

Virtual Mercury Elimination

Patrick Wooliever
Tetra Tech EM Inc.



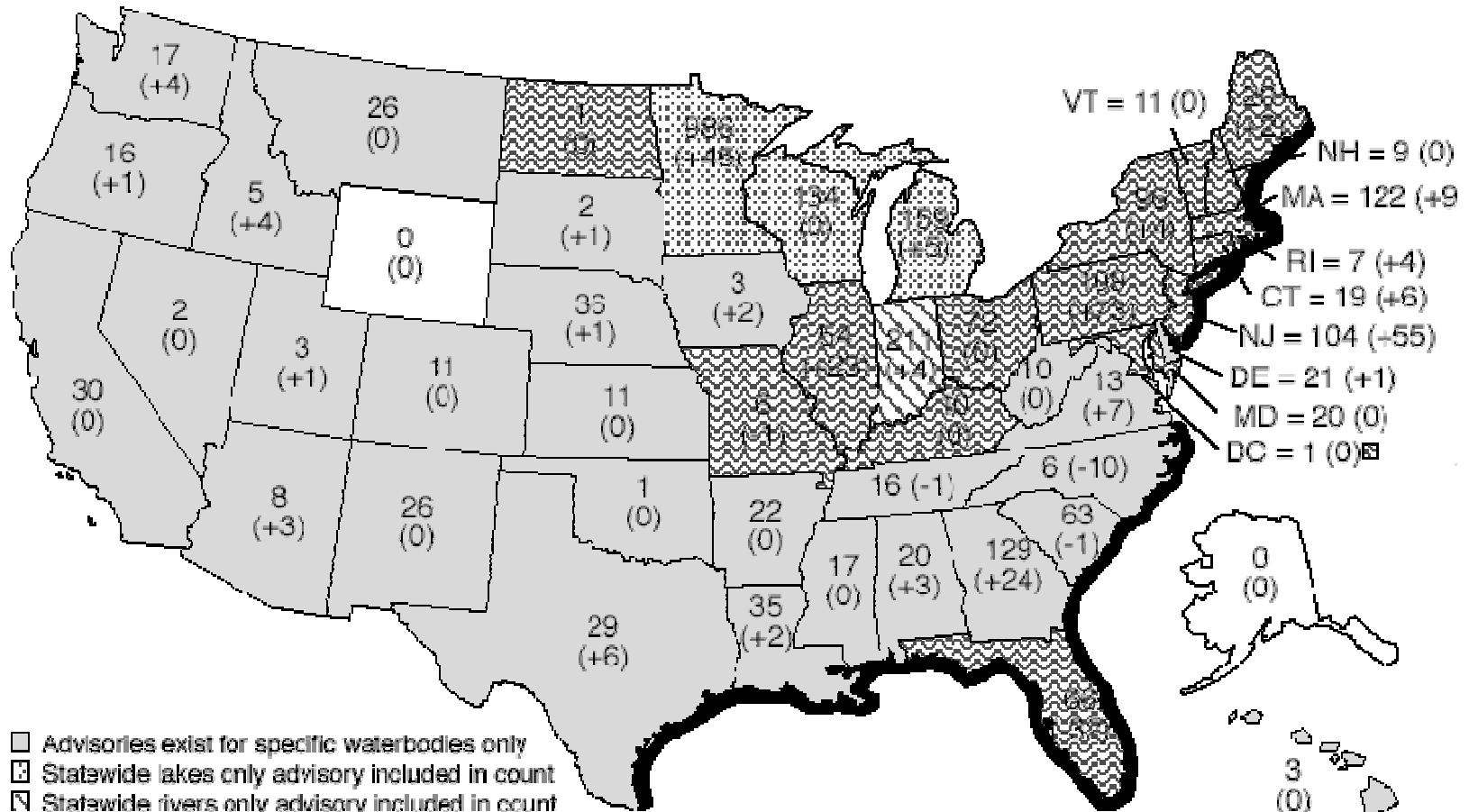
Take Home Message

1. Raise the alarm.
2. Most facilities have taken some formal first steps - the next step is to document and sustain these efforts.
3. Cost justification - focus on cost avoidance.
4. 80/20 rule applies: Tools for prioritizing and tracking Hg elimination to focus effort/resources.



2002 Total Number of Fish Consumption Advisories

(Change from 2001)



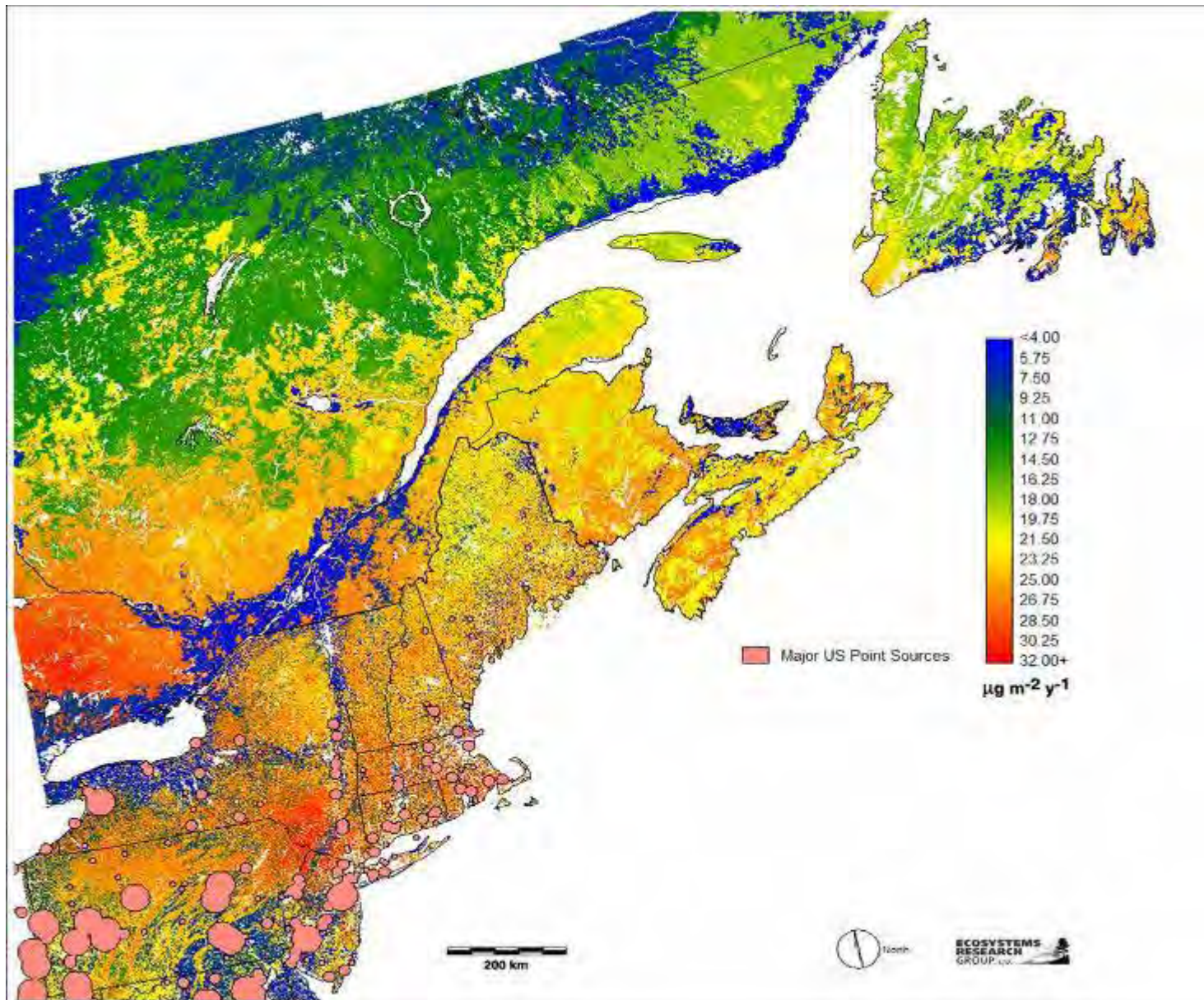
- Advisories exist for specific waterbodies only
- Statewide lakes only advisory included in count
- Statewide rivers only advisory included in count
- Statewide rivers and lakes advisory included in count
- Statewide coastal advisory included in count
- No advisories for chemical contaminants

AS = 1 (0) VI = 0 (0)
 GU = 0 (0) PR = 0 (0)

2001 Total = 2,618
 2002 Total = 2,800



Mercury Deposition



Miller et al. 2005. *Ecotoxicology*.



