



Polychlorinated Biphenyls

A Brief History



A Daunting Task?



Before the “Industrial Revolution” environmental clean up was fairly simple.

Better Things for Better Living through Chemistry



How It All Started

Polychlorinated Biphenyls

1881

PCB first synthesized

1927

First commercial manufacture

1935

Monsanto increased production and distribution of the “perfect industrial chemical”

1970

85 million pounds of PCB produced

1976

Toxics Substances Control Act

- Asbestos, formaldehyde, lead, mercury, and **PCBs**

Regulatory Allowances

- **Up to 50 ppm**
 - Pigments, inks, dyes
 - Consumer products
 - Paint pigments
 - Auto shredder residue
 - Plastics
 - Recycled paper
- **Other allowable sources**
 - Motor oil (up to 2 ppm)
 - Detergent bars (up to 5 ppm)
 - Fish and animal feed (up to 2 ppm)
 - Food wrappers (up to 10 ppm)
 - Human food (0.2-3 ppm)

Water Quality

Washington Human Health Criteria

7 ppq

1 ppm = 1,000,000,000 ppq

EPA 560/6-76-005

PB252012

PCBs IN THE UNITED STATES INDUSTRIAL USE AND ENVIRONMENTAL DISTRIBUTION

TASK I

FEBRUARY 25, 1976

FINAL REPORT



REPRODUCED BY
NATIONAL TECHNICAL
INFORMATION SERVICE
U.S. DEPARTMENT OF COMMERCE
SPRINGFIELD, VA. 22161

U.S. ENVIRONMENTAL PROTECTION AGENCY
OFFICE OF TOXIC SUBSTANCES
WASHINGTON, D.C. 20460

1976: What is the problem?

- “Current state of knowledge”
- Identified a potentially severe future hazard from landfill of PCBs
- Content of PCBs in industrial products could be reduced
- Recommended further study of inadvertent PCBs

