



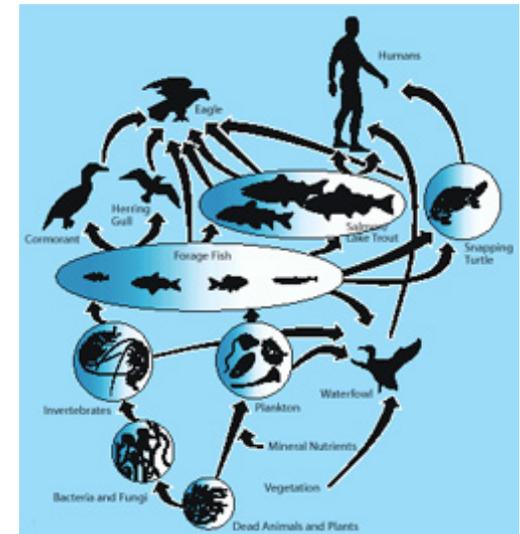
# Overview – PBT Rule Update and Lead CAP Development

- **Ecology's PBT Initiative**
- **PBT Rule**
- **The Next 3 Chemical Action Plans (CAPs)**
- **Organization & Update on 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 and fetuses are especially vulnerable
- PBTs impact environment
  - Marine and terrestrial animals have increasing levels of some PBTs
  - Chronic low dose exposures over time causing impacts

# Toxic 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 in 2000
- Mercury CAP - January 2003
  - Mercury Legislation - May 2003
- 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

- 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

# PBT Rule is Divided Into Four Main Parts

- Part 1 (Section 100) – General Provisions
- Part 2 (Section 200) – Definitions
- Part 3 (Section 300) – The PBT List and Criteria and Procedures for Revising the List
  - Establish criteria for use in identifying PBTs and Metals of Concern
  - Specific list of PBTs and Metals of Concern
- Part 4 (Section 400) – Chemical Action Plans (CAPs)
  - Evaluation factors and processes for selecting chemicals for CAPs
  - Contents of a CAP
  - Process for developing CAPs

# Purpose of the PBT List

## Intended uses of the PBT List:

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

# Criteria for Identifying PBTs

- **Persistence**
  - **Media-Specific Half Life > 60 days**
- **Bioaccumulation**
  - **BAF/BCF > 1000**
- **Toxicity**
  - **Potential to be toxic to humans or plants and wildlife based on credible information that the chemical (or chemical group) is:**
    - **a carcinogen, developmental or reproductive toxicant, or neurotoxicant;**
    - **Has a reference dose or equivalent toxicity measure < 0.003 mg/kg/day;**  
or
    - **Has a chronic NOEC < 0.1 mg/l or acute NOEC < 1.0 mg/l**
- **Bioavailability (metals only)**
- **Degradation products - both parent chemical and degradation products considered when evaluating if PBT Criteria exceeded**

# Chemicals on the PBT List

## Metals

Methyl-mercury

## Combustion By-Products

PAHs  
PCDD/PCDF  
PBDD/PBDF

## Metals of Concern

Cadmium  
Lead

## Flame Retardants

PBDEs  
Tetrabromobisphenol A  
Hexabromocyclododecane  
Pentachlorobenzene

## Banned Flame Retardants

Hexabromobiphenyl

## Banned Pesticides

Aldrin/Dieldrin  
Chlordane  
DDT/DDD/DDE  
Heptachlor Epoxide  
Toxaphene  
Chlordecone  
Endrin  
Mirex

## Organic Chemicals

1,2,4,5-TCB  
Perfluoro-octane sulfonates  
Hexachlorobenzene  
Hexachlorobutadiene  
Short-chain chlor paraffin  
Polychlorinated Naphthalenes

## Banned Organic Chemicals

PCBs

# The Next 3 CAPs

- March 2007 Multiyear CAP Schedule:
  - Lead - *2007-08*
  - Polycyclic Aromatic Hydrocarbons (PAHs) - *2008-09*
  - Perfluorooctane Sulfonates (PFOS) - *2009-10*