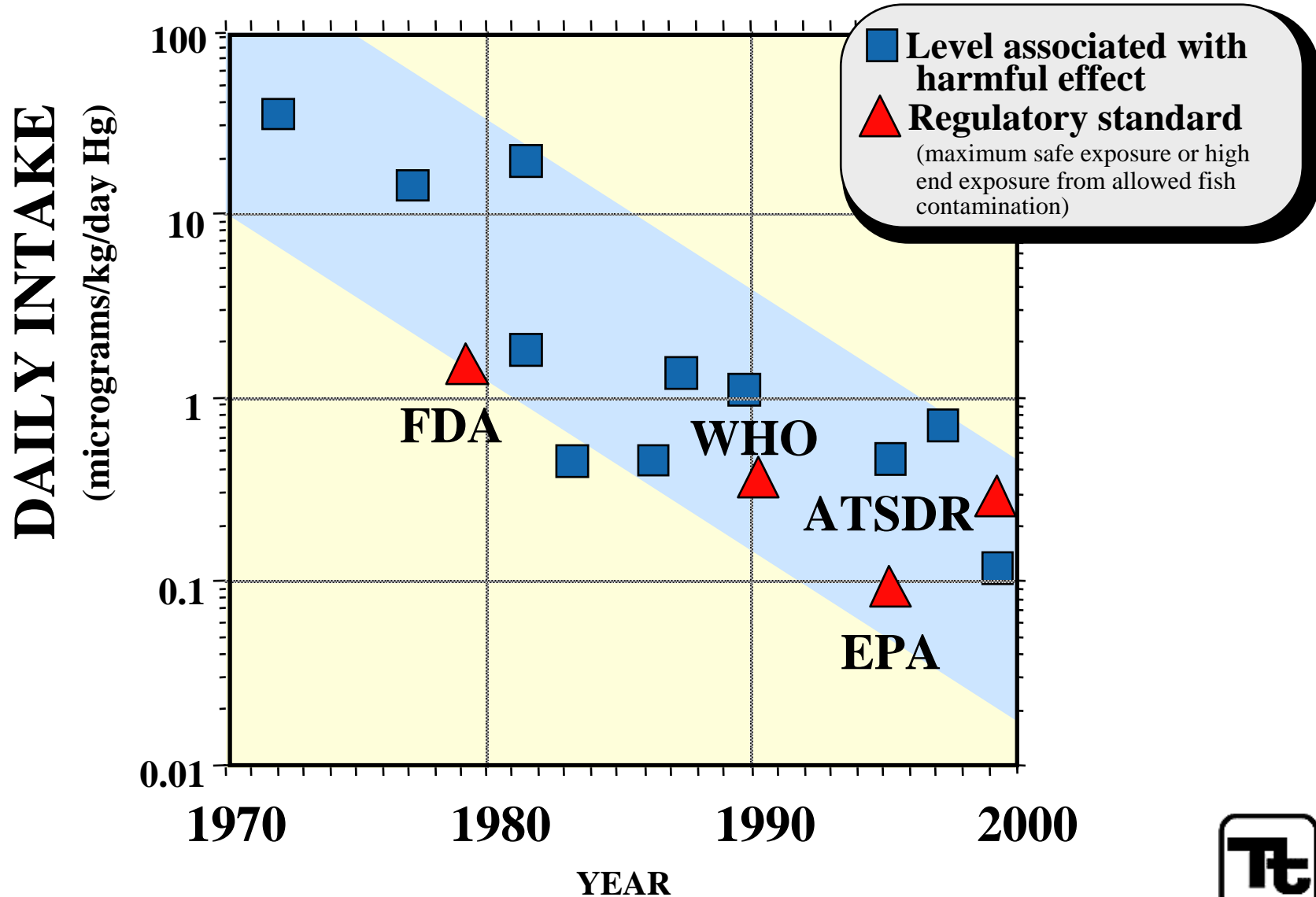
Connecting Mercury to Hospitals

- **Mercury is a known and ubiquitous hazard**

- CDC - 1 in 12 women of childbearing age risk giving birth to infants with neurological disorders due to mercury exposure in-utero.
- Children and pregnant women limited to one 6-ounce can of tuna/week
- Nat'l Academy of Science – 60,000 children may be born in the U.S. with neurological problems due to their mother eating mercury-containing fish



Declining Threshold of Harm



Why Focus on Hospitals?

Hospitals - concentrated sources and relatively few in number



Other sources:

- **Dental** – many offices/facilities with wide range of practices
- **Residential sources** - more numerous and diverse
- **Atmospheric Mercury Contributions:**
Power Generation, Boilers, Incinerators



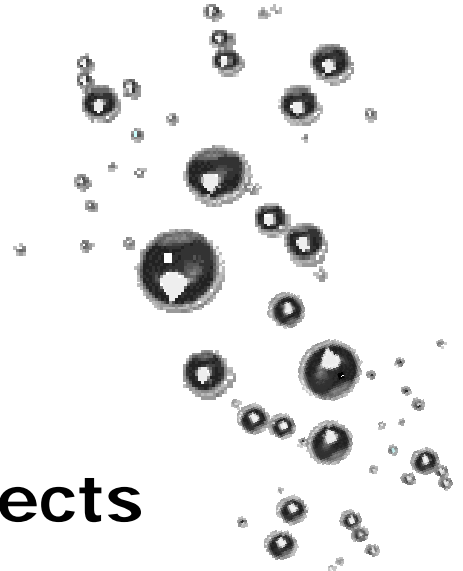
Mercury in Hospitals

- **Proactive, preventative means have proven effective**
- **Mercury-Free alternatives exist**
 - **Thermometers**
 - **Sphygmomanometers (sphygs)**
 - **Gastrointestinal tubes (GI Tubes)**
 - **Staining solutions and laboratory reagents**
 - **Fluorescent lamps**



