

Quantifying Dental Mercury Reductions for the San Francisco Bay Area



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Today's Project Update

- Why we conducted this project
- How we conducted this project
- What we concluded
 - Initial results
- Next steps



Mercury Watershed Permit

- The Order became effective March 1, 2008
- Includes a dental mercury source control program
 - Applies to **all municipal dischargers** that discharge to San Francisco Bay (Region 2)



Dental Metrics in Permit

- **Regionally**, Bay Area agencies are to be evaluated based on two metrics:
 - *“target for this program is that **85% of dental offices** that generate mercury amalgam waste in the region will be participating in an amalgam program”*
 - DEADLINE: March 1, 2013
 - *“Dischargers... shall **estimate the dental amalgam collected** (with description of basis for estimate)... Dischargers may collaborate ... in a single report...”*
 - DEADLINE: Provide this to Board by June 30, 2012



We Used a Survey-Based Approach to Collect Needed Data

- Surveyed 39 Bay Area POTWs, Fall 2009
 - This is a snapshot in time
 - Results will improve as agency programs evolve
- Survey results combined into a single master workbook
 - To evaluate the region relative to the two metrics



BACWA Member Survey: Dental Amalgam Programs as of:

Fall 2009

This Excel survey for Bay Area municipal wastewater dischargers will be used to quantify results with respect to the two regional metrics included in the Regional Mercury Watershed Permit.

- Instructions:**
1. Cells of this shade REQUIRE a response.
 2. Cells of this shade indicate to only answer if it is relevant to your program (usually with an "X").
 3. Return survey to: steifehughes@yahoo.com

Due Date: Please return survey by **November 16, 2009**

Questions? Contact Stephanie Hughes at (408) 499-9271 or email at steifehughes@yahoo.com

PART I. AGENCY INFORMATION

Agency Name (Discharger Name)	
Person Completing Survey	
Your Title	
Your Phone Number	
Your Fax Number	
Your Email Address	
Number of residents in service area	
	residents
What year is this population estimate for?	
Average flowrate of discharge (mill gal / day)	
	MGD

Metric One

Quantifying Percent Participation

Metric One



- **GOAL of 85% dental office participation with an amalgam program by March 1, 2013**



Regional Board Set Minimum Requirements for a “Dental Amalgam Program”

- Agency **MUST** at **MINIMUM** have a **MEASUREABLE** participation
 - For instance:
 - Survey
 - Permit
 - Site visit data
 - Other evaluation of BMP use in your service area