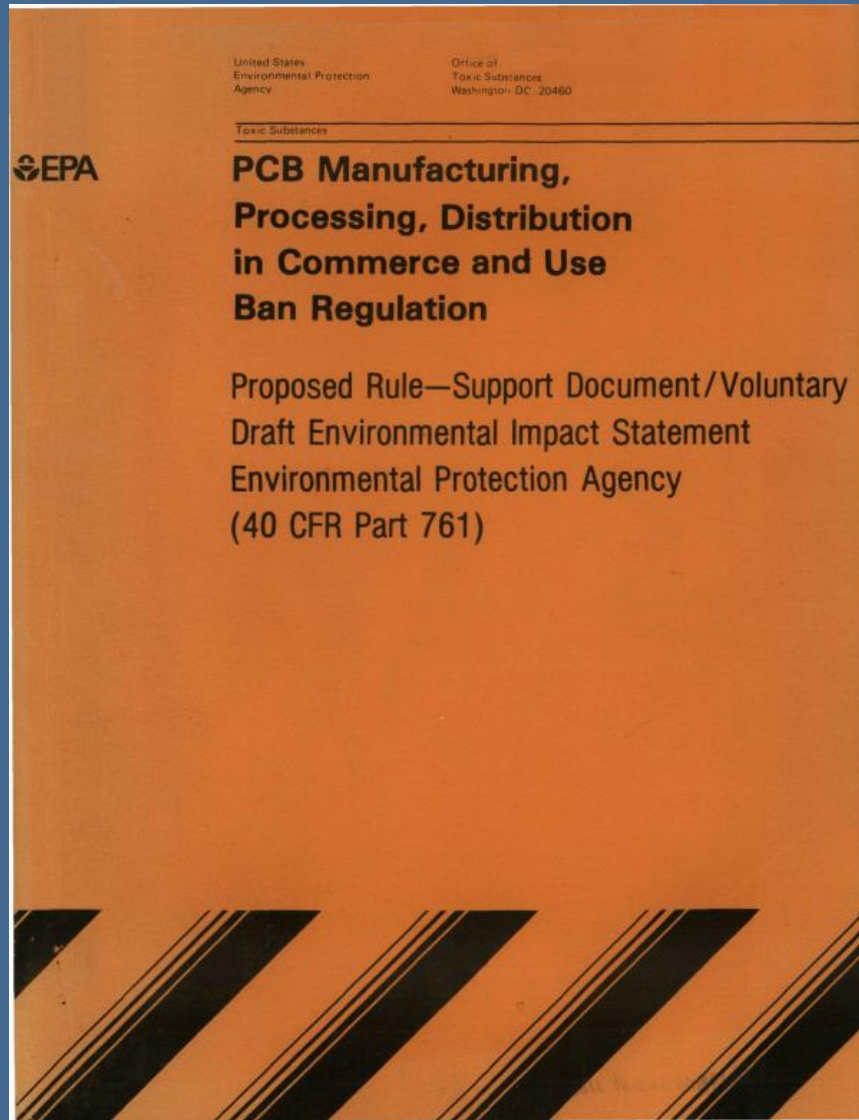


May, 1978 Proposed Rule

- Low dose health effects
- No “safe” level of exposure
- Any exposure is “significant”

- Can’t control all PCBs in the environment
- Can control manufacture

- **EPA would authorize a USE only if a BAN would cause “major and extensive economic disruptions.”**



“Serious environmental damage may result from deposit in or near water . . . even with low concentrations of PCBs”

June, 1978 Proposed Rule

- Bans manufacturing, processing, distribution in commerce and use
- Need more data for pigments and dyes
- Establishes “PCBs” as > 50 ppm based on “feasibility”
- **Other regulatory rules may have different standards**
- Water the most significant pathway



**50 ppm set
“because the
limited disposal
capacity for
PCB wastes”**

May 1979, Final Rule

- Focuses on controlling PCBs at the manufacturing level
- Includes limits on pigments (estimated 5700 lbs/year produced)
- 50 ppm set as the TSCA limit based on economic considerations
- Expects EPA to control environmental releases to water through the NPDES system



1980: Environmental Defense Fund v. EPA

- The wrong criteria were used to determine “unreasonable risk”

EPA reasoning:

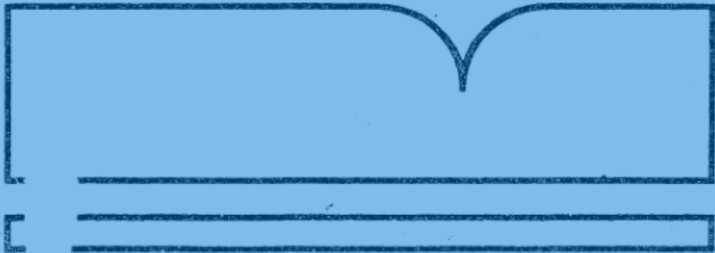
- Excludes municipal sludges with low levels of PCBs due to ambient conditions
- Control of industrial processes possible
- Can't regulate “diffuse and extremely numerous PCB sources”
- Other statutes available (CWA) to regulate low concentrations

PB83-159731

Economic Analysis for the Final
Rule to Exclude Closed and
Controlled Processes from the PCB
(Polychlorinated Biphenyls) Ban Rule

(U.S.) Environmental Protection Agency
Washington, DC

Sep 82



Department of Commerce
Technical Information Service
TIS

1982 Versar Economic Analysis

- Identifies the list of manufacturing processes that produce inadvertent PCBs
- Limit of quantification in water = 100 ppb
- Evaluates costs of managing incidentally generated PCBs

(Almost) the end of the Story

1983 Proposed Rule

- 50 ppm general exclusion
- FDA: Excluded from TSCA
- CWA: Effluent standards, pulp and paper, sludge

1984 Final Rule

April 2010: PCBs 30 years later

- Reassessment of TSCA: Proposed Rule
 - Liquid PCBs
 - **50 ppm level for excluded products**
 - Non-liquid PCBs
 - PCBs in porous surfaces
 - Marking
 - Definitions for
 - Excluded manufacturing process
 - Quantifiable level/level of detection
 - Recycled PCBs

PCBs 40 years later?

- Modify regulations if the use presents an unreasonable risk
- Includes evaluation associated with alternatives
 - Economy
 - Electric energy
 - Health
 - Environment
 - Social impacts
- Why change regulations?
 - Older PCB equipment/less equipment
 - International and transboundary protocols
 - Environmental and health risks
 - **Clean up costs**

The Spokane River



The Moving Pieces

