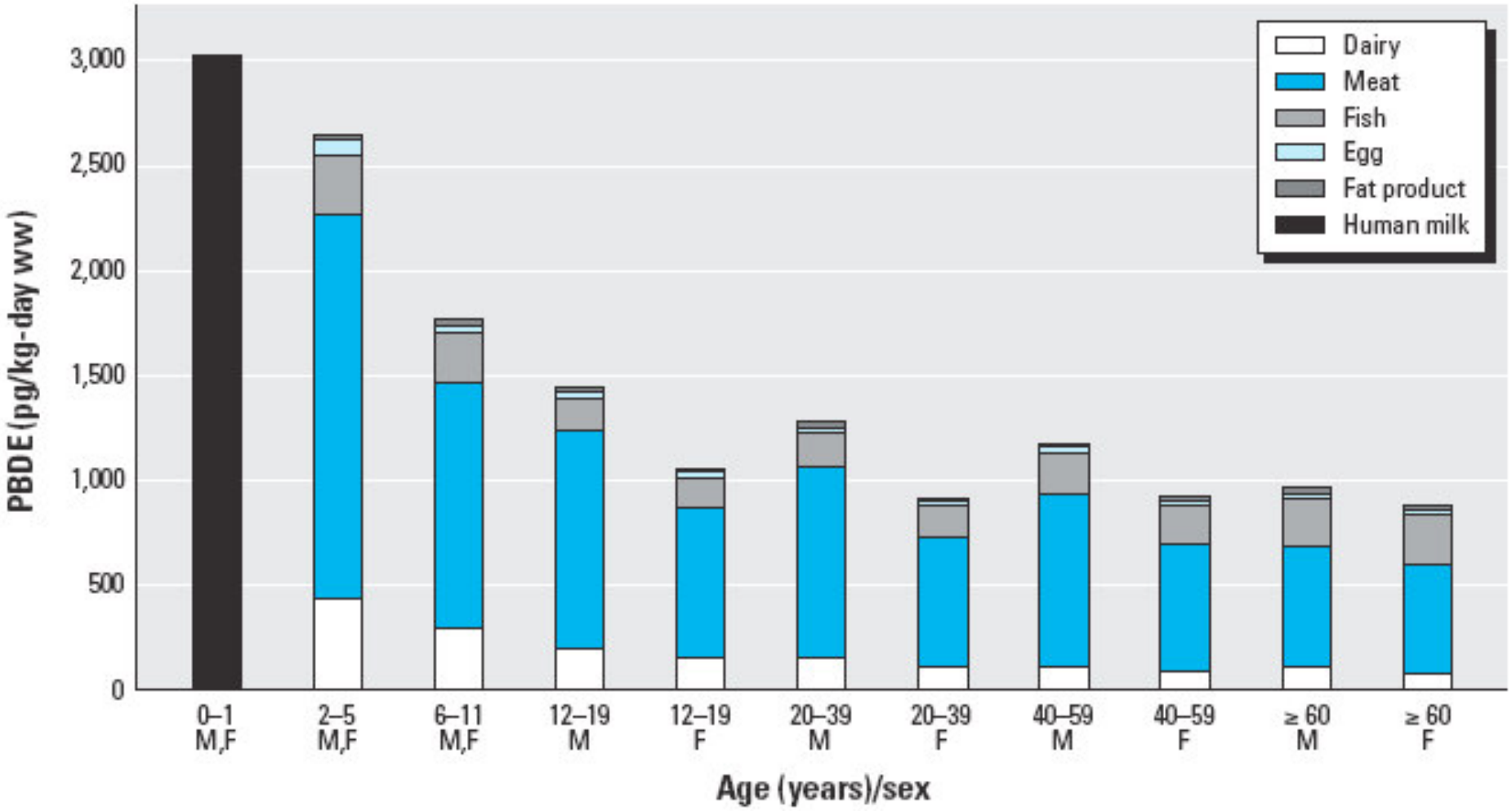
Few Contaminants Account for Most Risk
Ratio of Amounts in Fish to Benchmark