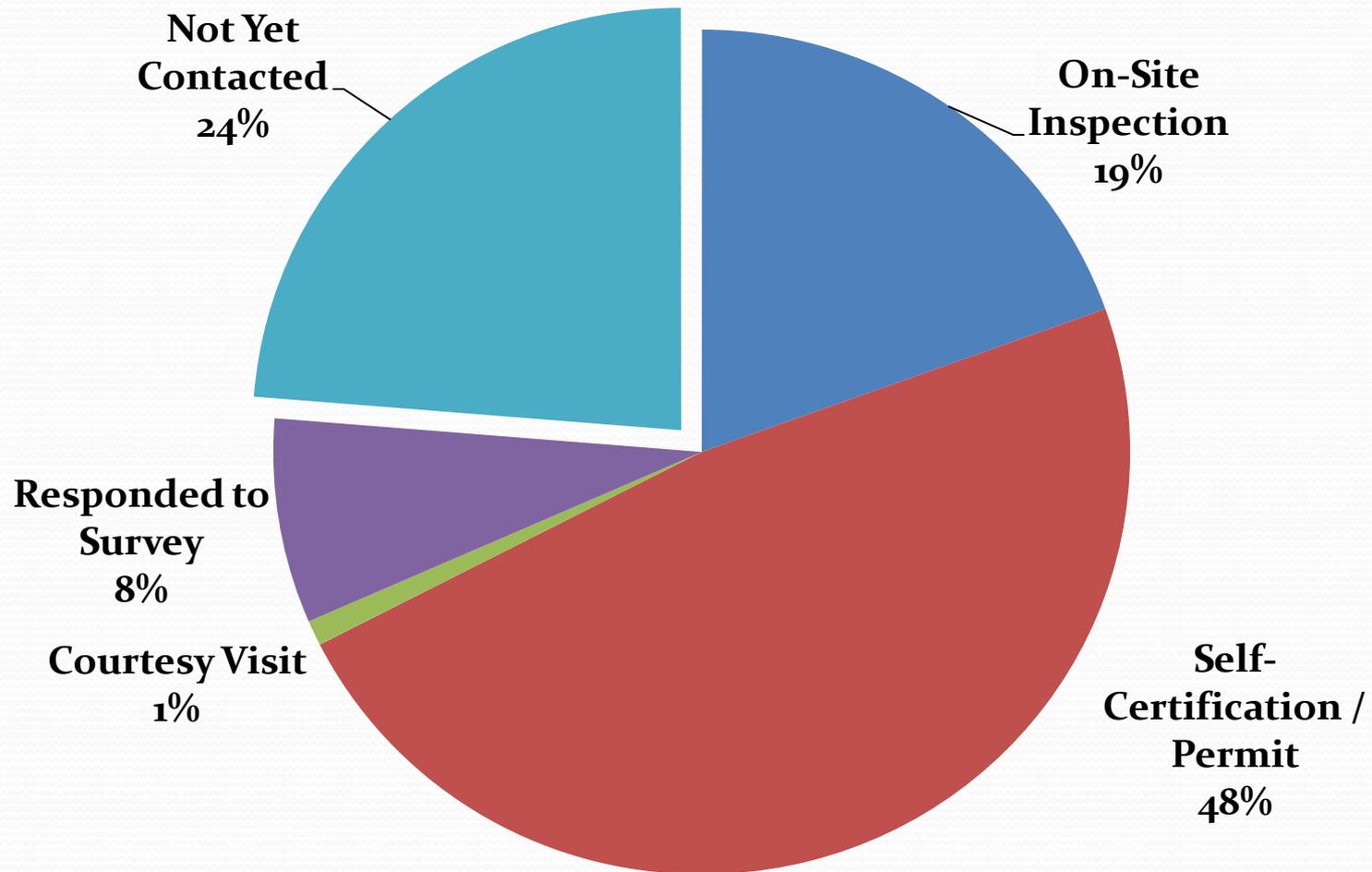


Participation Levels by Local Agencies

Participation Level	No. of Agencies	No. of Practitioners
100% of Practitioners	16	2,592
75% to 99%	2	164
50% to 74%	5	1,256
25% to 49%	3	26
1% to 25%	3	23
	29	4,061
Not Yet Contacted	10	1,264
Total	39	5,325

76%

Of estimated 5,325 dental amalgam practitioners, 76% have been contacted by their POTW at some level



Metric Two

Quantifying Reductions of Mercury
Discharges to Sewer

Metric Two



- Estimate the **dental amalgam collected** (with description of basis for the estimation)



How did we define “Amount of Amalgam Collected”?

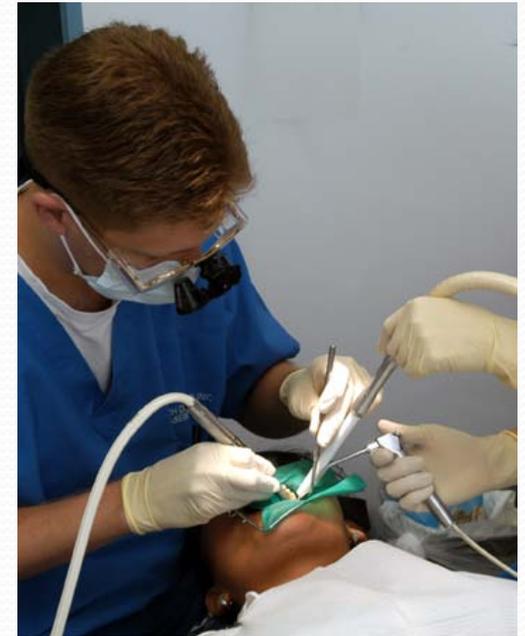
- The goal is to estimate mercury
 - diverted from wastewater
 - vs. landfill diversions
 - and ONLY attributable POTW dental programs
 - because dental offices have historically collected some types of Hg wastes

“amalgam *diverted* from collection system”