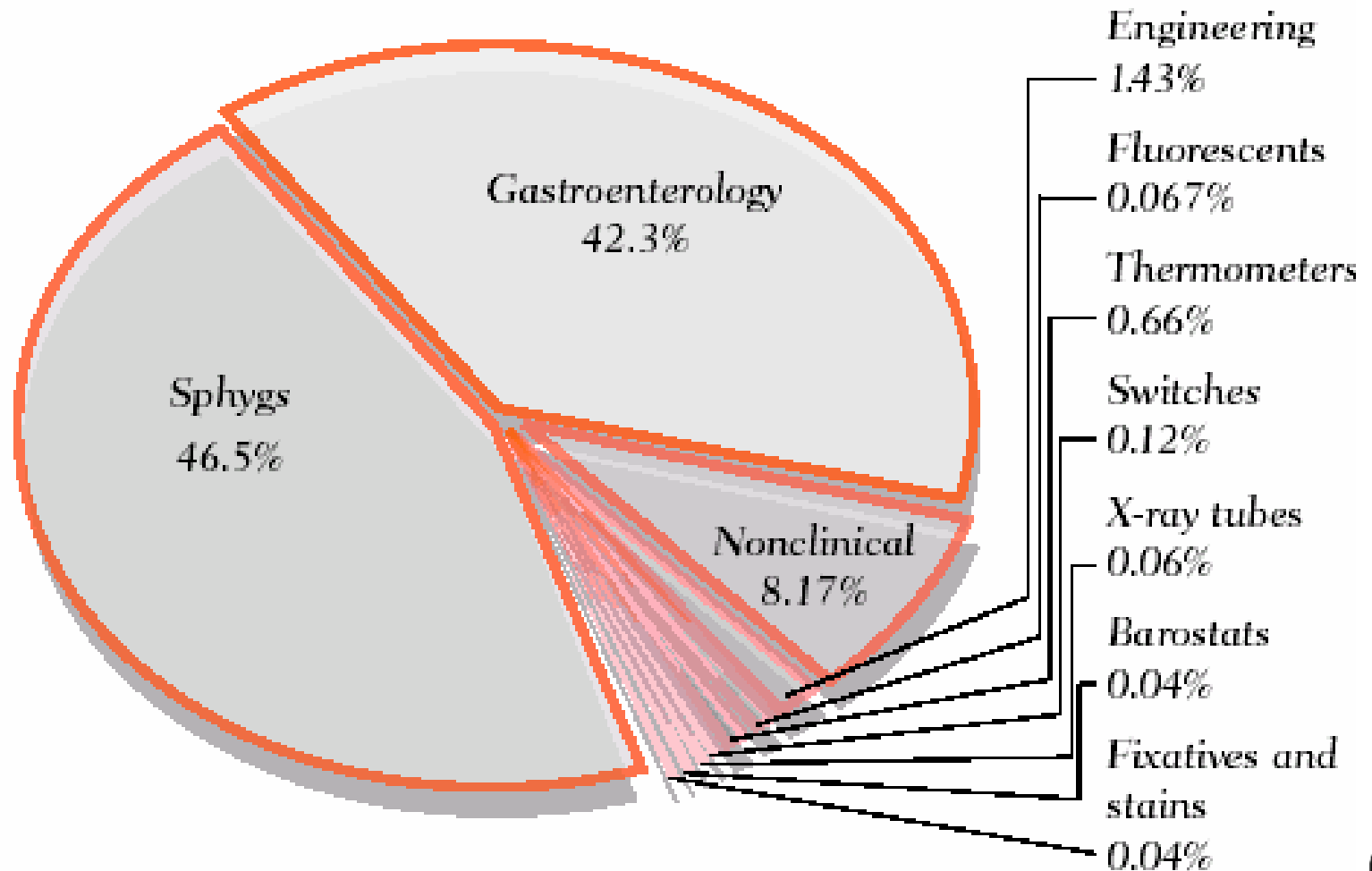
Step-by-Step Prescription

- Step 1. Know where it is**
- Medical Devices
 - Building Sources
 - Reagents/Chemicals
- Step 2. Conduct an inventory**
- Step 3. Prioritize removal projects**
- Step 4. Document the location of remaining devices**
- Step 5. Work with GPOs to prohibit new Hg purchases**
- Step 6. Share and reward success!**



Step 1. Know Where the Mercury Is

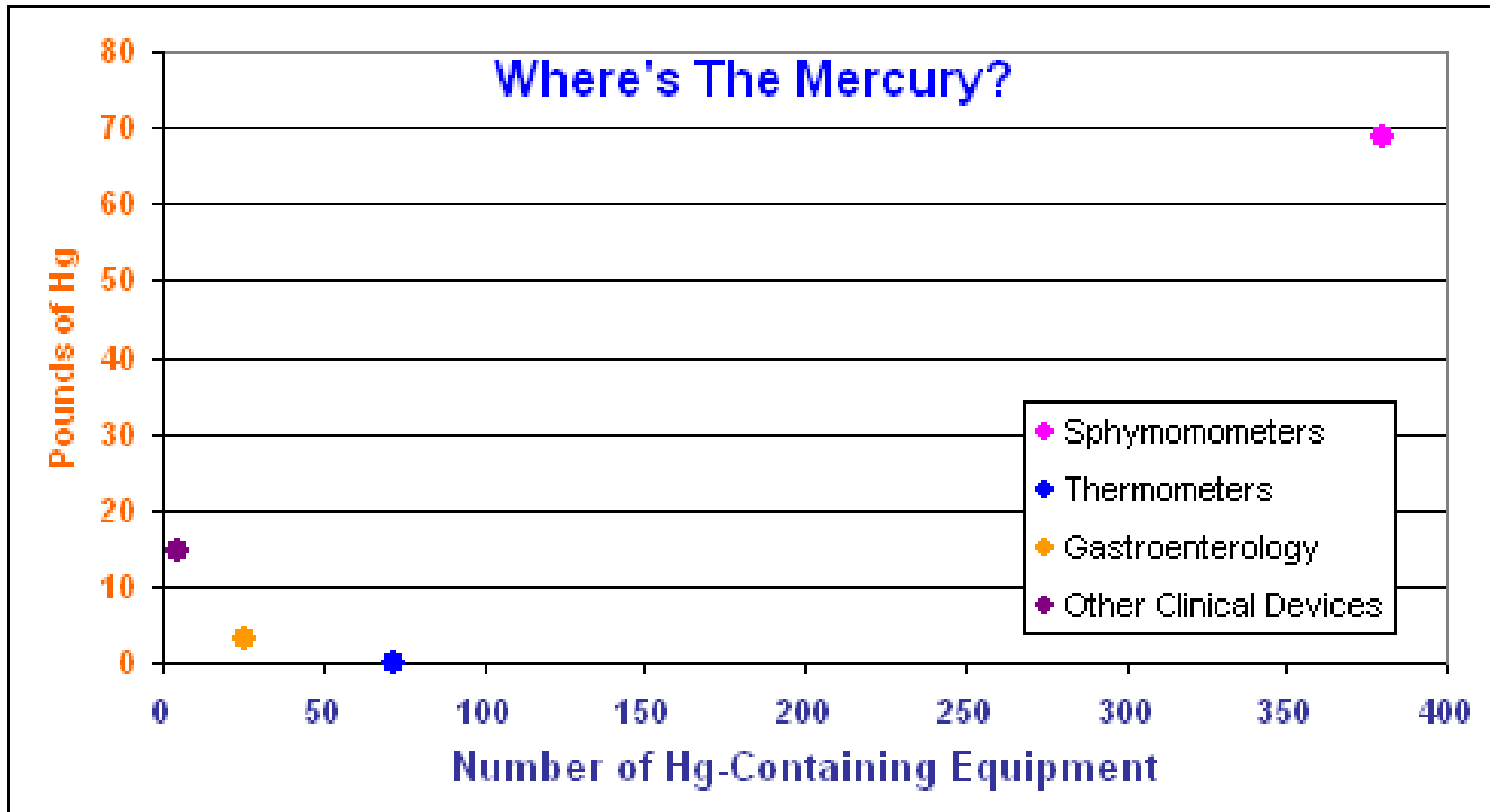
(2001-2 Data from 7 California Hospitals)



See resources for more lists



Prioritizing Your Search



Mercury in Health Care Organizations

The Obvious

- ~~Thermometers~~
- Sphygms
- Cantor, Miller-Abbott tubes
- Esophageal bougies
- Laboratory chemicals
- Thermostats
- Fluorescent lamps
- Batteries
- Dental amalgams

The Not So Obvious

- Caustic soda
- Laundry chemicals-bleach
- Antibacterial soaps
- Boiler & air conditioning chemicals
- Reagents
- Plastics