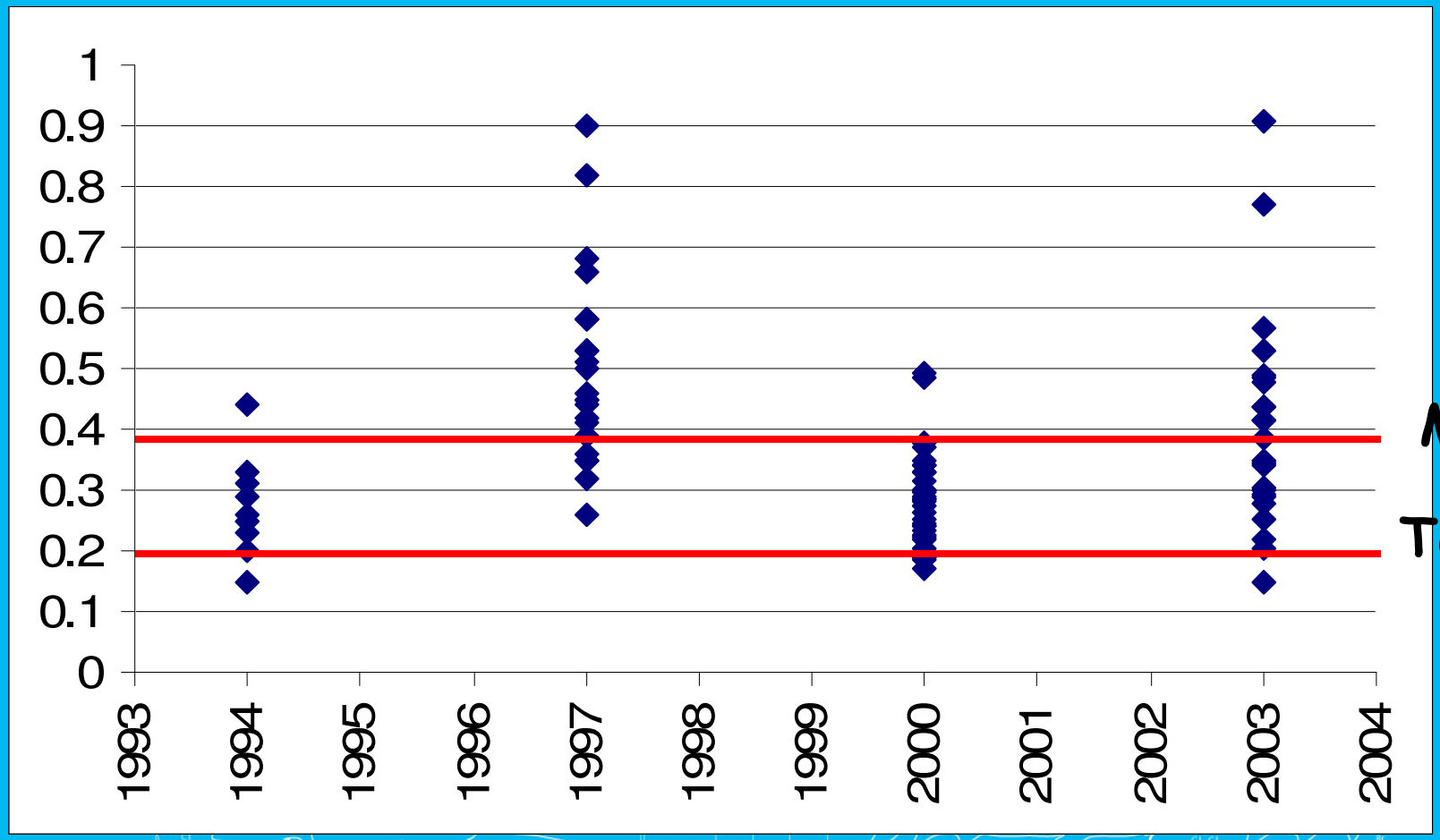
Global PBDEs in Fish



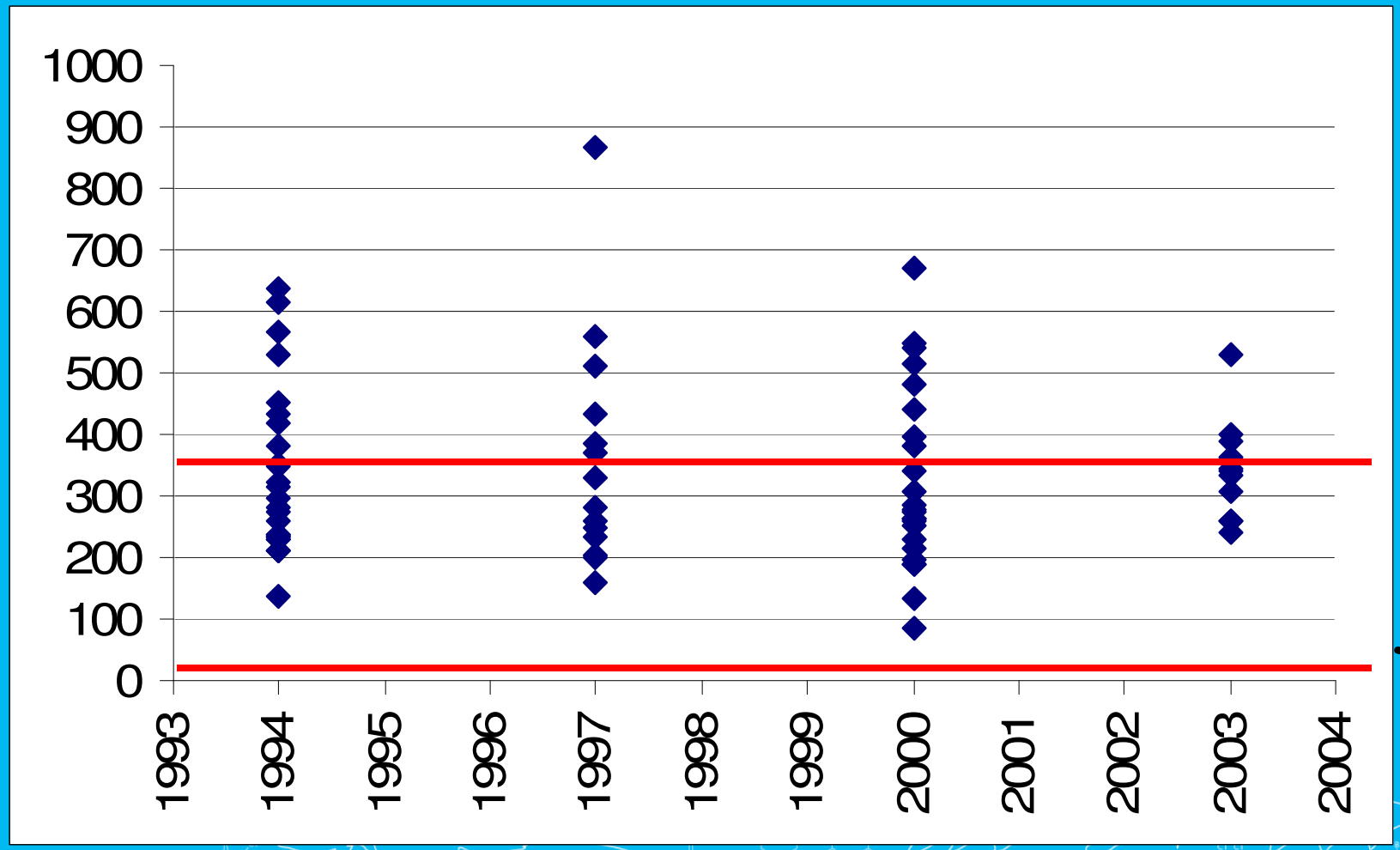
Daily PBDE dietary intake of the U.S. population by age and gender (Schecter et al., 2006)