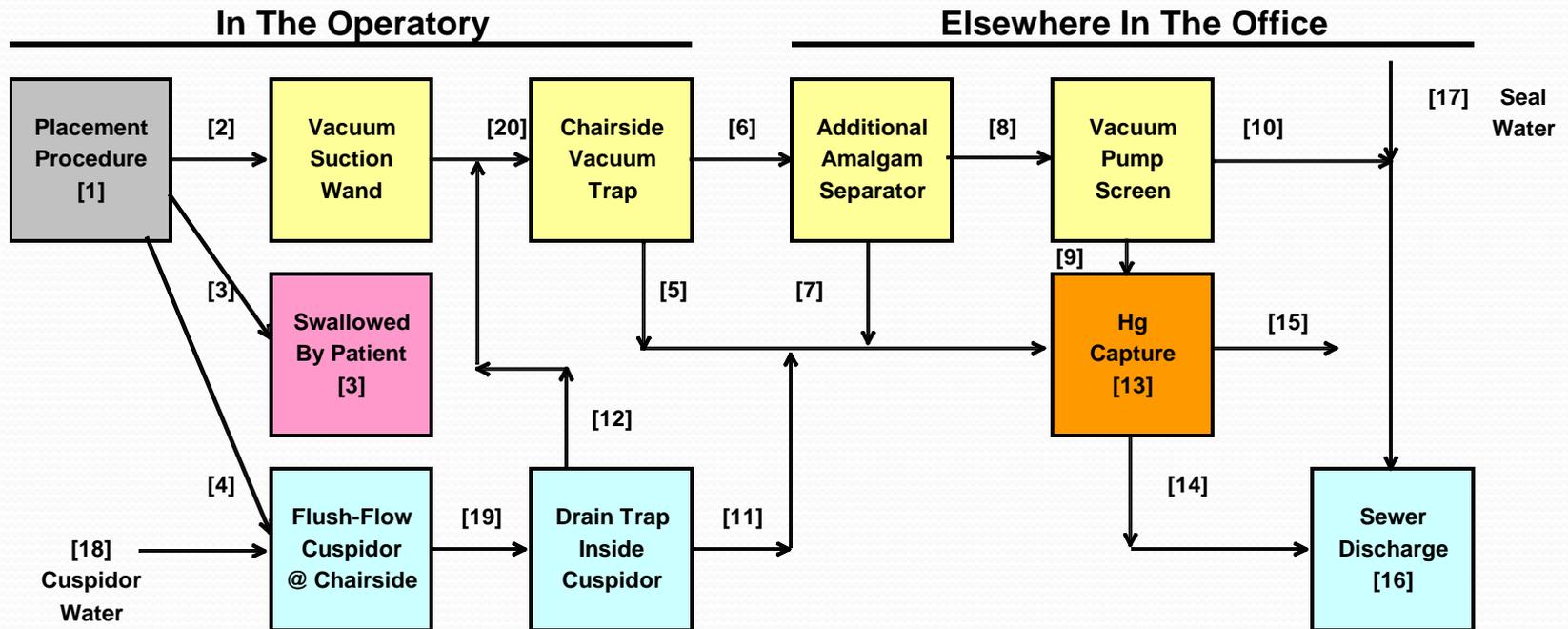


Metric 2 - Hg Reduction

- Two Step Process
 - Obtained Data from BACWA Surveys:
 - Amalgam Procedures Done
 - Waste Hg Generated per Procedure
 - Best Management Practice Use
 - Estimated Hg Discharge
 - For Each District
 - Total for Bay Area