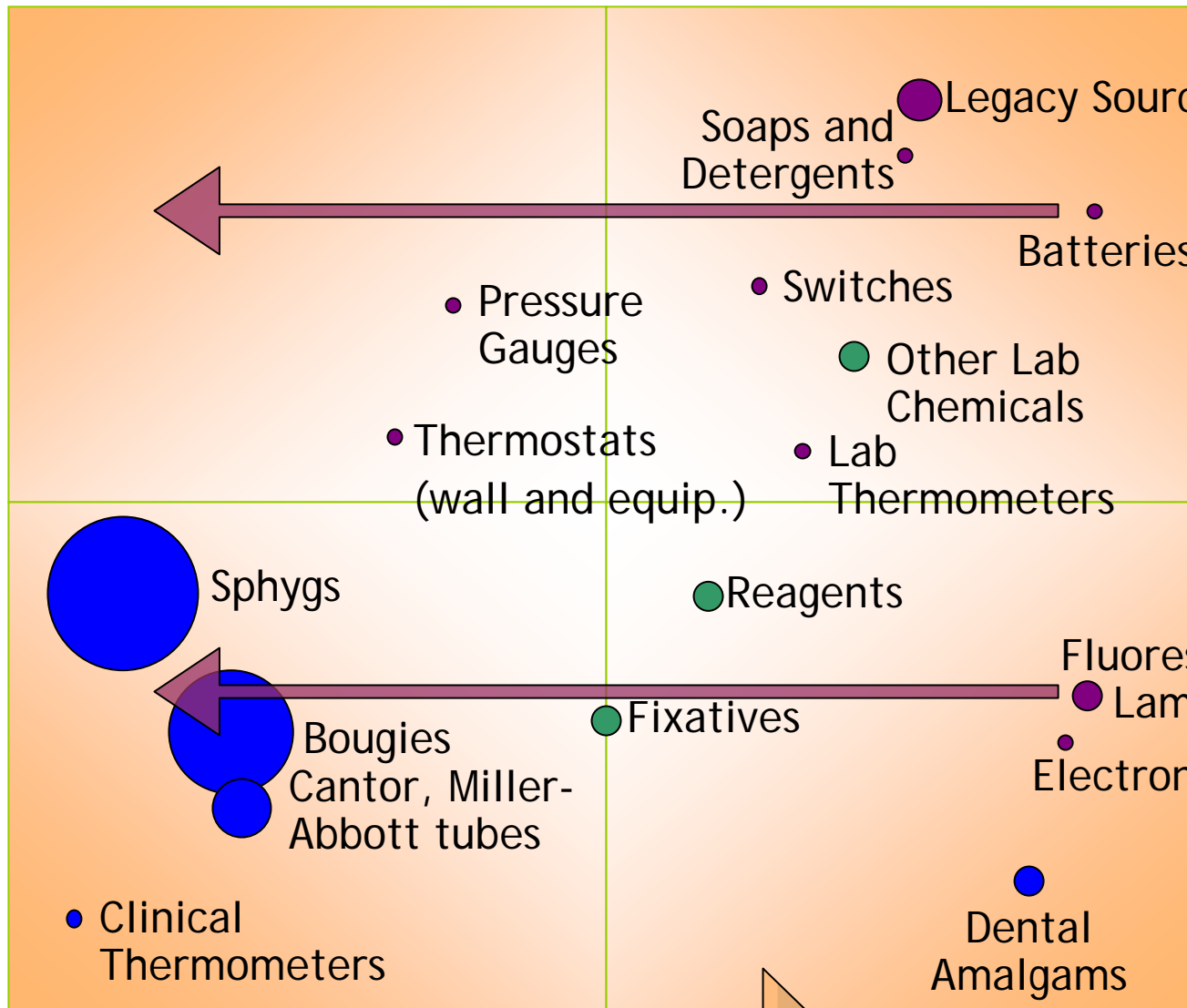
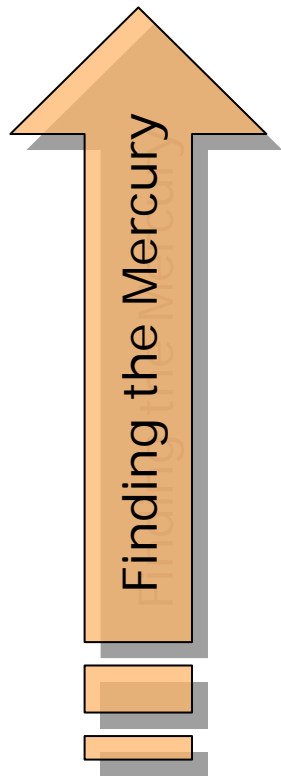


● Clinical

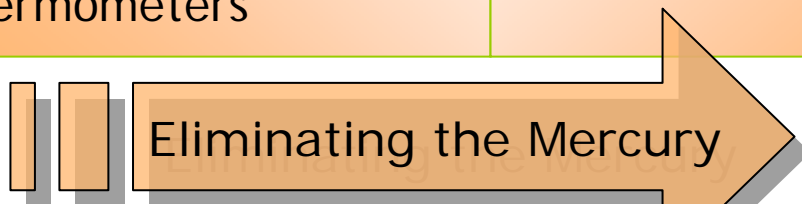
● Facility

● Laboratory

Difficult



Easy



Difficult

Step 2. Conduct an Hg Inventory

- Locate and catalog each source of mercury in the facility
- Unforeseen sources often discovered
- Include sampling of plumbing: p-traps and sumps
- Use the mercury assessment “tool kit” Excel spreadsheet available at:
www.ciwmb.ca.gov/WPIE/HealthCare/Mercury.htm



	A	B	C	D	E
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Mercury Assessment WorkSheet, Page 1

Facility name:

Survey Date:

	Source Class	Hg Item	Approximate Weight Per Unit (gm unless noted)	Location 1	Location 2
7	Gastroenterology				
8		Bougies (set)	5,700		
9		Blakemore tube	20		
10	Sphygmometry				
11		Trimline sphygmomanometers	70		
12		Baum or Baxter sphyg.	83		
13		Empire sphygmomanometer	90		
14	Non-Clinical				
15	Sphyg.repair kit	Bulk Hg, Lb. (30 ml* bottle)	454		
16		Bulk Hg, ml.	13.6		
17		Bulk Hg, fl.oz.	394.4		

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	A	B	C	D	E	F	G	H	I	J	K	L
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MERCURY INVENTORY - CLINICAL SOURCES

Part 1: Facility Information

Facility Type:	<input type="text" value="0"/>	Date Completed:	<input type="text" value="00-Jan-00"/>
Facility Name:	<input type="text" value="0"/>	Inventory Prepared By:	<input type="text" value="0"/>
Department:	<input type="text" value="0"/>	Phone:	<input type="text" value="0"/>
Location (Building, Room):	<input type="text" value="0"/>	Email:	<input type="text" value="0"/>

Part 2a: Clinical Sources of Mercury: Sphygmomanometers

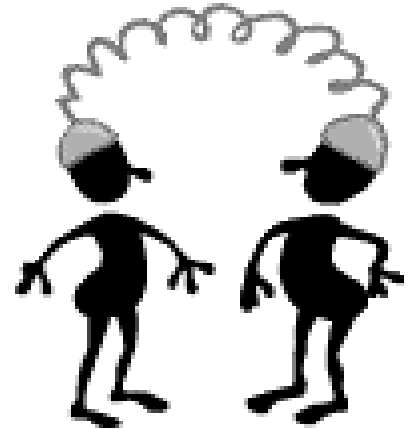
Check here if you have mercury containing sphygmomanometers. If yes, please indicate the number of each sphygmomanometer below.

Trimline Sphygs:	<input type="text" value=""/>	Estimated Mercury (grams):	<input type="text" value="0"/>
Baum or Baxter Sphygs:	<input type="text" value=""/>	Estimated Mercury (grams):	<input type="text" value="0"/>
Empire Sphygs:	<input type="text" value=""/>	Estimated Mercury (grams):	<input type="text" value="0"/>
Other Sphygs:	<input type="text" value=""/>	Estimated Mercury (grams):	<input type="text" value="0"/>
Sphyg Repair Kits:	<input type="text" value=""/>		
Bulk Hg - Total Pounds:	<input type="text" value=""/>	Estimated Mercury (grams):	<input type="text" value="0"/>

Step 3. Prioritize Removal Projects

- **Include impacted staff and stakeholders:**

- Purchasing (to prevent reintroduction)
- Engineering
- Maintenance
- Physicians and Nurses
- Regulators (POTW, CUPA)



- **Consider capital resources**

- **Weigh exposure pathways and likelihood**

- ❖ Wastewater
- ❖ Air
- ❖ Workers/Patients
- ❖ Solid/Haz/Medical Waste

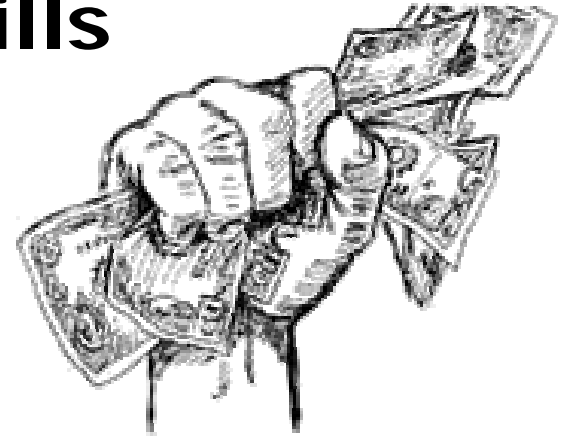
- **Prepare a “Mercury Punch List”**



Focus On Cost Avoidance

- **Collect data on past spills**

- ❖ Cleanup cost
- ❖ Lost work
- ❖ Worker health impacts
- ❖ Potential liability
- ❖ Patient room downtime



- **Review current practices for maintenance and accuracy**

- **Turn the question around –
How many spills can we afford?**

Spill Costs: Preparation & Cleanup

- **Preparation: \$650**
 - Spill kit
 - Training (trainer + 3 staff)
- **Cleanup:**
 - Spill kit
 - Labor
 - Disposal
- **Thermometer Spill: \$860 – \$1,655**
- **Sphyg Spill: \$990 - \$1,785**



UCLA Spill Data

- **1997 – 1999 Spills**
 - **Therms: 55% (3.4 spills/100 beds)**
 - **Sphygs: 17%**
 - **Sink Traps: 13%**
 - **Other: 15%**
- **Hg: 42% of Hazmat responses**
- **\$10K/year**
- **Sphyg Spill: \$990 - \$1,785**