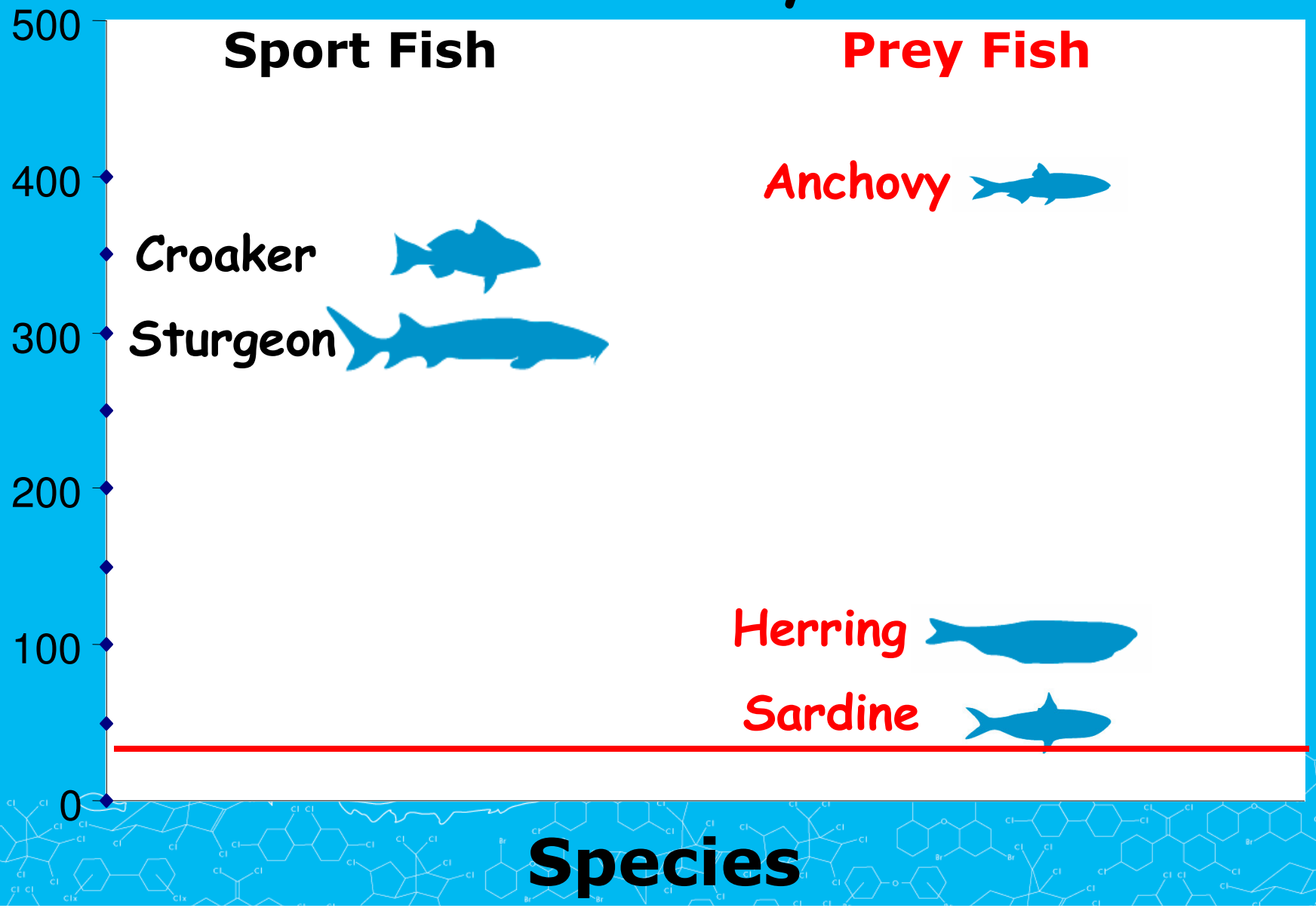
Striped Bass Mercury



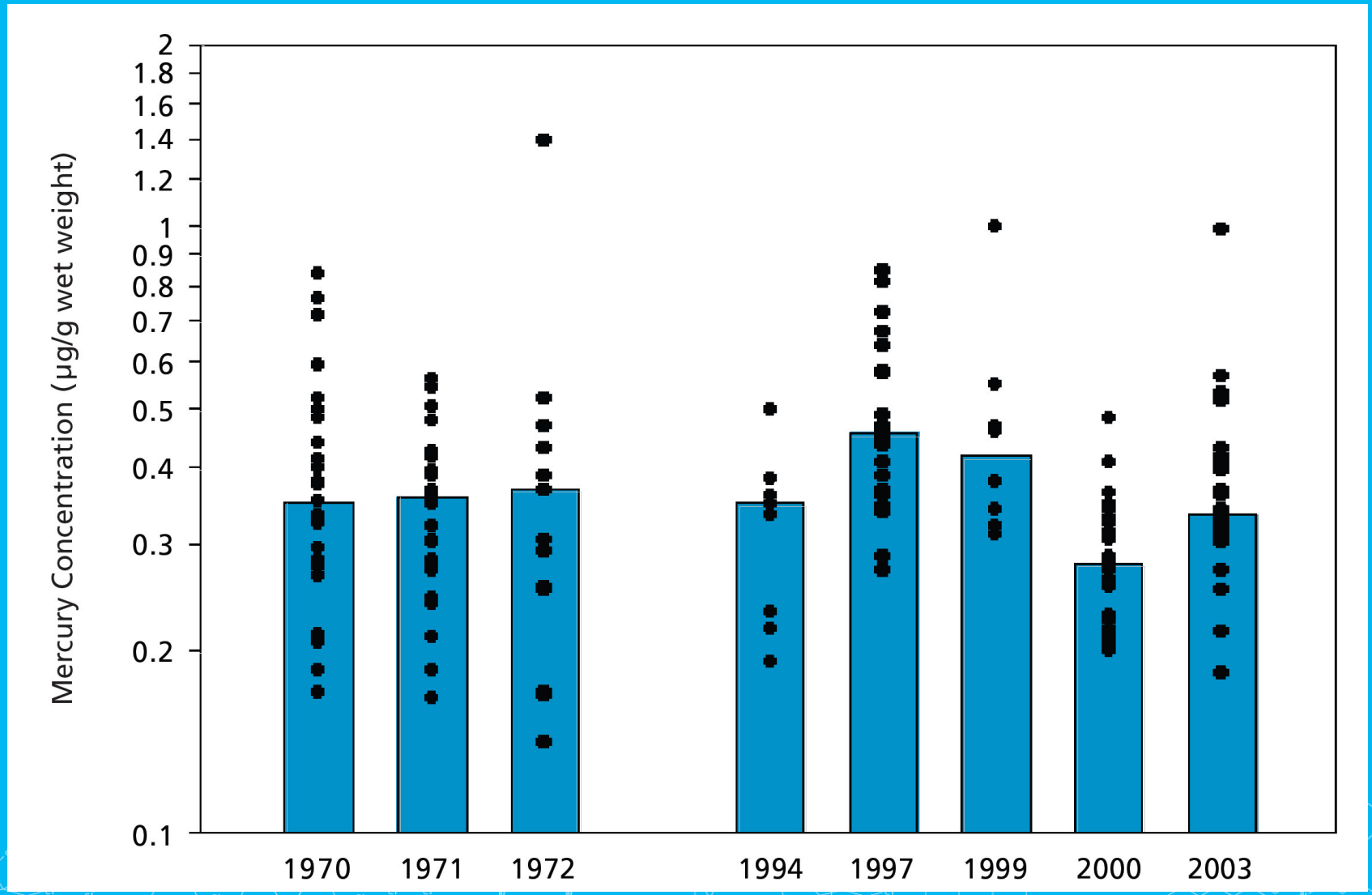
White Croaker PCBs



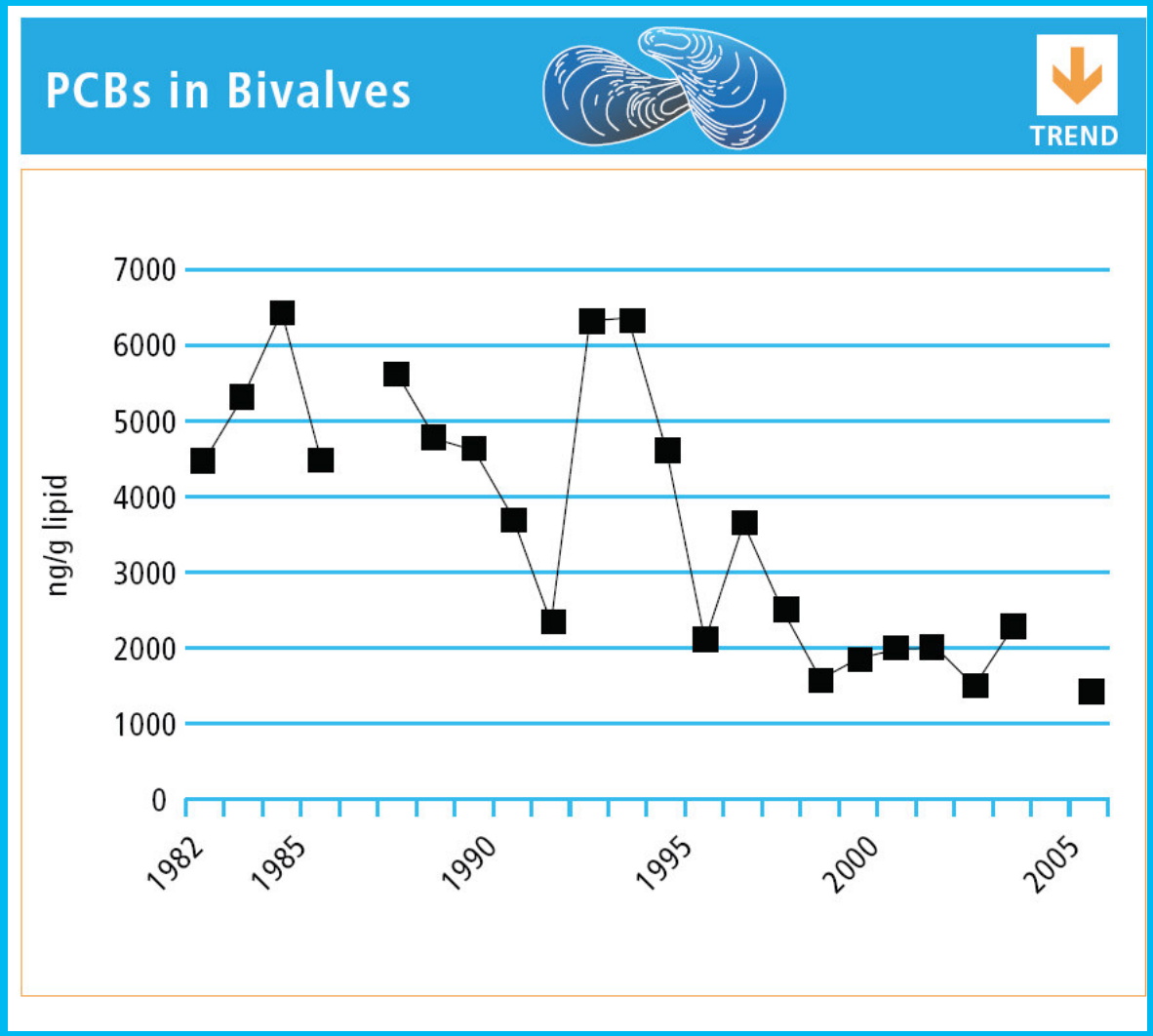
PCBs in Prey Fish



Hg in Striped Bass

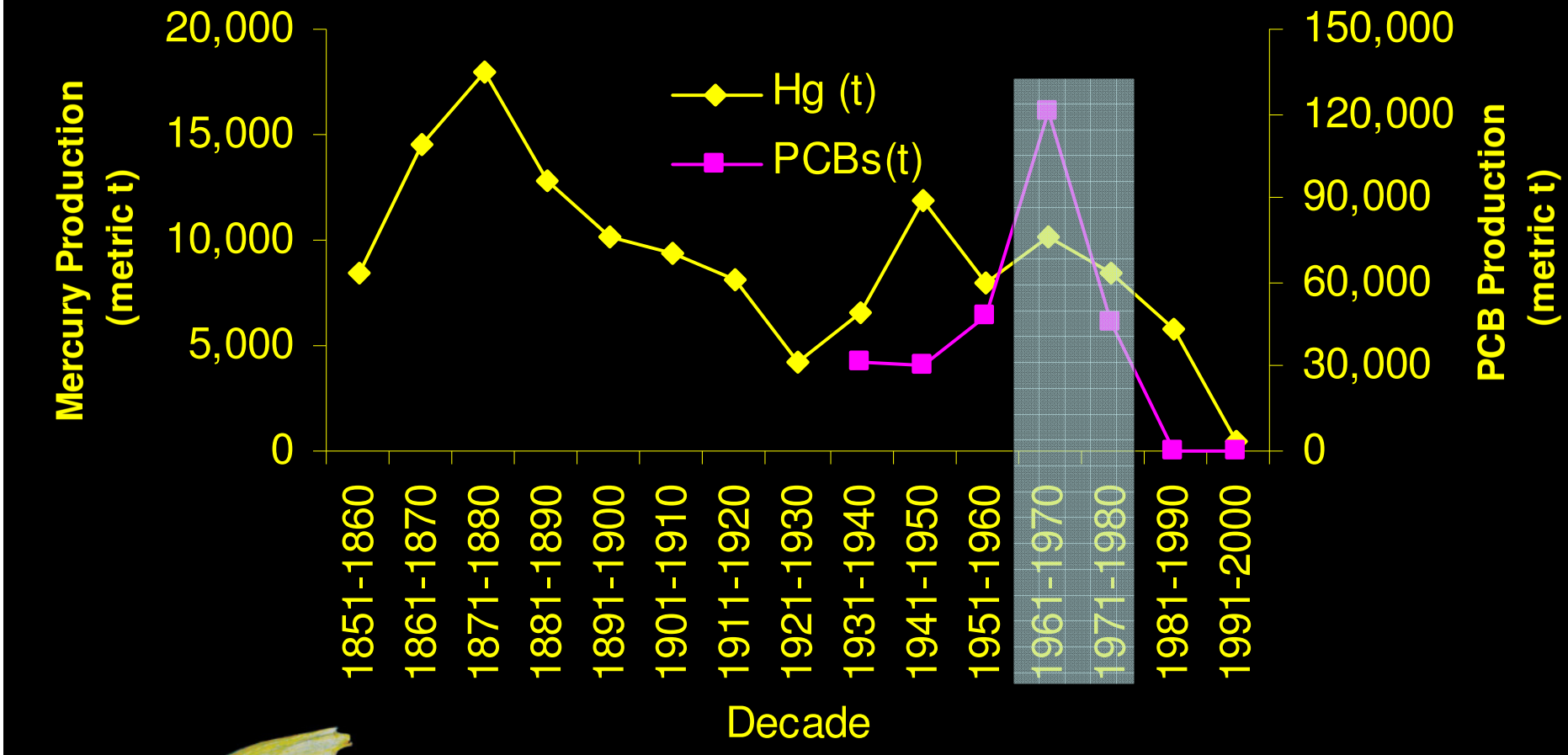


