

Persistent Bioaccumulative Toxins (PBTs) in Washington State

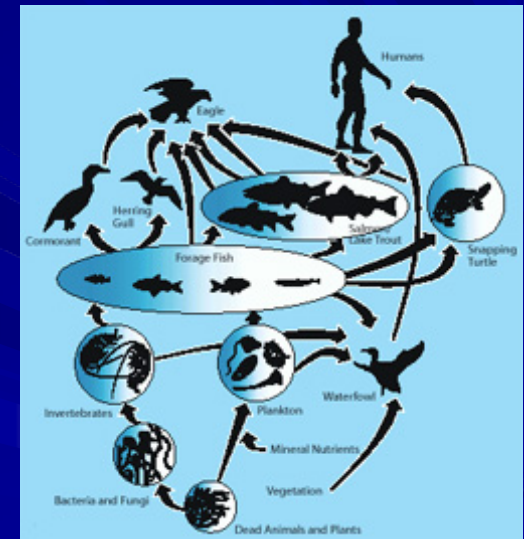


- Ecology's PBT Initiative
- PBT Rule
- Previous and Future Chemical Action Plans (CAPs)
- Organization & Update on the Lead CAP Process

What are PBTs?

Naturally occurring or human-made chemicals that:

- Remain in the environment for a long time
 - **Persistent**
- Build up in human or animal tissues
 - **Bioaccumulative**
- Have adverse effects on living organisms
 - **Toxic**
- Also can readily migrate between the air, land and water and travel long distances



Focusing on Persistent, Bioaccumulative Toxic Chemicals (PBTs)

- PBTs considered the **“worst of the worst”**
- PBTs can cause human health impacts
 - Young children, fetuses, and women of child-bearing age are especially vulnerable
- PBTs impact environment
 - Marine and terrestrial animals have increasing levels of some PBTs
 - Chronic low dose exposures over time causing impacts

PBT Chemicals come from a Variety of Exposure Sources

Stormwater

Motor Vehicles

Oil & Hazardous Substance Spills

Consumer Products

Contaminated Sites

Pesticide Use

Industrial Releases to Air, Land & Water



Ecology's PBT Initiative

- Started in late 1998
- Proposed PBT Strategy - **December 2000**
- Mercury CAP - **January 2003**
 - Mercury Legislation - **May 2003**
- Governor's Executive Order 04-01 - **January 2004**
- PBT Rule - **January 2006**
- PBDE CAP - **January 2006**
 - PBDE Legislation - **April 2007**

Ecology's PBT Rule

Chapter 173-333 WAC

- **Goal:** Reduce & phase-out uses, releases and exposures of PBTs in WA
- PBT Rule helps Ecology set priorities on how to address PBTs
 - PBT and **Metals of Concern** List
 - Process to prioritize and schedule CAPs
 - Establishes the content of CAPs
 - Establishes a procedure for developing CAPs
- First rule of its kind in the US
- Procedural rule

Purpose of the PBT List

Intended uses of the PBT List:

- Chemical Action Plans **(by Ecology and DOH)**
- Ambient monitoring **(by Ecology)**
- Biomonitoring **(by DOH)**
- Promote public awareness
- Promote voluntary reduction measures

Chemicals on the PBT List

Metals

Methyl-mercury

Combustion By-Products

Polyaromatic Hydrocarbons (PAHs)

Chlorinated Dioxins & Furans

Brominated Dioxins & Furans

Metals of Concern

Cadmium

Lead

Banned Pesticides

Aldrin/Dieldrin

Chlordane

DDT/DDD/DDE

Heptachlor Epoxide

Toxaphene

Chlordecone

Endrin

Mirex

Banned Flame Retardants

Hexabromobiphenyl

Banned Organic Chemicals

Polychlorinated Biphenyls (PCBs)

Flame Retardants

PBDEs

Tetrabromobisphenol A

Hexabromocyclododecane

Pentachlorobenzene

Organic Chemicals

1,2,4,5-Tetrachlorobenzene

Perfluorooctane Sulfonate (PFOS)

Hexachlorobenzene

Hexachlorobutadiene

Short-chain Chlorinated

Paraffins

Polychlorinated

Naphthalenes

Contents of Chemical Action Plans

■ CAP Contents

- **General chemical information**
- **Production, uses, and releases**
- **Human health and environmental impacts**
- **Evaluation of current management approaches**
- **Identification of policy options**
- **Recommendations**
- **Implementation steps**
- **Performance measures**