Focus: Sphygms

- Contain 70-90 grams
- Often the largest source and located in heavily-used areas
- Often thought of as the “gold standard, but 2000 study examined 444 sphygms and found:
 - 55% showed zero level between 10 and 20 mm Hg
 - 38% had dirty columns obscuring readings
 - 20% of columns were not vertical



Mercury-Free Sphygms

■ Aneroid Sphygm:

- ✓ Cost -- \$150 (wall unit) to \$275 (mobile unit)
- ✓ Same calibration schedule – 1/6 months
- ✓ +/- 3mm Hg accuracy conforms to AAMI standard

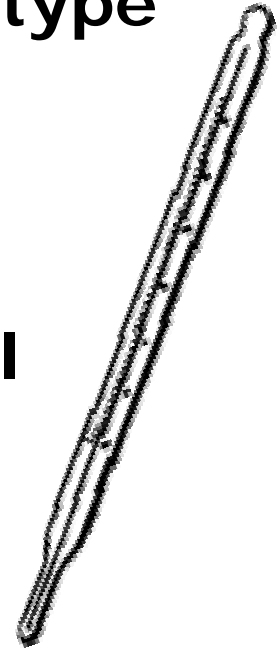
■ Vital Signs Monitor:

- ✓ Cost varies - \$1,250 to \$3,000
- ✓ Measures multiple parameters



Focus: Thermometers

- Fever type contain 0.5 gram (lab type contain 2-10 grams)
- Manufacture and sale of mercury thermometers **banned in CA**
- Not a large component of hospital mercury, but...
 - Widely used
 - More frequently mishandled
 - Readily available alternatives (see EPA Region 9 mercury factsheet)
- **Hardest replacement areas:**
Neonate/NICU, isolation rooms



Mercury-Free Thermometers

- **Liquid-In-Glass**
- **Digital and Tympanic Models**
 - ✓ Purchase: Digital -- \$186,
Tympanic -- \$296
 - ✓ Probe Covers: \$30 for 500
 - ✓ Batteries: \$5 every 5,000 uses
- **Dot Matrix**
 - ✓ Good for disposable use
 - ✓ < \$10 for 100



Focus: Lab Reagents

- **B-5 Fixatives – use products with zinc chloride instead of mercuric chloride**
- **Secondary antibodies bound to HRP – ELISA and Western Blot Kits not using alkaline phosphate**
- **Reagents with potassium (KCl, KOH) generally contain ppb ranges of Hg**
- **Equipment used with mercury-containing solutions**
 - ❖ baskets
 - ❖ metal fittings on tubing
 - ❖ reagent containers
 - ❖ metal sinks
 - ❖ electrophoresis chambers



Thimerosal Synonyms/Trade Names

(Compiled by Melissa McCullough, Dana Farber Cancer Institute)

Aeroaid
Curativ
Ethyl (2-mercaptobenzoato-S) mercury sodium salt
[(o-carboxyphenyl)thio] Ethylmercury sodium salt
o-(Ethylmercurithio)benzoic acid sodium salt
Elcide 75
Elicide
Estivin
Ethylmercurithiosalicylic acid, sodium salt
Ethylmercurithiosalicylate sodium
Ethylmercurithiosalicylate sodium salt
Mercurothiolate
Mercurate(1-), {ethyl[o-mercaptobenzoato(2-)]-,}
sodium
Mercurate(1-), {ethyl[2-mercaptobenzoato(2-)-
O,S]-,} sodium
Mercurochrome®
Mercural
Mercury, ethyl(hydrogen o-mercaptobenzoato)-,
sodium salt
Mercury, ethyl(2-mercaptobenzoato-S)- sodium salt
Mercury {[(ocarboxyphenyl)thio]ethyl}-sodium salt
Merphol
Merseptyl (VAN)
Merthiolate®Merthiolate salt
Merthiolate sodium
Merzonin sodium
Merzonin, sodium salt

Nosemack
Sodium ethylmercurithiosalicylate
Mercurothiolate
Mertorgan
Merfamin
Septicol
SET
Sodium ethylmercuric thiosalicylate
Sodium ethylmercurithiosalicylate
Sodium merthiolate
Sodium o-(ethylmercurithio)benzoate
Sodium salt of 2-
(carboxyphenyl)thioethylmercury
Sodium 2-(ethylmercurithio)benzoate
Thimerosal
Thimerosal solution
Thimerosalate
Thimerosol
Thimerosol solution
Thimersalate
Thiomerosal
Thiomersalat
Thiomersalate
Thiomersalate
Thiomersal
Thiomersalan
Vitasepto



Certificate of Analysis



- MSDSs do not typically list components less than 1% (preservatives)
- Many resources for identifying low-level mercury lab chemicals
- Request a certificate of analysis from suppliers (see handout)



Focus: Batteries

- **Mercuric Oxide (mercury zinc):**
 - ❖ 10-year shelf life; may remain in hospital stock in older equipment:
 - cardiac monitors
 - pH meters
 - oxygen analyzers and monitors
 - telemetry instruments
- **Button Batteries**
 - Replace with zinc air button battery (may contain up to 25 mg Hg)
 - FDA and Underwriter's Laboratory certification: Contact equipment manufacturer to ensure that alternative batteries are OK



GRAINGER

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Catalog No. 395 Index (PDF)



Order Form

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Item Details

[Back](#)[Cleaning & Painting](#) > [Receptacles and Containers](#) > [Recycling Kits](#)

Battery Recycling Kit

Battery Recycling Kit, Length 15 Inches, Width 12 Inches, For Use With Miscellaneous Sized Batteries That Contain Toxic Materials, UN Approval Number UN1H2/Y1 5/30/99, 5 Gallons Mixed Bucket, 50 Pound Maximum, Includes Container, Preprinted Address Labels, Waste Pickup, Transportation, Recycling, And Certificate Of Reclamation

Grainger Item: 5KH65

Price (ea) : \$102.05

Manufacturer: ONYX

SPECIAL
SERVICES

Mtg. Model#: 531

Ship Qty : 1

Sell Qty (Will-Call) : 1

Usually Ships : Today

Catalog 395 Page: 637

Qty. [Add to Personal List](#)[Add to Order](#)Price shown may not reflect your price. [Log-in](#) above, or [click here to register](#).

NOTES & RESTRICTIONS

This item has been restricted from sale in the following state
ME
See Catalog 395 Page [637](#) for application and/or safety information.



TECHNICAL SPECIFICATIONS

Item	Recycling Container
Length (In)	15
Width (In)	12
For Use With	Miscellaneous sized batteries that contain toxic materials
UN Approval No.	UN1H2/Y1 5/30/99