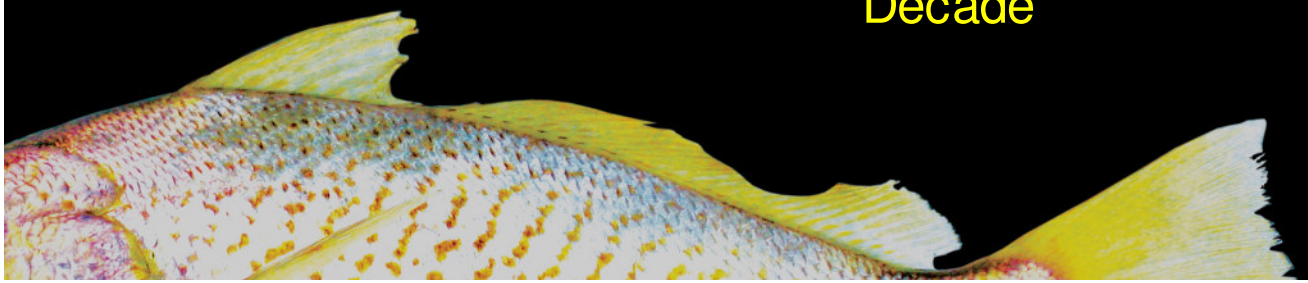
- Our best long-term trend indicator
- One time series from Yerba Buena Island
- Representative of other locations
- Noisy trend line
- Declines from about 5000 ppb to 2000 ppb (60%) over the 23 year period