■ Regulatory Consistency

■ Economic Analyses

■ Safer Substitutes

Process for Preparing Chemical Action Plans



■ CAP Process

- Plan and scope the CAP
- Coordinate with other agencies
- Create advisory committee
- Collect information
- Develop draft recommendations
- Public review and comment of draft CAP
- Final recommendations/Final CAP

The First 2 and Next 3 Chemical Action Plans (CAPs)

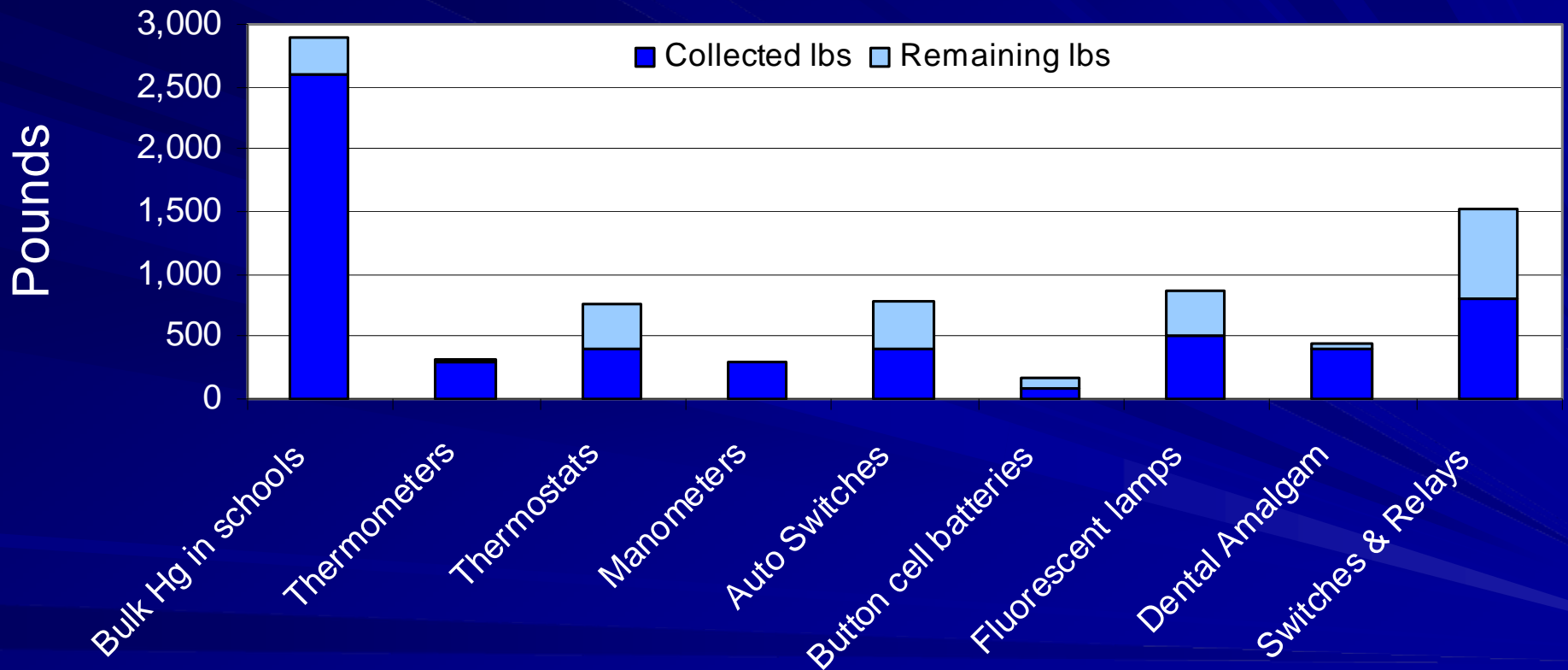
- Mercury CAP – January 2003
- PBDE CAP – January 2006
- Multiyear CAP Schedule – March 2007

Schedule for CAPs as follows:

