



PPG Chlor-Alkali & Derivatives

ORSANCO Technical Committee

February 7, 2012



Introductions



- Lori Leffler
 - Director EHS, PPG Natrium
- Dave Langseth
 - Principal Consultant, Gradient
- Jim Rock
 - Plant Manager, PPG Natrium
- Tim Cobaugh
 - Director EHS, PPG Chemicals
- Tom Horan
 - Environmental Manager, PPG Natrium

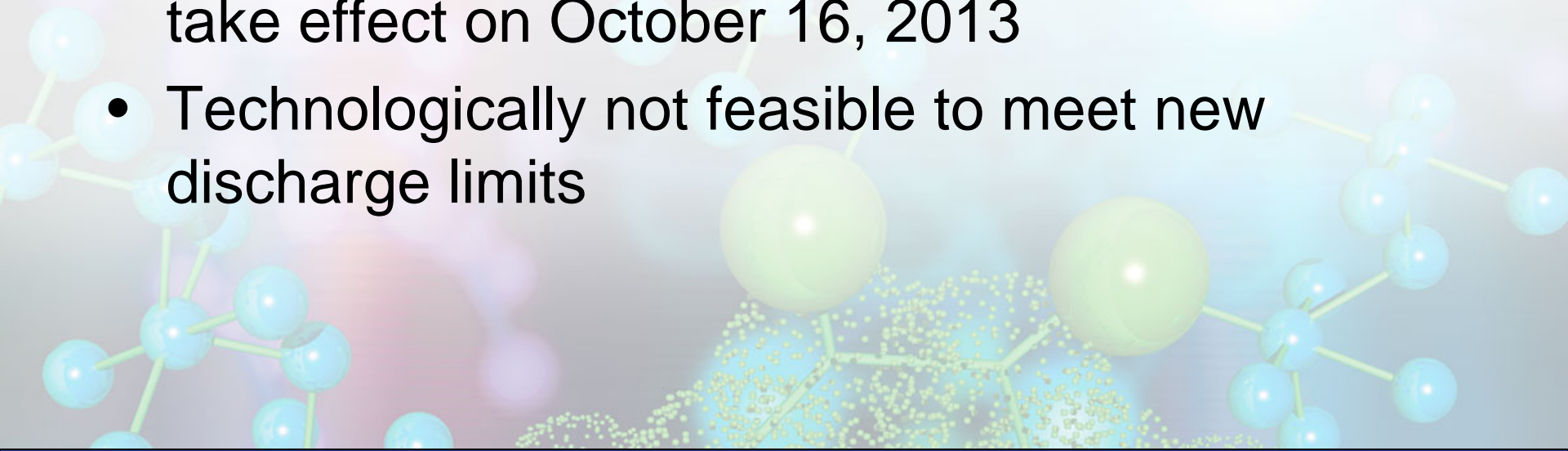
- Background
 - Lori Leffler
- Explanation of Fish Tissue Analysis
 - Dave Langseth
- Response to ORSANCO Questions
 - Jim Rock
- Additional Q&A



Background



- PPG is not asking for any increases in Hg discharges
- Designated uses for the Ohio River will not be impacted
- Considerable efforts have been expended to achieve the permit limits scheduled to take effect on October 16, 2013
- Technologically not feasible to meet new discharge limits



- The mixing zone is related only to the ORSANCO 12 ppt total mercury water quality standard.
 - Currently meet all WVDEP water quality criteria for Hg at end-of-pipe
 - Methyl mercury end of pipe samples below or barely above method detection limit of 0.023 ppt
 - The Ohio River conditions are not conducive to methylation
- No reasonable potential to exceed the fish tissue criterion of 0.3 mg/kg methyl mercury
 - Within West Virginia or outside its border

- US EPA (2010) methods:
 - Weighted mean tissue concentration
 - Weights based on consumption patterns
- Alternative consumption weightings include:
 - All consumed species or trophic levels
 - Trophic level 4 only (as conservative approach)
- May be normalized to standard size