# Contents of Chemical Action Plans

(CAPS are developed jointly by Ecology and DOH)

- 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

# 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 Association	Puget Sound Anglers	Solutions for Humanity Community & Environment	People for Puget Sound ----- WA Toxics Coalition	Tacoma Pierce County Health Department

# Lead CAP Coordination with other agencies

- **Washington agencies:**
  - Transportation
  - Fish & Wildlife
  - Labor & Industries
  - Community, Trade & Economic Development
  - Corrections
  - Early Learning
- **Federal agencies**
  - 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 – occupational exposures in WA and ongoing releases of lead
- December 13 – 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

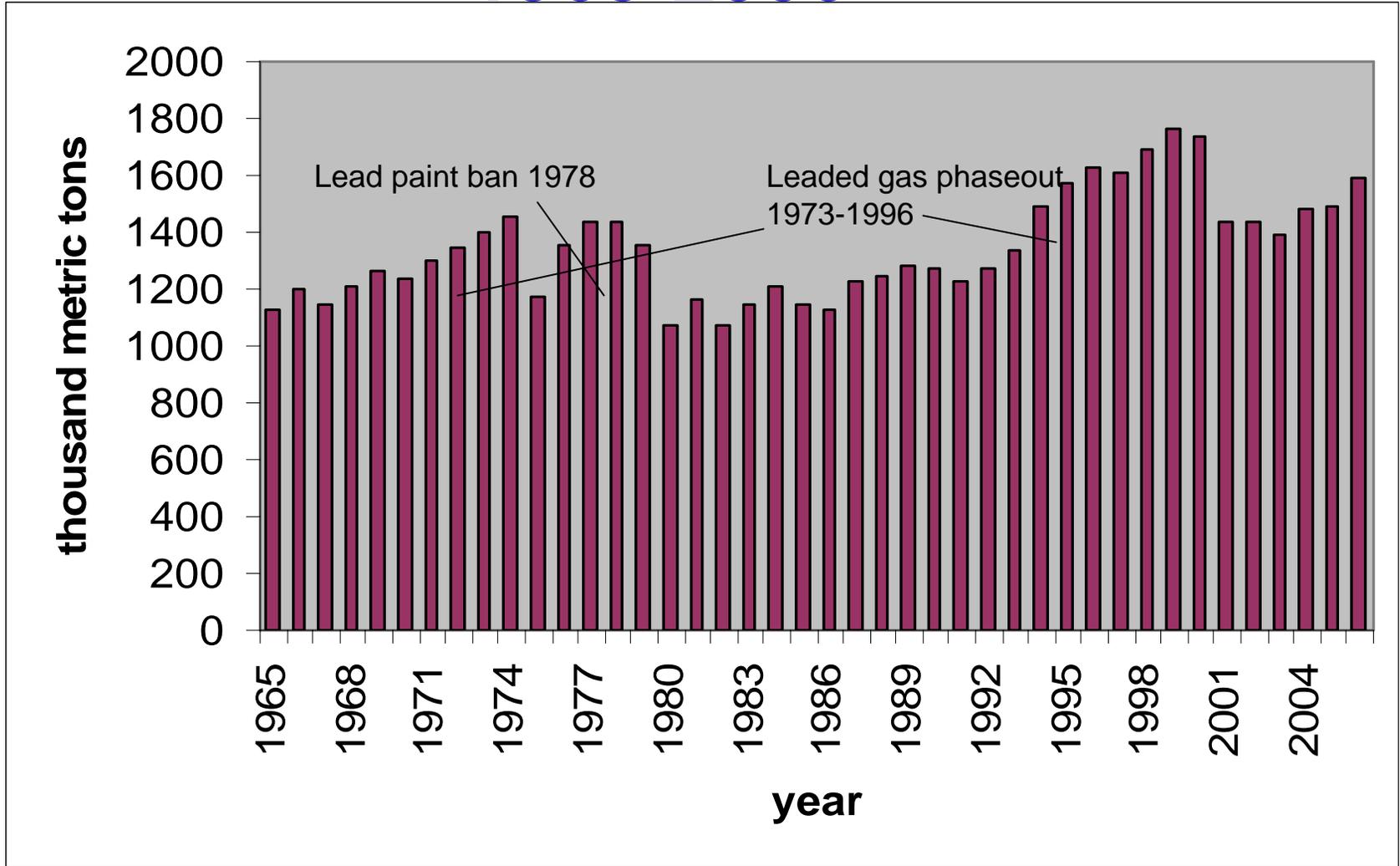
- The health effects of lead are well-studied
- Studies in people, not animals
- As blood lead levels go up, we see two things:
  - it's more and more likely people will be harmed
  - the effects get more serious