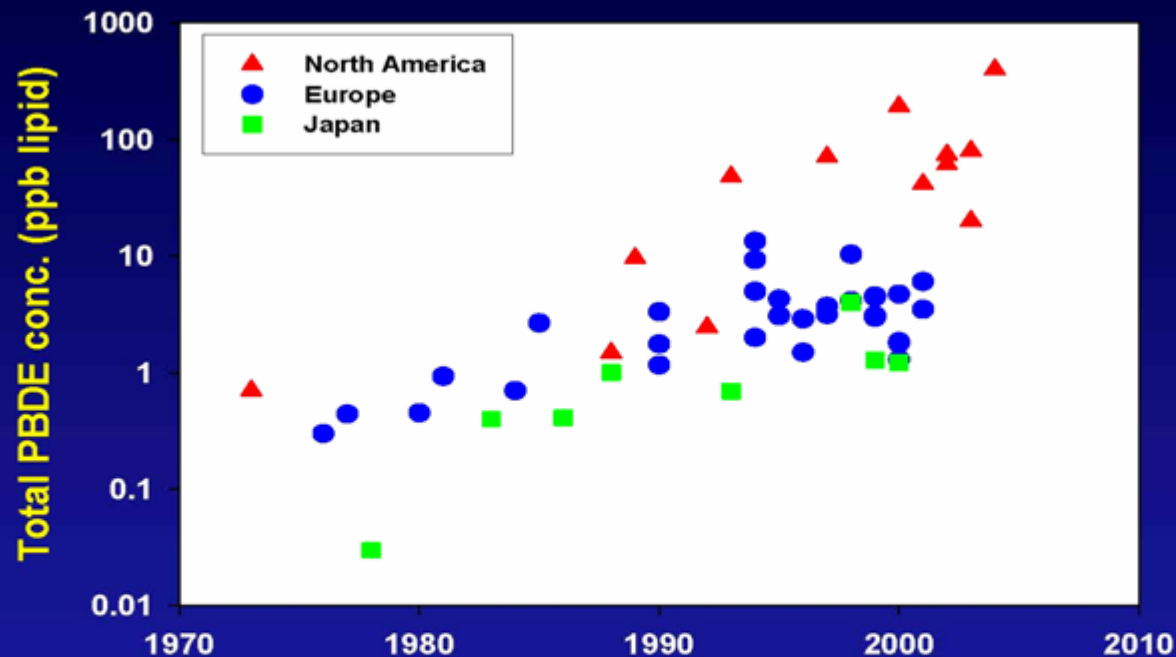
- Lead - *2007-08*
- Polyaromatic Hydrocarbons (PAHs) - *2008-09*
- Perfluorooctane Sulfonates (PFOS) - *2009-10*

Mercury CAP Accomplishments

Pounds of Mercury Collected 2003 - 2005



PBDEs in Human Samples from Around the World



Total PBDE concentrations in human blood, milk and tissue (in ng/g lipid) shown as a function of sampling year.

Issue 1: PBDEs doubling about every 5 years

Issue 2: U.S. and Canadian populations have the highest accumulation of PBDEs

Lead CAP Development Process

- Ecology (Solid Waste Program) and DOH (Office of Environmental Health Assessments) jointly doing Lead CAP
- Advisory Committee created (July 2007)
- Advisory Committee meetings (July – January 08)
[Open public meetings]
- Draft Lead CAP (February 2008)
- 60 days public comment (February – April 2008)
- Final Lead CAP (May 2008)

Lead CAP Advisory Committee

General Business & Industry	Medical	Electronic Products	Batteries	Academic Interests	Occupational Health	Product Stewardship	Local Govt
Pacific NW Paint Council ----- Assn of WA Business	WA State Hospital Assn	Philips Medical Systems	All Batteries Sales & Service	Institute of Neurotoxicology and Neurological Disorders	Occupational and Environmental Health Nursing	NW Product Stewardship Council	City of Spokane Solid Waste
Small Business	Lead Abatement	Recycling	Mining	Recreational Fishing	Community Groups	Environmental Organizations	Public Health
Independent Business Association	IRS Environmental	Total Reclaim	NW Mining Assn	Puget Sound Anglers	Solutions for Humanity Community & Environment	People for Puget Sound ----- WA Toxics Coalition	Tacoma Pierce County Health Department

Coordination With Other Agencies

■ Washington agencies:

- Department of Transportation (DOT)
- Department of Fish & Wildlife (DFW)
- Department of Labor & Industries (L&I)
- Department of Community, Trade & Economic Development (CTED)
- Department of Corrections (DOC)
- Department of Early Learning (DEL)

■ Federal agencies

- Environmental Protection Agency (EPA) Region 10

Lead CAP Advisory Committee Meetings

- **July 18** – Public health and environmental concerns about lead, Lead CAP scope
- **September 12** – legacy lead
- **October 25** – lead in consumer products
- **November 15** – lead in consumer products
- **December 13** – occupational exposures in WA and ongoing releases of lead
- **January 10** – wrap up

So what is the concern about lead?