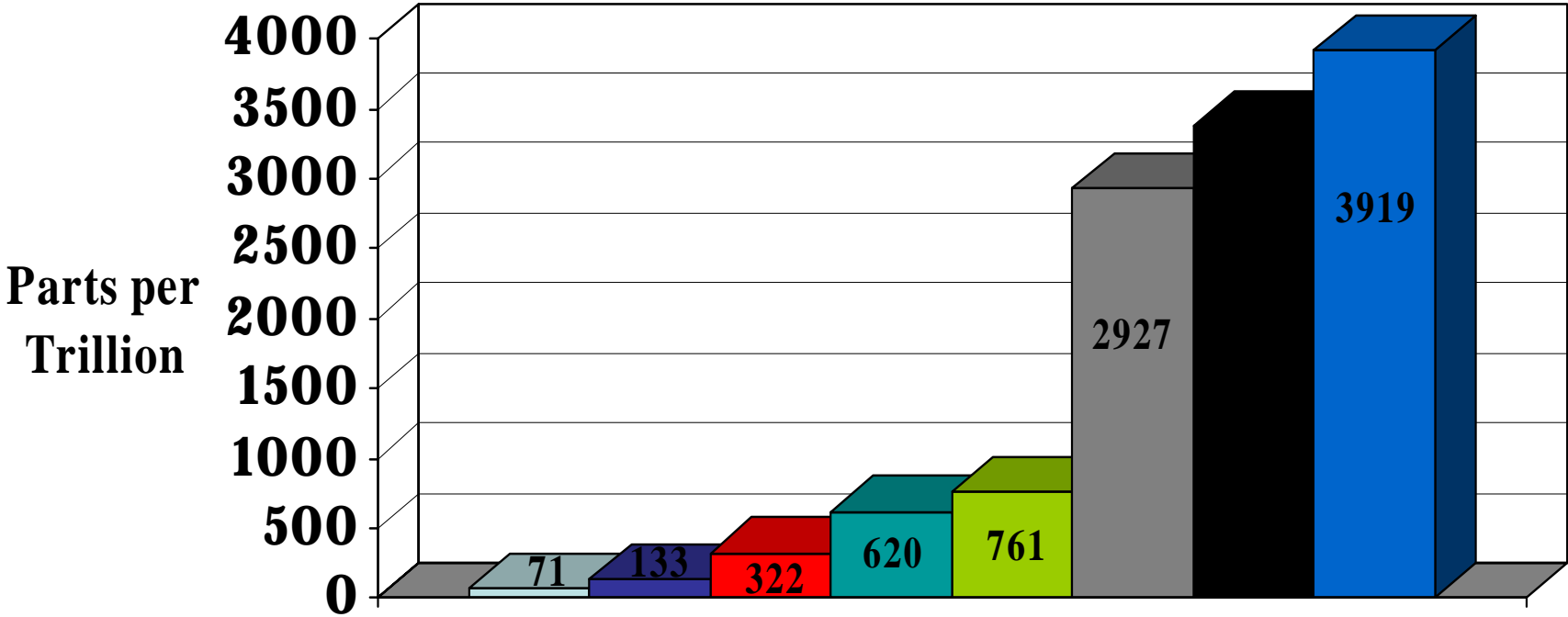
Focus - Plumbing

- Piping of older hospitals may contain “legacy” mercury from old practices
- Laboratory rinsing of mercury-containing reagents
- Disposal of old, surplus pharmaceuticals
- Mercury spill cleanup using the sink drain



Sacramento Area Hospitals

Mercury Concentrations in Area Hospitals



Recent Plumbing Sampling

- 3 sumps from Sacramento hospitals (~80 years old)
 - Sump 1 320 and 380 ppm
 - Sump 2 4.0 and 4.4 ppm
 - Sump 3 0.17 and 0.087 ppm
- Residue from 24 p-traps in older sections of the hospital had 0.240 and 3.200 ppm.
- Older hospitals/buildings = typically more mercury



Focus - Hg-Free Pharmaceuticals

Pharmaceuticals can also be a source of mercury to wastewater:

(www.premierinc.com/all/safety/resources/mercury/downloads/HG_drug_list_08-23-02.xls)

- Premier's list is historical – listed products at some time in the product's history contained a mercury compound...
...therefore current products formulations may or may not contain mercury compound.
- Older formulations may still be in distribution and therefore no deletions have been made unless the product has been discontinued.



Step 4. Keep Track of What Remains

- Label and locate remaining mercury-containing devices, equipment, etc.
- Review list during:
 - remodel/construction
 - routine maintenance
 - repair

**WARNING:
MERCURY
HAZARD**



Step 5. Working with GPOs

- **Most GPOs recognize healthcare's initiative to avoid Hg-containing products**
 - In 2002, many of the top GPOs announced plans to enhance labeling, contracting, and customer education¹
 - Premier and Consorta have EPP (including Hg) information readily available on their website
 - Novation has incorporated Hg, DEHP, and other environmental considerations into its decision criteria award matrix

¹ "Top GPOs Embrace Effort to Reduce Environmental Impact of Healthcare," October 31, 2002,
<http://www.noharm.org/details.cfm?type=document&id=692>





Resource Management Center

Company ▾ Contracting ▾ Members ▾ Suppliers ▾ Resource Management ▾ Help

enter search term here...



Consorta's EPP Program Environmentally Preferable Purchasing



Our shared values demand that we conduct business in a socially responsible and ethical manner that protects the safety of its employees and patients and employees, as well as the environment. In support of this commitment, Consorta has implemented a comprehensive program for environmentally responsible purchasing. This program will identify environmentally preferred purchasing alternatives and evaluate the quality, functionality and price of alternative products. The initiative will focus on communication and education in specific areas of environmental concern.

Consorta is contracting for environmentally safe products that:

- Do not contribute to other health issues.
- Are manufactured by companies that are committed to reducing the manufacturing waste stream.
- Combine environmentally friendly features with economy.
- Are of high quality.
- Offer the same or better functionality than current products.
- Are readily and reliably available at reasonable prices.

Components of Consorta's EPP Program

Collaborating with the Catholic Health Association, the American Hospital Association, Hospitals for a Healthy Environment, Health Care Without Harm, and other organizations to advance shareholders' environmental concerns.

healthcare environmental issues

- Latex
- Mercury
- DEHP-PVC
- Waste Minimization
- Incineration
- Pesticides
- Pollution Prevention

web resources

- The Sustainable Hospitals Project
- Hospitals for a Healthy Environment
- Health Care Without Harm
- Waste Reduction Activities for Hospitals
- National Institutes of Health
- MASCO Mercury Work Group

- ### Resource Management
- Resource Management Home
 - Consorta Education Network (CEN)
 - Bariatric Clinical Services Briefing
 - The Edge from SG-2, LLC
 - Zynx Health Incorporated
 - Clinical Resource Management
 - Contract Development/Support
 - Environmentally Preferable Purchasing
 - Consorta Clinical Pharmacy





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Tue, Jun 17, 2004

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Customer Service Central

WINGS™ Registration

Resource Management

Technology Assessment:
HA YFS Inc. Online

WINGS - Online Reports

WINGS Connection Newsletter

Status:

WINGS = login to activate



Mercury-containing Equipment & Products in Medical Facilities

CATEGORY	APPLICATION	ALTERNATIVES
ANALYTICAL INSTRUMENTS (mercury chloride as reagent)	Sequential Multi-Channel Auto-analyzer (SMCA) AU 2000	Ion Selective Electrode
AUTO ANALYZERS	Autodelfia Irio Cottor Technicon H2 Hitachi Chem Array Chem IMX-1 Chem-IMX-2 Chem-654 Chem-Autodelfia Chem-SEC 6 HFMF MDA	
BAROMETERS AND MANOMETERS	Monitoring air pressure, weather conditions. Flow meters and controllers for natural gas supplies. Commercial, industrial & laboratory	Bourdon tube gauge, electronic gauges, non-mercury flow meters gauge
BATTERIES mercuric oxide silver oxide in: alkaline, zinc carbon, silver oxide, zinc air, mercury zinc batteries	Hearing aids Pacemakers Defibrillators Fetal monitors Holter monitors Pagers Picker calibers Spirometer alarms Telemetry transmitters Temperature alarms Blood analyzers	Lithium, zinc, low-mercury alkaline. Note: Mercury content in alkaline, zinc carbon, silver oxide, zinc air is being reduced or discontinued.
BLOOD GAS ANALYZER (Reference Electrode)	Radiometer (brand)	Equipment without a mercury reference electrode
CATHODE RAY OSCILLOSCOPE	Recording electrical signals over time on a fluorescent screen	



Mercury pollution prevention

In this section:	Key documents
	Resources
	Pharmaceuticals with mercury
	Comments and feedback

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- ▼ [Safety at Premier](#)
- ▼ [Safety topics A to Z](#)
- ▼ [Emergency and public health preparedness](#)
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- [Solutions and strategies for pollution prevention](#)
- [Mercury substitution](#)
- [Mercury spill prevention](#)
- [Mercury spill response](#)
- [Pharmaceuticals *containing* mercury](#)

Introduction

Mercury is a toxic metal that occurs naturally in the environment. The silvery-white inorganic form is most familiar because of its widespread use in fever thermometers. The properties of inorganic mercury

- ▼ [Premier services](#)
- ▼ [Site index](#)



Mercury pollution prevention

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 - ▼ [Pharmaceuticals *with* mercury](#)
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- ▼ [Other sites providing information on mercury free products](#)