# Health Effects in Kids

- Blood Lead Levels (BLLs)  $< 10 \mu\text{g}/\text{dL}^*$ 
  - Decreased learning ability
- BLLs 10- 25  $\mu\text{g}/\text{dL}$ 
  - Decreased learning ability
  - Behavior problems (e.g., aggression)
- BLLs  $> 60 \mu\text{g}/\text{dL}$ 
  - Kidney damage
  - Anemia

\* Measured as micrograms per deciliter ( $\mu\text{g}/\text{dL}$ )

# US Lead Consumption 1965-2006



# 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



# 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.*

**Millions** are being held that are fact about White Lead paint. The advertisement opposite here is the first in a series now appearing in national magazines.

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

*Agood 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 warrent--is one of the dozens of things that a real painter knows how to do.*

*You're money ahead when you paint with*  
**White Lead**

# Sources of Lead

## • Consumer Products

- Batteries – 88% of all lead use is engine batteries
- Paint – (imported toys, artistic paints)
- Alloys (solder, etc.)
- Vinyl – (garden hoses, bibs, lunchboxes)
- Weights (wheel, fishing, diving, therapeutic uses)
- Equipment (electronics and computers)
- Specialty glasses
- Leaded fuels (Aviation fuel for small aircraft)
- Food and nutritional supplements (imported candies)
- Cosmetics and personal care (Grecian Formula 16)
- Decorative items (jewelry)
- Recreation (fishing weights, ammunition, lead shot pellets)



# Sources of Lead

- **Occupational sources of lead exposure**
  - Battery manufacture
  - Specialty glass manufacture
  - Remodeling older homes
  - Bridge sandblasting and painting
  - Gun ranges