From Pulse of the Estuary 2006

National Production History





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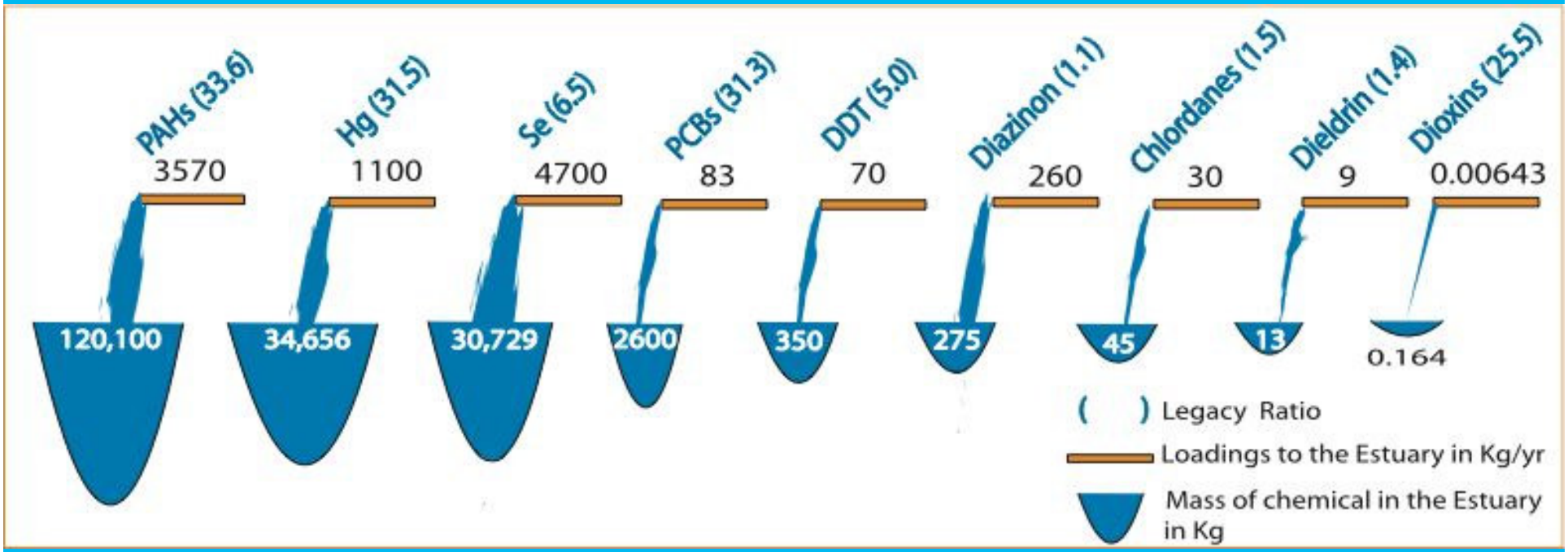
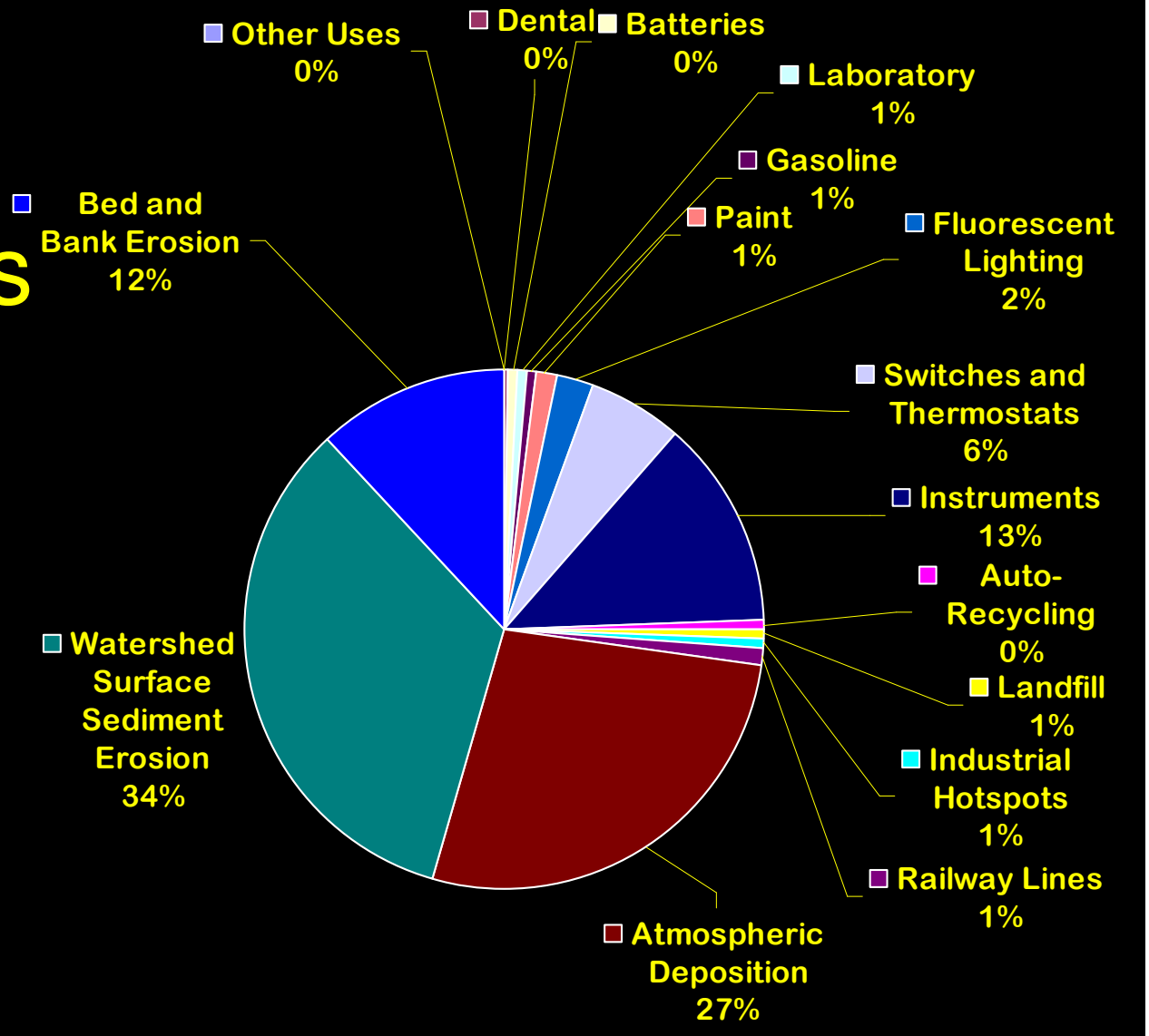
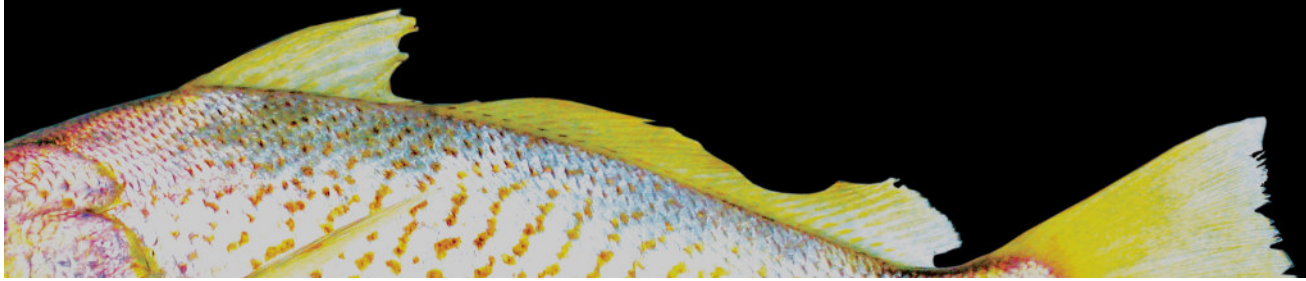
Legacy Pollutants: Amount in Bay >30x larger than annual inputs