Mercury-free pharmaceuticals and products

Pharmaceuticals containing mercury

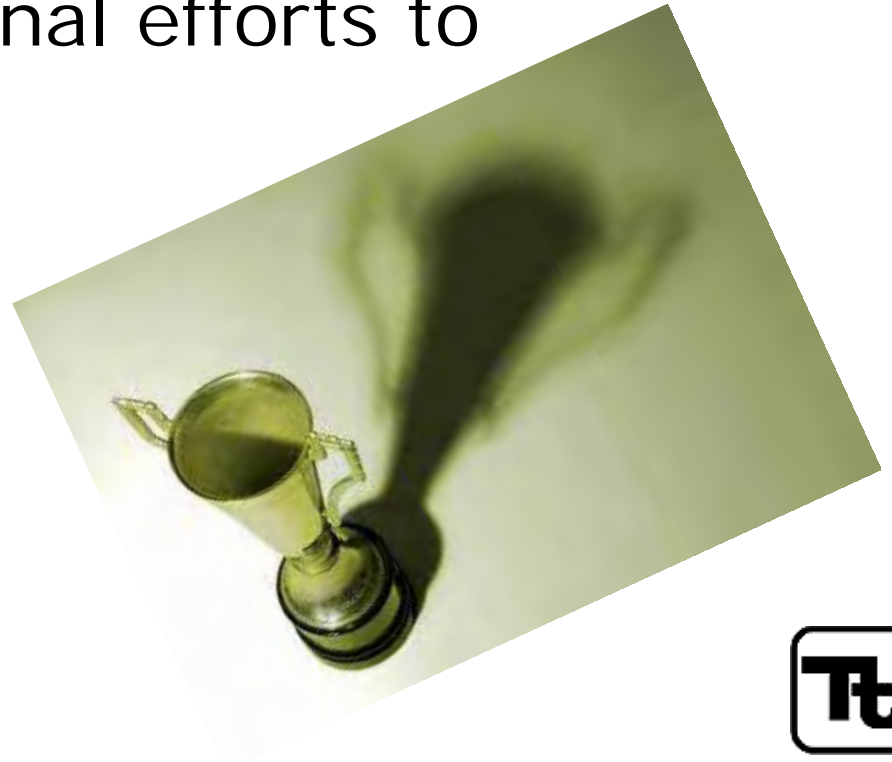
The EPA and AHA entered into a voluntary partnership, a Memorandum of Understanding (MOU), in June of 1998 with the agreement to "virtually eliminate" all mercury-containing waste from hospitals by 2005. As part of this MOU, tools and resources for mercury elimination were made available through Hospitals for a Health Environment (H2E) and are available on the organization's Web site at: <http://www.h2e-online.org>.

A1	Current National Drug Code #								
	A	B	C	D	E	F	G	H	I
	Current National Drug Code #	Old National Drug Code #	Obsolete date	First DataBank Manufacturer/Distributor	First DataBank Generic Name	First DataBank Brand Name	First DataBank Strength	First DataBank Dosage Form	Dosage Form Code
1									
2	00944293501			HYLAND LABS.	ANTIHEMOPHILIC FACTOR,HUMAN	HEMOFIL-M	850U(+/-)	VIAL	HS 1
3	00006408400			MERCK & CO.	ANTIVENIN LACTRODECTUS MACTANS	ANTIVENIN LATRODECTUS MACTANS		COMBO. PKG	ZD 1
4	00052060101	48642904101	3/16/1998	ORGANON PHARM.	BCG VACCINE	TICE BCG		AMPUL	HR 1
5	00077065604		1/1/1999	AKORN INC.	BORIC ACID	BLINX EYE WASH		IRRIG SOLN	SW 1
6	00008076901	00008068702		WYETH-AYERST	BORIC ACID	COLLYRIUM FRESH EYES		IRRIG SOLN	SW 1
7	17317008804			AMEND	CALOMEL	CALOMEL		POWDER	PA 3
8	17317008804			AMEND	CALOMEL	CALOMEL		POWDER	PA 1
9	17478028109		4/1/1997	AKORN INC.	CHLORAMPHENICOL	AK-CHLOR	0.5%	DROPS	SD 7
10	00006325032		3/20/2000	MERCK & CO.	CHLOROTHIAZIDE SODIUM	DIURIL SODIUM	500MG	VIAL	HS 1
11	11098052603	00011834109		AKORN INC.	DIMERCAPROL	BAL IN OIL		AMPULE	HH 3
12	00011834109		3/16/2000	TAYLOR PHARM	DIMERCAPROL	BAL IN OIL		AMPULE	HH 3
13	54569386800			ALLSCRIPTS	DIP,PERT,TET, HAEM. CONJ VACC	TETRAMUNE		VIAL	HV 5
14	54060340000			PHYSICIANS TC.	DIP,PERT,TCT, HAEM. CONJ VACC	TETRAMUNE		VIAL	IV 5
15	00005196031			WYETH-AYERST	DIP,PERT,TET, HAEM. CONJ VACC	TETRAMUNE 10 DOSE		VIAL	HV 5
16	54569474600			ALLSCRIPTS	DIPHTH,PERTUSS(ACELL),TET PED	TRIPEDIA		VIAL	HV 7
17	62448401201			NORTH AMER VACC	DIPHTH,PERTUSS(ACELL),TET PED	CERTIVA		VIAL	HV 7

Product Category	Business Partner	Product Name	Product Description	Contract Number
Thermometers	<i>Alaris Medical Systems</i>	Alaris 2080 Thermometer	Standard Electronic Thermometer	PP-CE-008
		Alaris Turbo Temp	Advanced electronic thermometer (reads in 5 sec)	PP-CE-008
		Alaris Core Check	Infrared tympanic (ear) thermometer	PP-CE-008
	<i>3M Health Care</i>	Temp a Dot	Available in Farenheit and Celsius; oral, axillary & rectal	PP-MS-022K
Sphygs	<i>GEMS/IT (formerly Critikon)</i>	Dinamapp BP monitor	Electronic noninvasive BP monitor	PP-CE-030A
	<i>World Health</i>	Large Face Aneroid Sphygmomanometers	Numerous models (eg; wall mounted, stand up, adult/peds cuff sizes; latex free)	PP-MS-048
		Hand Held Pocket Aneroid BP Kits	Numerous models with latex free cuffs	PP-MS-048
		Disposable Aneroid BP Kits	Numerous models (eg; thigh or arm cuffs; latex free)	PP-MS-048
	<i>World Health/Hader</i>	Hader Pump Aneroid BP	Pocket Size BP Kit	PP-MS-048
	<i>World Health/Bainbridge</i>	Bainbridge Aneroid BP	Pocket Size BP Kit	PP-MS-048
Balloon GI Dilators (non-mercury)	<i>CR Bard, Inc.</i>	Endoscopic Devices	Dilation Balloon Catheter	PP-OR-069
	<i>Boston Scientific</i>	Endoscopic Devices	Balloon Dilators	PP-OR-124
Batteries	<i>Gillette Commercial Operations North America</i>	Batteries	Range of battery types with no mercury added (eg; Zinc-Air, Voltage, Silver Oxide, Lithium, Alkaline, Flashlight, Telemetry)	PP-SS-012
	<i>Energizer Battery Company</i>	Batteries	Range of battery types with no mercury added (eg; Zinc-Air, Voltage, Silver Oxide, Lithium, Alkaline, Flashlight, Lantern)	PP-SS-013

Step 6. Share and Reward Success!

- Measure and share progress with those involved
- Pursue continual improvement
- Consider promotional efforts to
 - Employees
 - Patients
 - Community
- Apply for awards

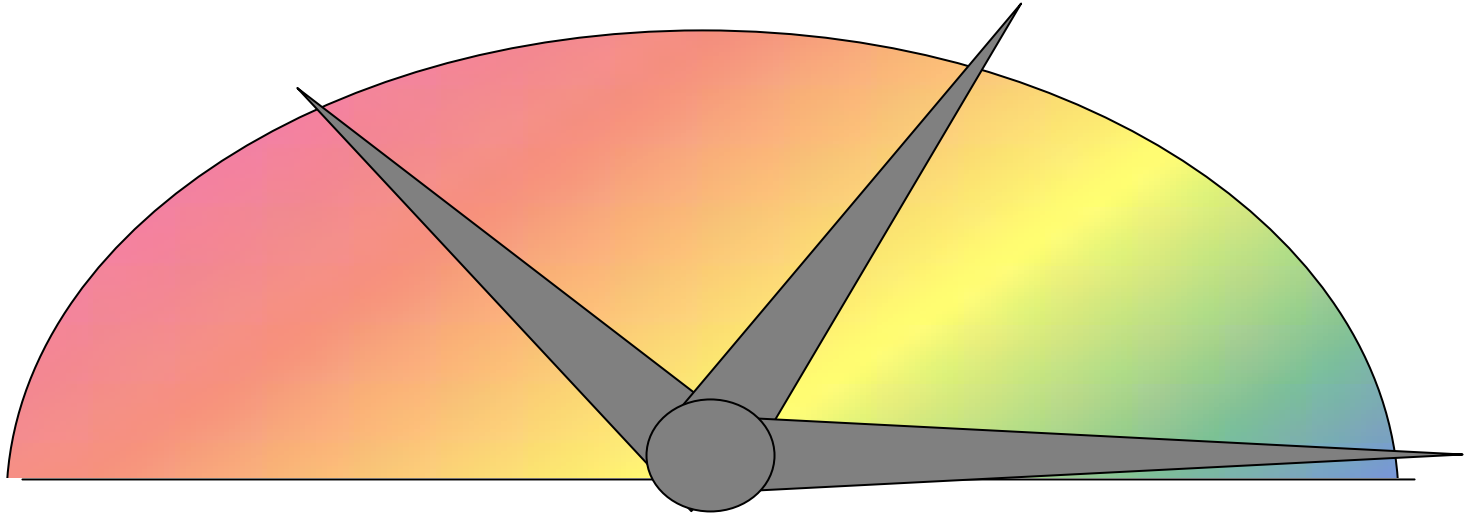


Making Medicine Mercury Free Award Facts

- You have to be an H2E partner.
- You can apply any time during the year.
- This is a one-time award.
- You don't have to be 100% mercury free to be eligible.
- H2E can walk you through the process.
- H2E will inform you in 30-60 days.