Use of consumption-weighted mean is consistent with Hg criteria development method

Ohio River Fish Tissue Evaluation

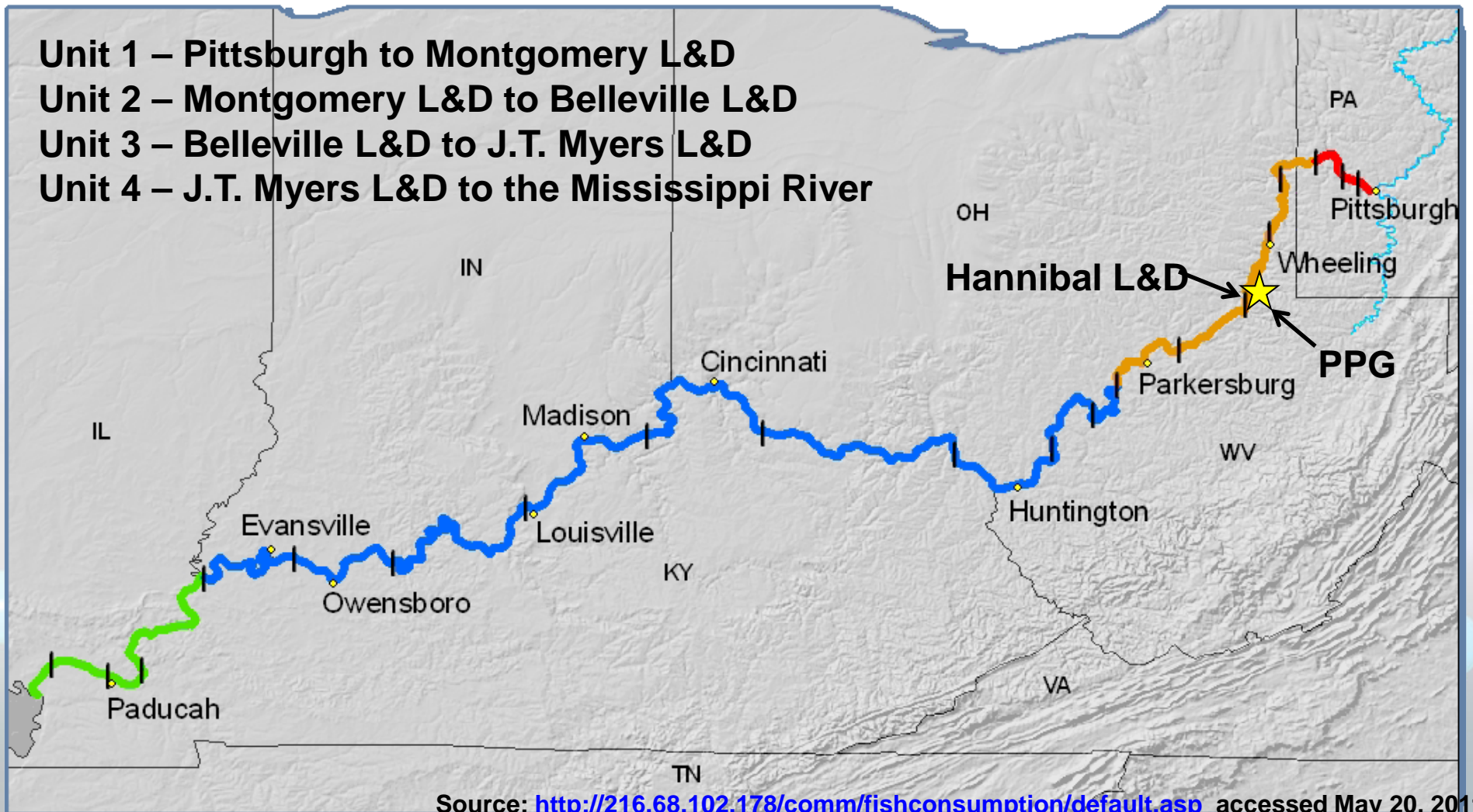


- ORSANCO THg tissue data 2005-2010
- Consumption weighted mean calculations:
 - EPA default by trophic level (in application)
 - ORSANCO survey: all species and TL4 only
 - Ohio DNR Hannibal pool survey: all species and TL4 only
 - ORSANCO designated trophic levels
- Reaches
 - Hannibal pool
 - Fish Consumption Advisory (FCA) Unit 2