Human Health Effects

- Generally accepted that there is “no safe level” of lead exposure
- Children, especially from ages 0-6, particularly vulnerable

Lead and Health - General

- The health effects of lead are well-studied
- Studies in people, not animals
- As blood lead levels go up, we see two things:
 - it's more and more likely people will be harmed
 - the effects get more serious

Concerns About BLL Action Level

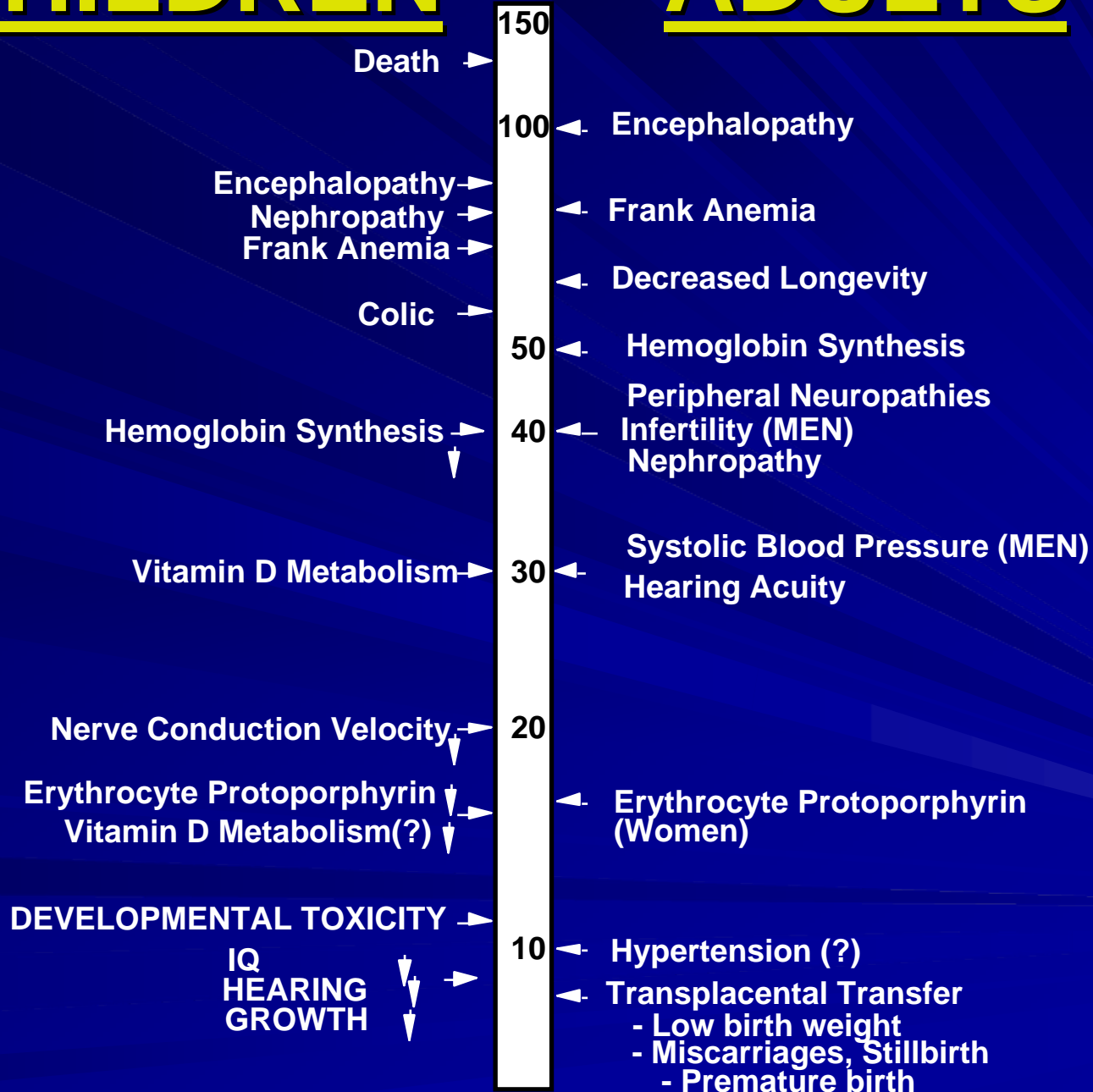
- 1991- CDC* established current BLL of 10 ug/dl as an action level
- CDC: “Current BLL of 10 ug/dl did not define a threshold for the harmful effects of lead.”
- Since 1991, research has strengthened evidence that children’s physical and mental development can be effected at BLL’s < 10 ug/dl