Hg Entering Creeks Rivers and Storm Drains





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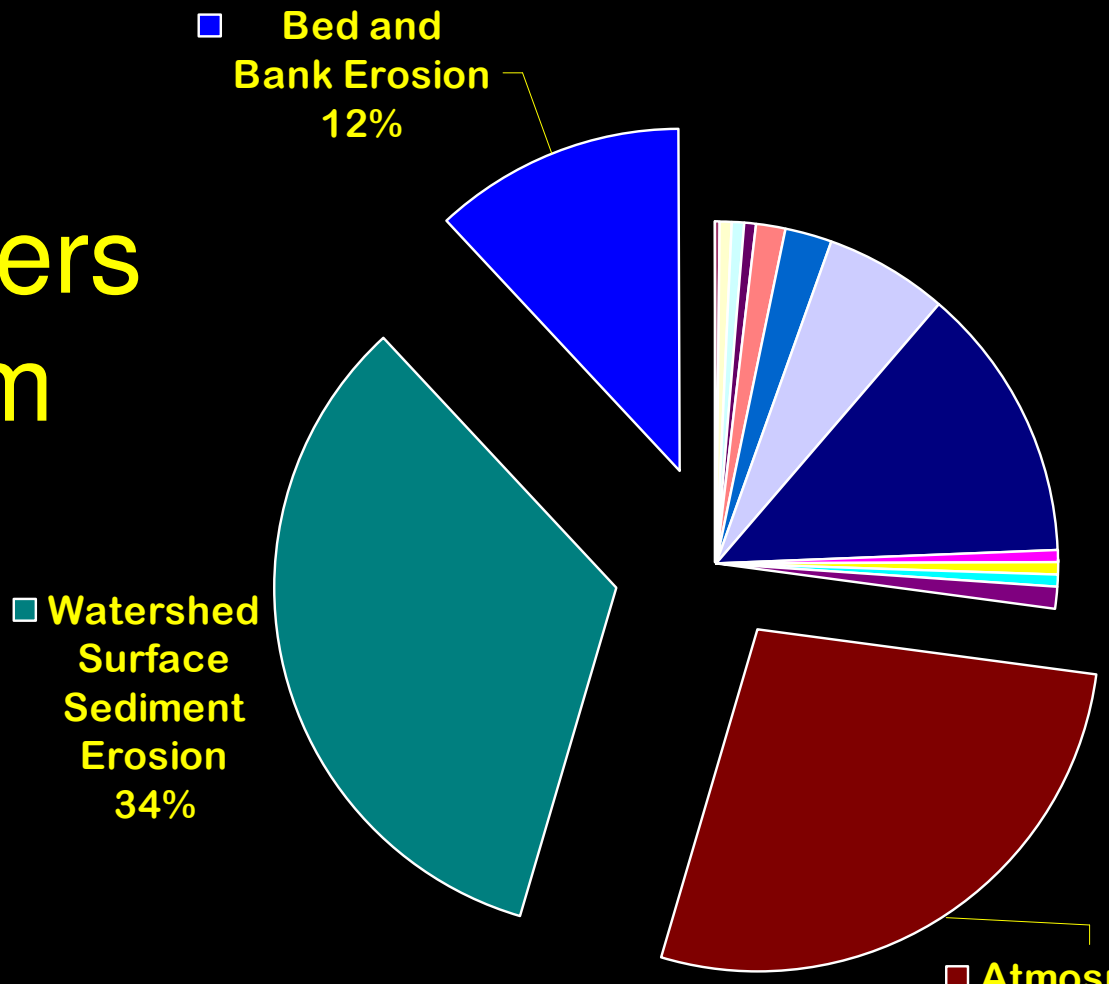

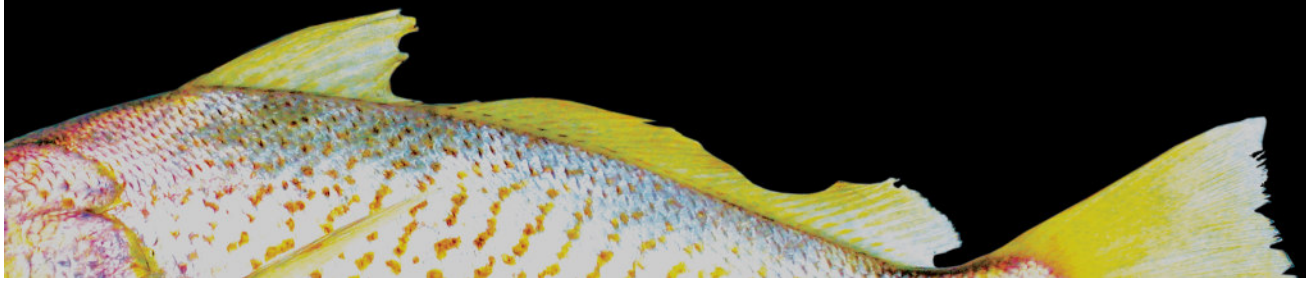

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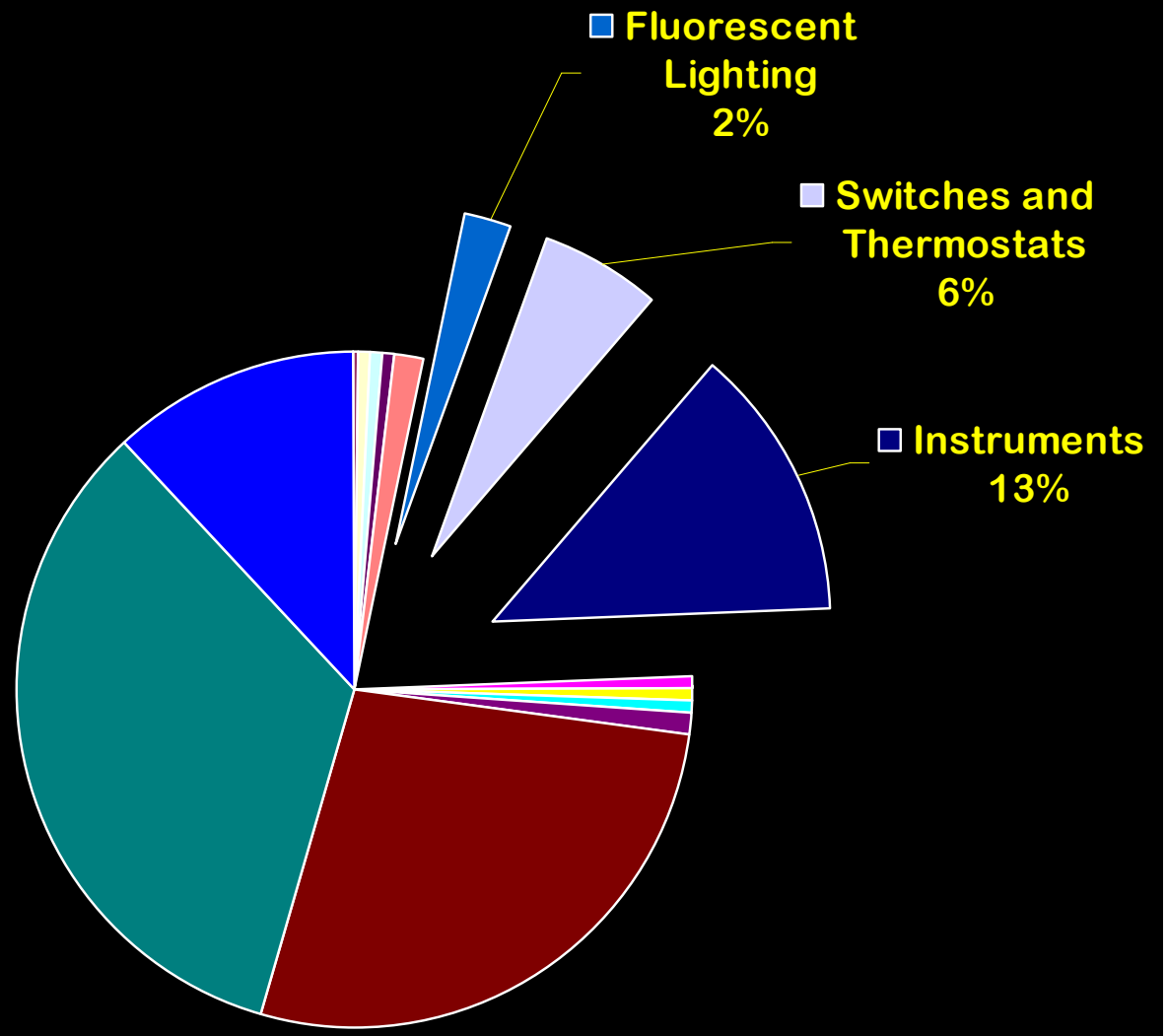