ORSANCO FCA Units



- Unit 1 – Pittsburgh to Montgomery L&D
- Unit 2 – Montgomery L&D to Belleville L&D
- Unit 3 – Belleville L&D to J.T. Myers L&D
- Unit 4 – J.T. Myers L&D to the Mississippi River



Source: <http://216.68.102.178/comm/fishconsumption/default.asp> accessed May 20, 2011

Ohio River Fish Consumption Data



Species		Trophic Level	ORSANCO 2009	Ohio DNR		
				Hannibal pool 1992	RM 0-301 1992	Rm 279-531 1993
Catfish	channel or blue	4	41	10	15	14
Crappie		3	13	4	7	6
Bass	largemouth, smallmouth, or spotted	4	13	20	14	8
Catfish	flathead	4	13	0	2	15
Sauger or Walleye		4	7	30	31	26
Bass	hybrid striped	4	NSI	9	9	4
Bass	white or striped	4	6	29*	26*	20*
Sunfish		3	2	2	2	1
Carp	common	2	1	0	<0.1	1
Bluegill		3	1	2	2	1
Drum		4	NSI	1	2	5

Table entries are consumption frequencies (%) for Ohio River fish species eaten.

NSI = not separately identified

*Includes Hybrid Striped Bass

Fish Consumption by Trophic Level



Trophic Level	EPA Default	ORSANCO 2009	Ohio DNR		
			Hannibal pool 1992	RM 0-301 1992	Rm 279-531 1993
2	22	2	0	0	1
3	46	17	11	11	11
4	32	81	89	89	88

- Table entries are consumption frequencies (%)
- EPA default is based on fish weight consumed
- ORSANCO and Ohio DNR values are based on % of fish species eaten