* CDC. 2007. *Recommendations of CDC’s Advisory Committee on Childhood Lead Poisoning Prevention Program*

CHILDREN

Blood Lead
(ug Pb/dl)

ADULTS

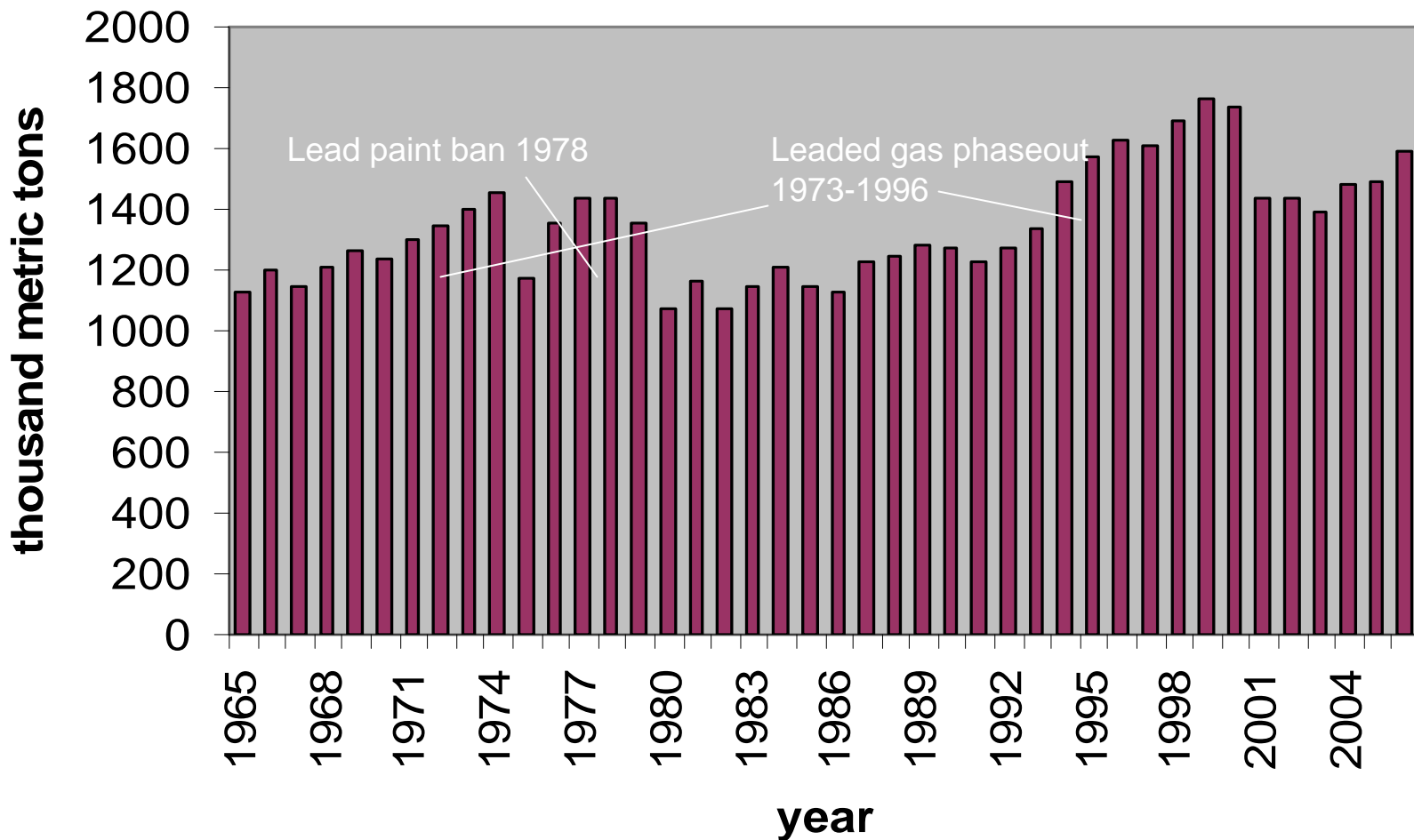


So what is the concern about lead?