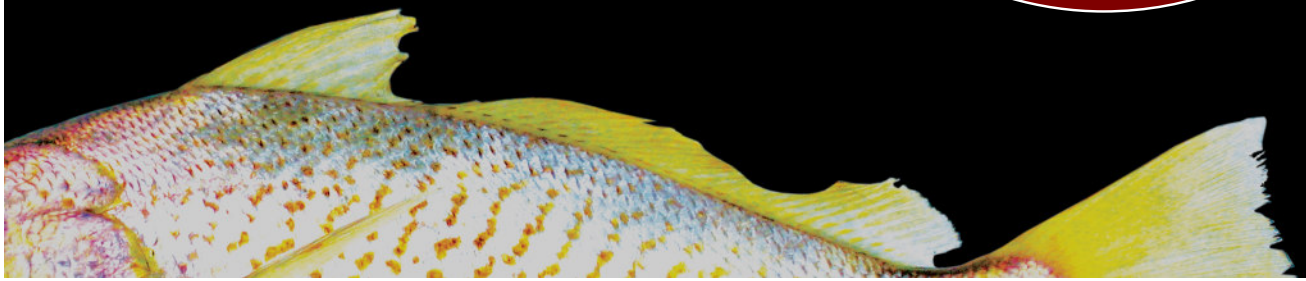

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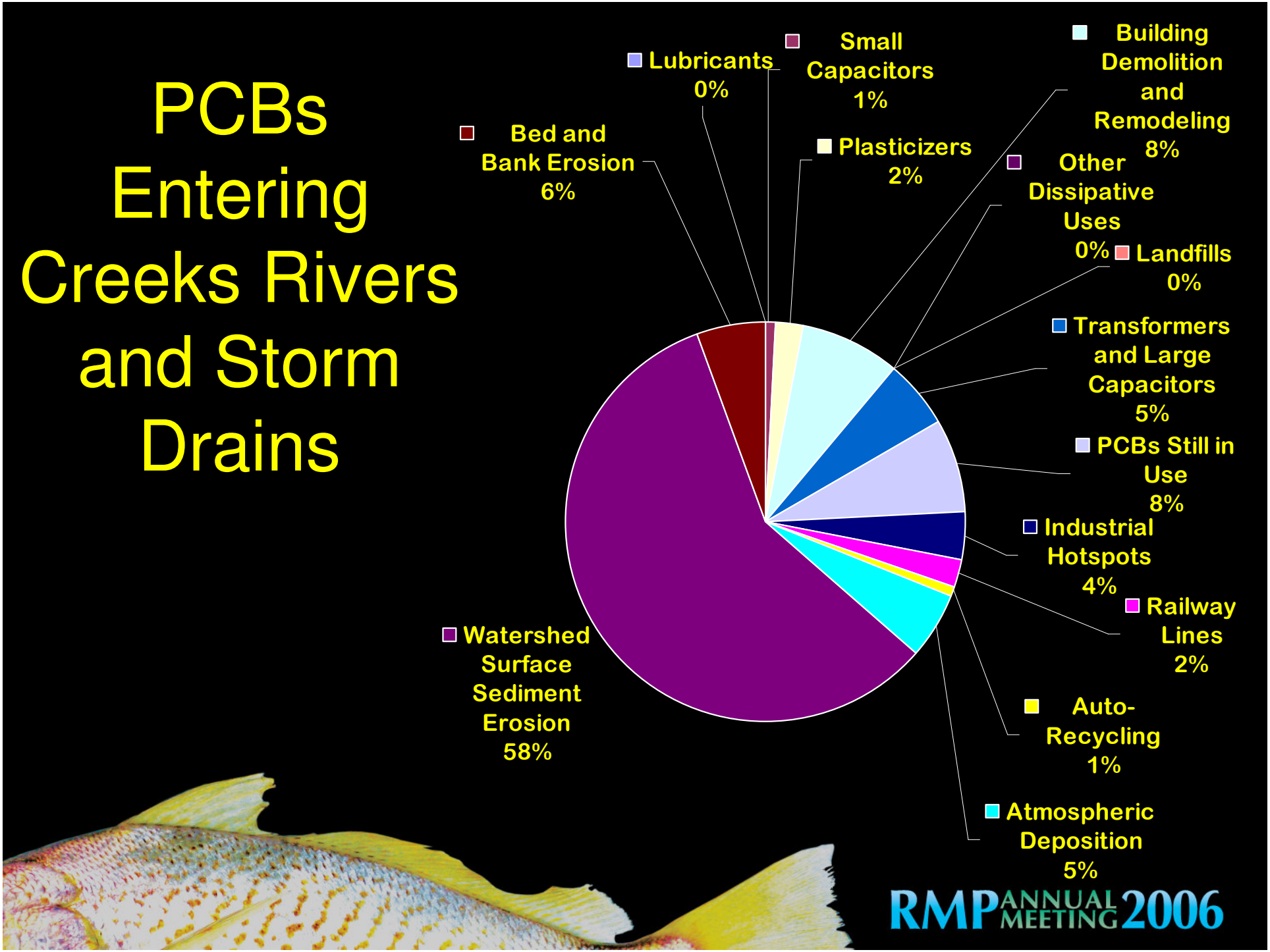

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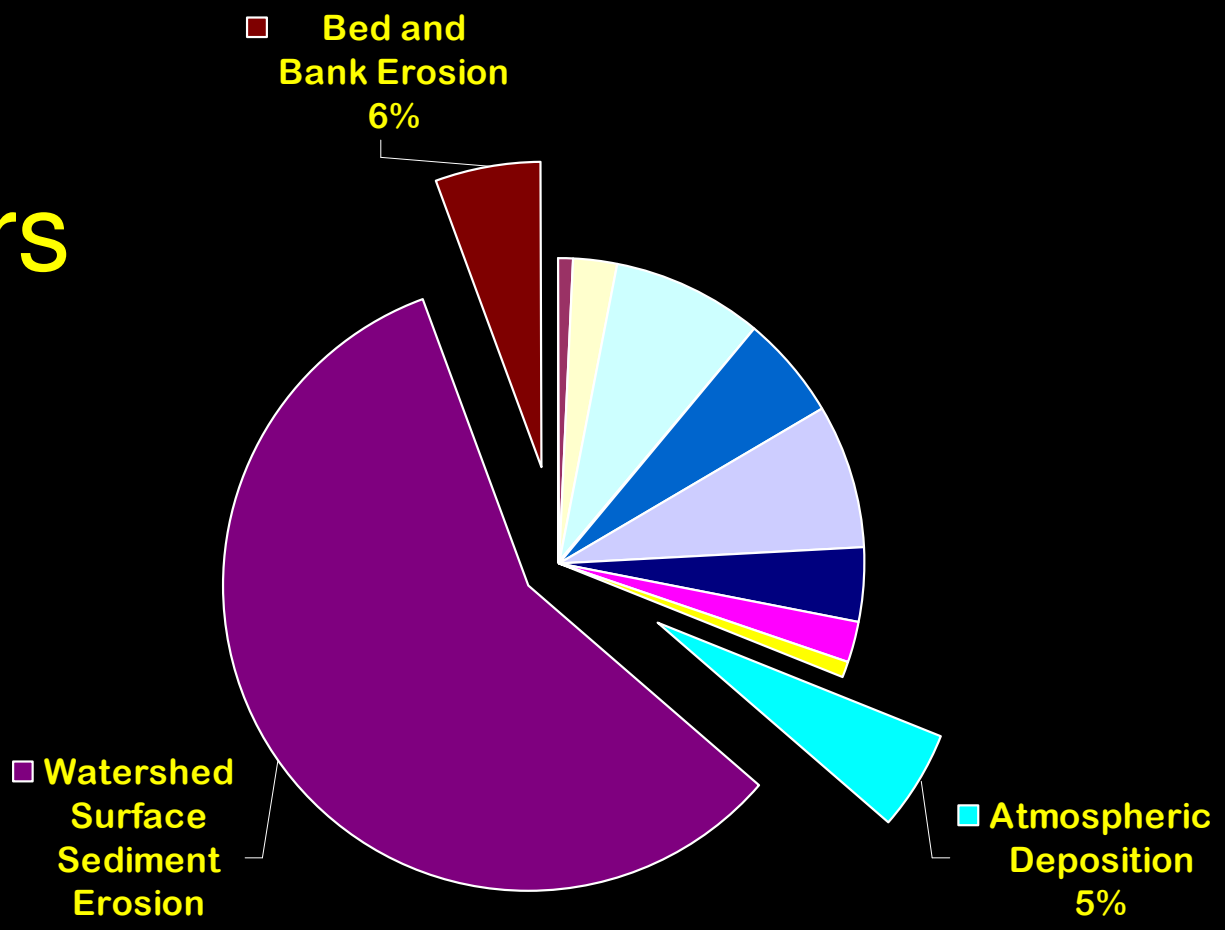