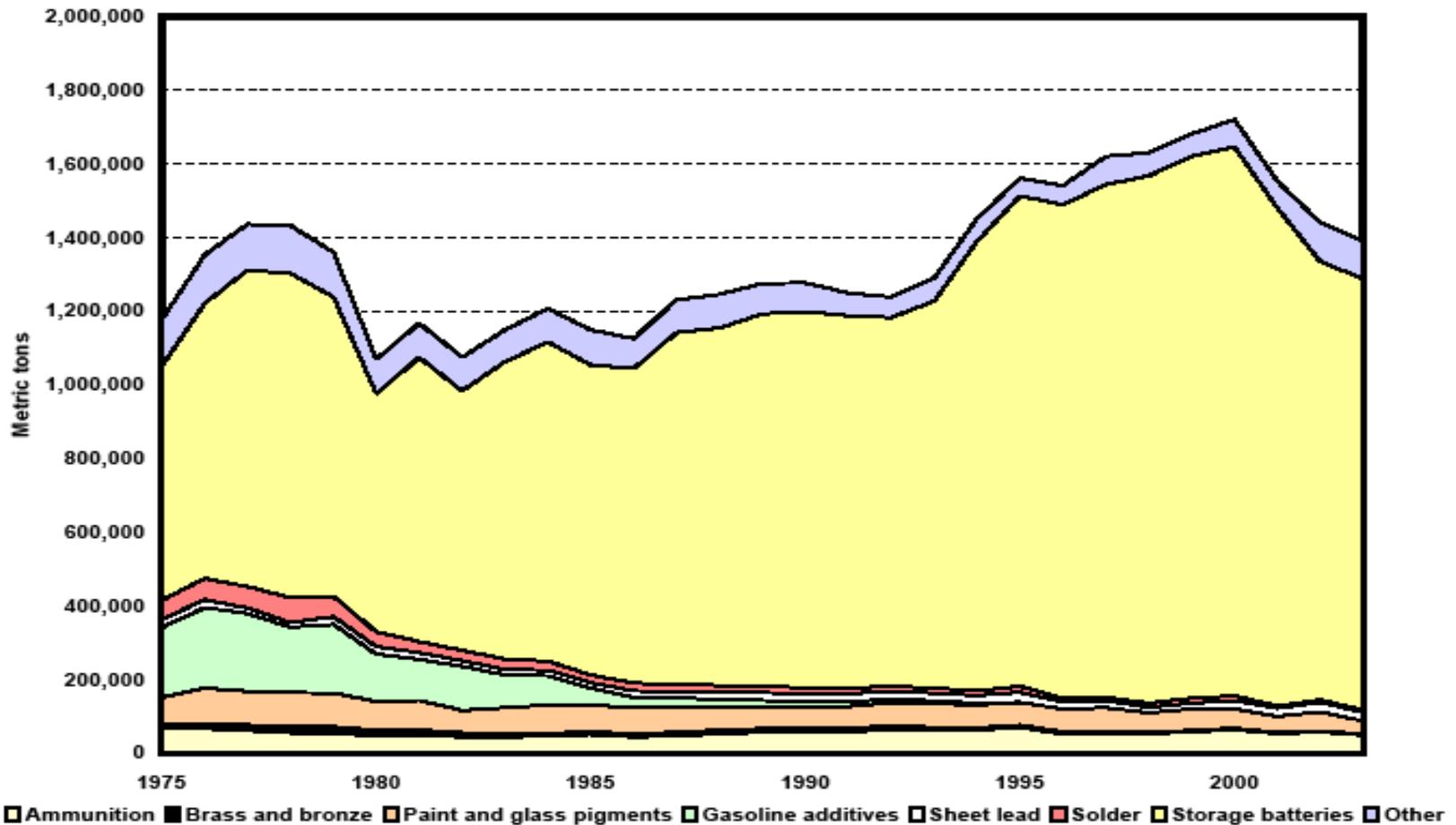
# Sources of Lead

## 2005 WA Toxics Release Inventory (lbs)

Industry	Air	Water	Land Onsite	Landfill	Recycling
Mines	678	286	4432980	7	0
Hanford	4	0	1609784	19549	34000
Metals	1493	0	1	14569	587635
Military bases	804	589	144900	15217	0
Electric, gas, and refuse	70	1	67400	49022	6
Pulp and paper mills	3349*	2022	1690	85953	211
Measuring, analyzing and control instruments	0	0	0	13957	20458
Electronic (non-computer)- includes batteries	19	0	0	651	33395
Concrete and glass products	660	3	4794	3860	542
Misc. manufacture- includes specialty glass	58	0	0	2057	0
Petroleum refining	431	73	85	224	112
Other	294	5	0	2638	20499

\* Erroneous data being corrected

# End Uses of Lead



USGS Data Series 140  
September 1, 2005

MRW County Coordinators  
Meeting - Sept. 26&27, 2007

# Range of Possible CAP Recommendations

- Alternatives
- Best management practices
- Labels
- Product bans
- Education
- Biomonitoring
- Update standards
- Abatement

**Recommendations are not limited to Ecology or DOH**

# For Additional Information

## Ecology Lead CAP Web Page:

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

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