Environmental Effects

- Lead is present in many consumer products
- Legacy lead releases to Washington's environment from historical uses of:
 - lead-based paints (1910-1977)
 - leaded gasoline (1923-1995)
 - lead-arsenate pesticide application (1900's – 1950's)
- Occupational exposures
- Ongoing permitted releases

US Lead Consumption 1965-2006





Sources of Lead



Legacy Lead

- Older Housing
 - (pre 1978 – lead based paint)
- Plumbing
- Contaminated Soil
- Contaminated Sediment
- Historical Mining



My job is mining lead but that tells me a lot about PAINT

ANYBODY who's ever worked with lead knows it's a grand metal. If you could cover a house with lead, it would just about last forever.

And it's not far wrong to say that the next best thing to a metal coating when it comes to protection, is white lead.

Fact is, white lead is made from lead. You can't use any other metal for making paint and get the same result.

What I mean is, white lead paint gives a tough, elastic coat -- a coat that never brittles up or flakes away.

Don't take my say-so. Ask any painter who's been at his job long enough to time the life of white lead. Ask him what he'd paint his own house with.

Any way you look at it, you're money ahead when you paint with white lead.

You'll learn a lot of helpful facts about paint if you read, "What to expect from White Lead Paint." Write for your copy today.

LEAD INDUSTRIES ASSOCIATION
420 Lexington Avenue, New York, N.Y.

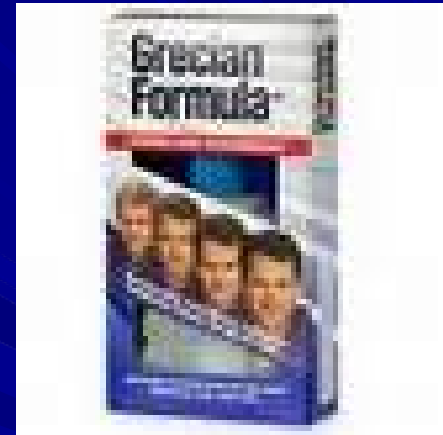
Millions also have told these facts about White Lead paint. The advertisement reproduced here is the kind of a better one appearing in national magazines.

Your money ahead when you paint with White Lead

A good painter is always a good investment. For example, painting up open joints and cracks on wood trim--filling them properly with white lead putty so they will stay watertight--is one of the dozens of things that a real painter knows how to do.




Sources of Lead Consumer Products



Sources of Lead

■ Occupational sources of lead exposure

- Battery manufacture
- Specialty glass manufacture
- Remodeling older homes
- Bridge sandblasting and painting
- Gun ranges



Ongoing Releases of Lead in WA

Sources	Amount (tons)	Medium
Industrial		
Mining	2217	air, land, water
Federal	895	air, land, water
High energy users	52	air, land, water
Remaining reporters	68	air, land, water
Metals	8	air, land
Small users (<100lbs)	?	air, land, water
Consumer products		
Batteries	600	land
Fishing weights	132	water
Wheel weights	40	air, land, water
Aviation fuel	27	air
Other products	?	air, land, water
Legacy	?	air, land, water

Range of Possible CAP Recommendations

- Alternatives
- Improve best management practices
- Labels
- Product bans
- Status Quo (No Action)
- Education
- Biomonitoring
- Update standards & enforcement
- Abatement
- Prevention

Recommendations are not limited to Ecology or DOH

For Additional Information

Ecology Lead CAP Web Page:

<http://www.ecy.wa.gov/programs/swfa/leadcap/>

Holly Davies
Lead CAP Developer
Solid Waste & Financial
Assistance Program
Department of Ecology
PO BOX 47600
Olympia, WA 98504-7600

P: (360) 407-7398
E: HDAV461@ecy.wa.gov

Mike Gallagher
Ecology PBT Coordinator
Solid Waste & Financial
Assistance Program
Department of Ecology
PO BOX 47600
Olympia, WA 98504-7600

P: (360) 407-6868
E: MGAL461@ecy.wa.gov