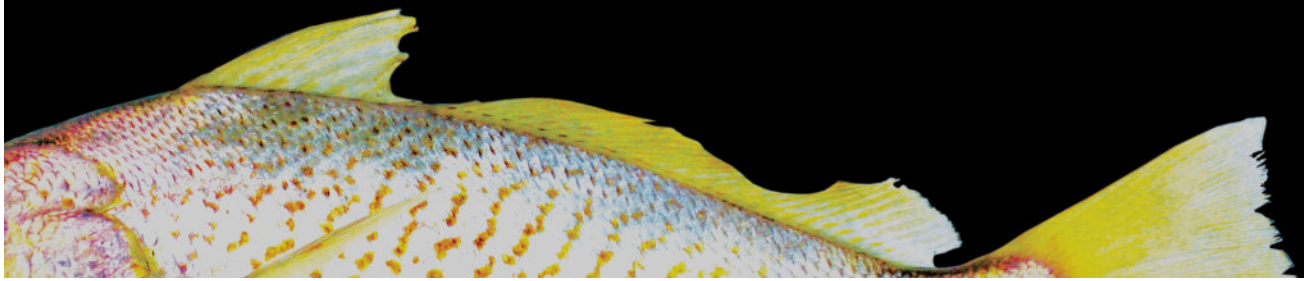

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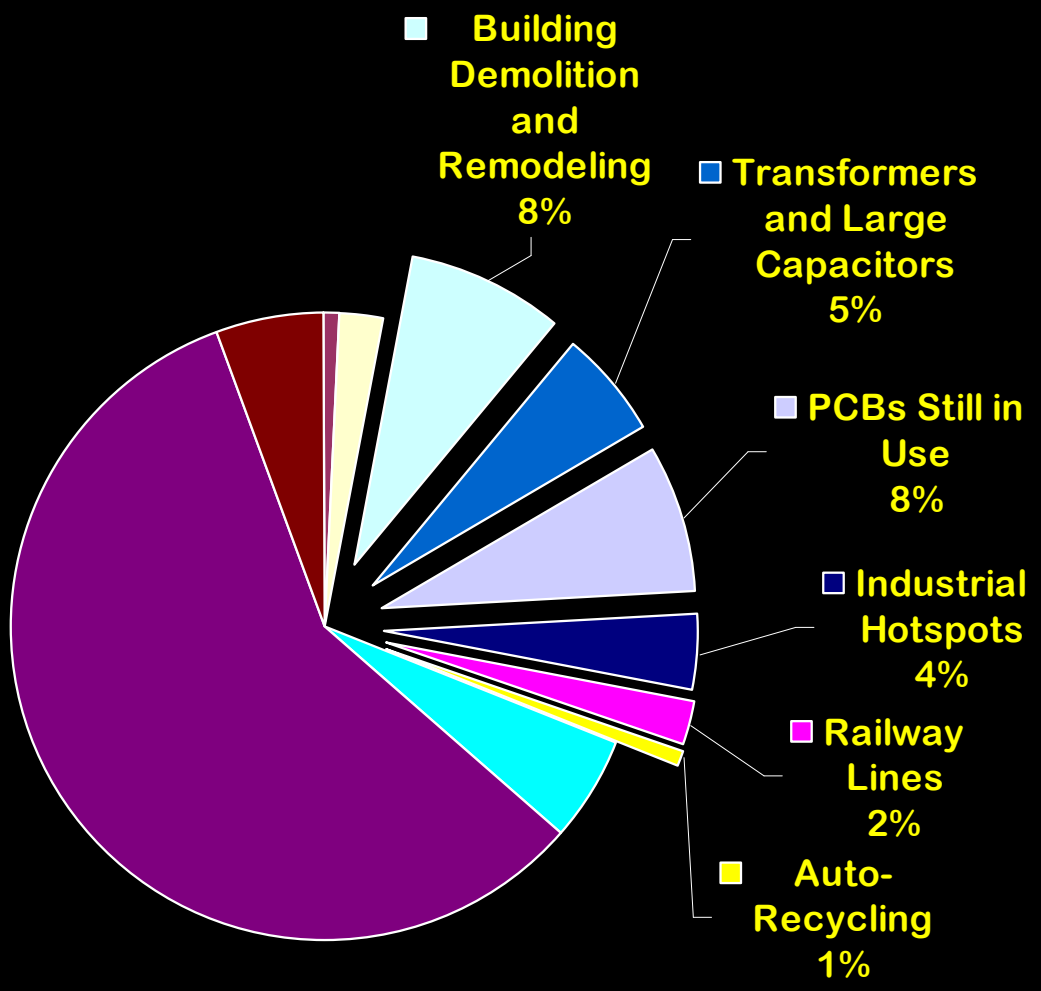

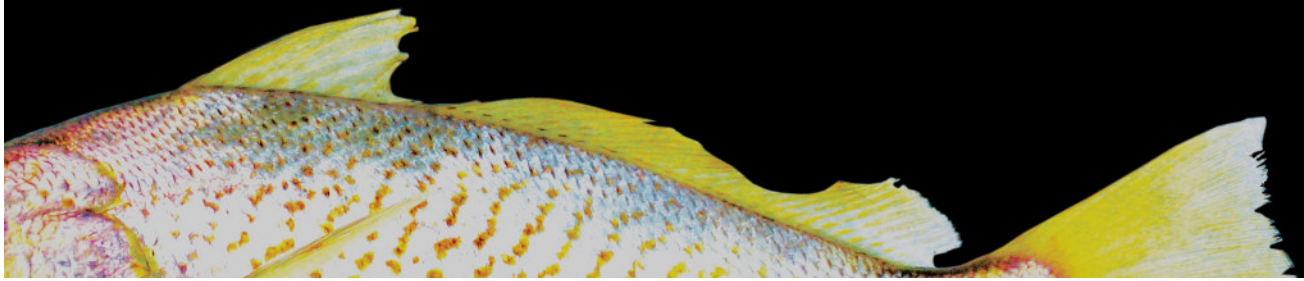

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Information Sources

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