Dental Hg Waste Pathways



RESULTS: Estimated Regional Hg Reduction

Dental Hg Waste = 453
Kg/yr in SF Bay Area

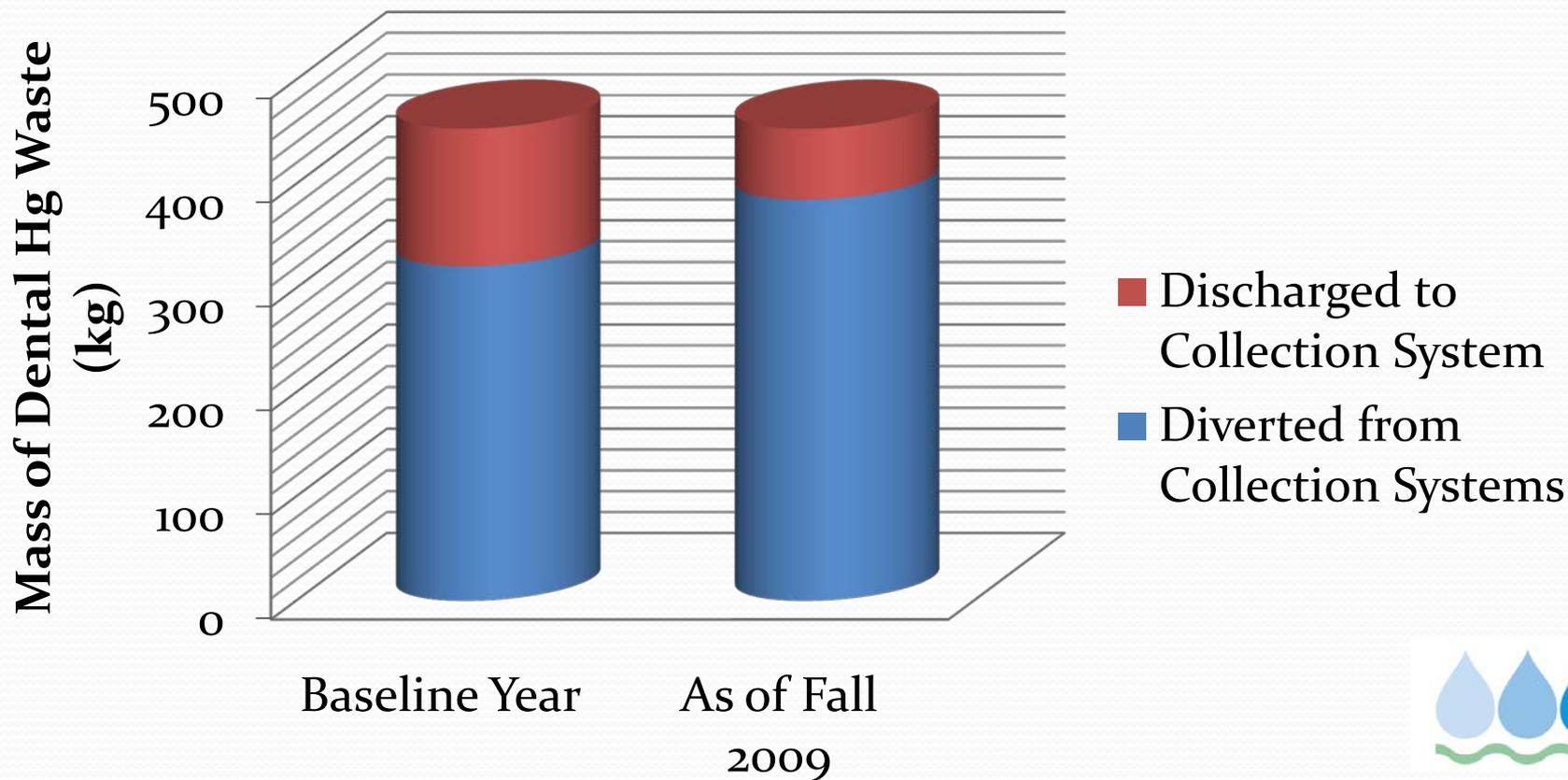
Before Program = 132
Kg/yr (29%) Discharged

2009 Status = 68 Kg/yr
(15%) Discharged



Estimate that mercury discharges have reduced from 29% of total generated waste to 15%

This represents an effective reduction to collection systems of 50%.



Methodology and Draft Results Were Reviewed

- Draft analysis to **BACWA** reviewers for QA/QC
- Final analysis presented to **Regional Board** (November, 2010)
 - Have verbal approvals
 - Expecting written approval



Next Steps: need to update prior to June 2012

- Planning a repeat survey in Fall 2011
 - to provide final results to Regional Board relative to the two metrics
 - Hope to see an increase in regional dental participation from 76% to 85%



Lastly, Mercury Reductions are Dramatic for Agencies with Strong Dental Programs

Agency	Amalgam Program Fully Operational	% Mercury Reduction
Central Contra Costa Sanitary District	November 2007 (mandatory)	77% (biosolids)
King County, WA	End of 2004 (97% compliance)	55% (biosolids)
Madison Metropolitan Sewerage District , WI	December 2008 (mandatory)	45% (biosolids)
MWRA, Boston, MA	April 2006 (mandatory, statewide)	60% (biosolids)
MCES, Minneapolis / St. Paul, MN	January 2003 voluntary; later mandatory	51% (influent)
Regional Water Quality Control Plant, Palo Alto	March 31, 2005 (mandatory)	63% (biosolids)
San Francisco PUC	February 2004 (mandatory)	45% (biosolids)
Western Lake Superior Sanitary District, Duluth, MN	2005 (100% voluntary)	62% (biosolids) 77% (effluent)

For more information

- CWEA P3S presentation, Wednesday
March 2nd, 9:35-10:15 AM
- BACWA web site will soon include
sample survey and technical
memorandum describing analysis



Thanks for your attention!

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