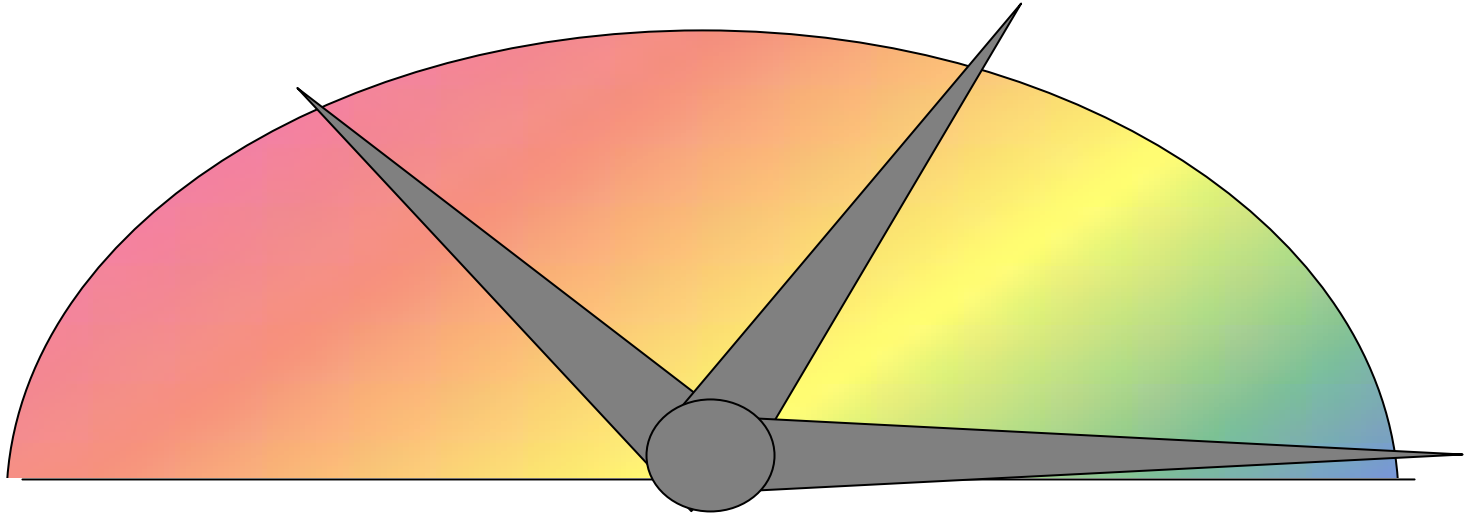


MMMF Award: Clinical



1. Replaced thermometers
2. Replaced at least 75% sphygms
3. Replaced at least 75% clinical devices

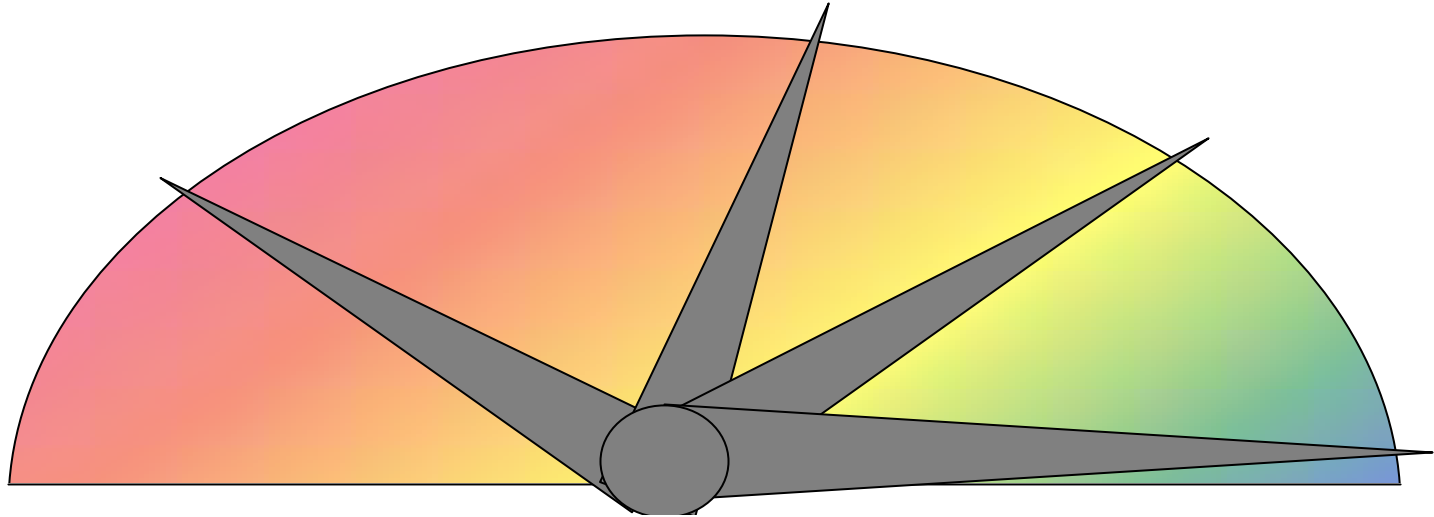
MMMF Award: Facility



1. Recycle fluorescent bulbs
2. Battery collection
3. Inventoried and labeled Hg-containing devices and plan to replace



MMMF Award: Labs



1. Replaced B5/Zenkers stains
2. Inventoried mercury-containing lab chemicals with plan to substitute.
3. Inventoried thermometers, replaced at least 75% and phase-out plan in place
4. Other chemicals - Pharmacy, dental, cleaning chemicals



Progress is being made...

- Kaiser Permanente and Catholic Healthcare West have mercury elimination plans
- Mercury-free medical facilities
 - ✓ UCLA
 - ✓ Beth Israel Deaconess Medical Center
 - ✓ California community clinics



Take Home Message

1. Raise the alarm.
2. Most facilities have taken some formal first steps - the next step is to document and sustain these efforts.
3. Cost justification - focus on cost avoidance.
4. 80/20 rule applies: Tools for prioritizing and tracking Hg elimination to focus effort/resources.



Hospital P2 Resources

CA DHS (with EPA Region 9 Factsheets):

www.ciwmb.ca.gov/WPIE/HealthCare/

Hospitals for a Healthy Environment:

www.h2e-online.org

- *Program Templates*
- *Mercury-Containing Items*
- *Mercury-Free Products*
- *Vendor Information*



Hospital P2 Programs

(continued)

Mercury Wastewater Data:

- Sacramento Region. WWTS – data not yet avail.
- Masco Study (1995-6) – Old, but good data
(www.masco.org/mercury/phase2/index.html)
- City of Palo Alto – 1999
(www.city.paloalto.ca.us/cleanbay/mercurypubs.html#mercury)

Sustainable Hospitals – Web Site

- Sphygms: Mercury vs. Aneroid
(www.sustainablehospitals.org/HTMLSrc/IP_Merc_Tools_CompSphyg.html)
- Removing Mercury from Laboratories
(www.sustainablehospitals.org/HTMLSrc/IP_mercury_remove_labs.html)
- Is there Mercury in your Coulter Counter
(www.sustainablehospitals.org/HTMLSrc/IP_Merc_Coulter.html)