Hannibal Pool and FCA Unit 2 Summary

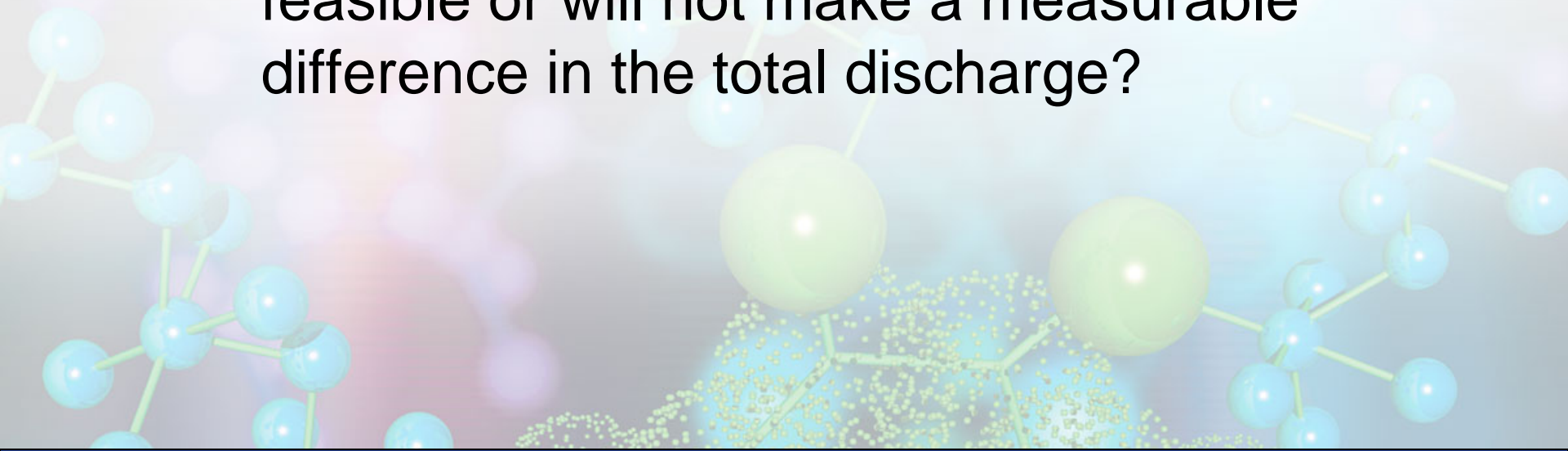


Weighting Basis	Mean Total Hg Concentrations (mg/kg)	
	Hannibal Pool	FCA Unit 2
Methyl Mercury fish tissue criterion	0.3 MeHg	0.3 MeHg
EPA default by TL	0.12	0.11
ORSANCO Survey	0.13	0.10
ORSANCO Survey TL4 only	0.14	0.11
1992 Hannibal Pool Survey	0.13	
1992 Hannibal Pool Survey TL4 only	0.14	

**Most conservative approach consistent with
USEPA guidance shows no impairment**

1. What are the business ramifications of not receiving a variance from the mixing zone prohibition?
2. What are the business ramifications of being required to eliminate the mercury process?
3. Based on the mass balance submitted, unknown sources appear to account for the vast majority of discharged mercury. What can be done in the future to identify and eliminate or reduce these unknown sources?

4. What are the possibilities for decreasing the concentration of the managed streams (chlor-alkali process discharge and ground water treatment discharge) to the 12 ppt and why that either is not feasible or will not make a measurable difference in the total discharge?



What are the business ramifications of not receiving a variance from the mixing zone prohibition?



- PPG has a strong policy regarding compliance
 - Compliance with 12 ppt limit well within the boundary of the mixing zone
 - Compliance with RCRA by pumping contaminated groundwater to maintain hydraulic control and prevent discharge to the Ohio River without treatment

Need mixing zone to maintain compliance with both NPDES and RCRA requirements

What are the business ramifications of not receiving a variance from the mixing zone prohibition?



- PPG spent over \$5 million to reduce the mercury concentration in 200 gpm discharge stream
 - Unable to achieve 12 ppt with available technology
 - Theoretical treatment system for 26,000 gpm would require nearly 2.4 million gallons of media
 - Media would have to be replaced frequently
 - Cover acres of landscape

We have found no available technology to reliably treat to less than 12 ppt mercury

What are the business ramifications of not receiving a variance from the mixing zone prohibition?



- PPG provides over 500 jobs at this facility
 - Approximately \$40 million in salaries and wages
 - Local tax revenue of \$2.3 million annually
 - Generous community support every year
 - United Way - >\$20,000
 - Employee directed PPG donations - >\$40,000
 - PPG Foundation - >\$30,000
 - PELC Grants - >\$28,000

Even with a total plant shutdown, PPG can not meet 12 ppt at end of pipe

What are the business ramifications of being required to eliminate the mercury process?



- PPG recently spent \$600,000 to evaluate conversion to membrane technology
 - 30 months to construct after authorization and completion of detailed engineering
 - \$85-100 million to replace the existing chlorine capacity of 72,848 tons per year
 - 15+ year payback is not economically viable

Elimination of mercury process would reduce concentration at Outfall 009 by only 4 ppt

What are the business ramifications of being required to eliminate the mercury process?



- PPG could lose annual sales of \$40-50 million
 - Support fewer jobs
- Continue to operate the remaining assets with reduced income
 - Incur costs to demolish the circuit and associated equipment
 - Continue to operate the mercury waste water treatment facility

Elimination of the mercury cell manufacturing process would not reduce the final discharge concentration below 12 ppt

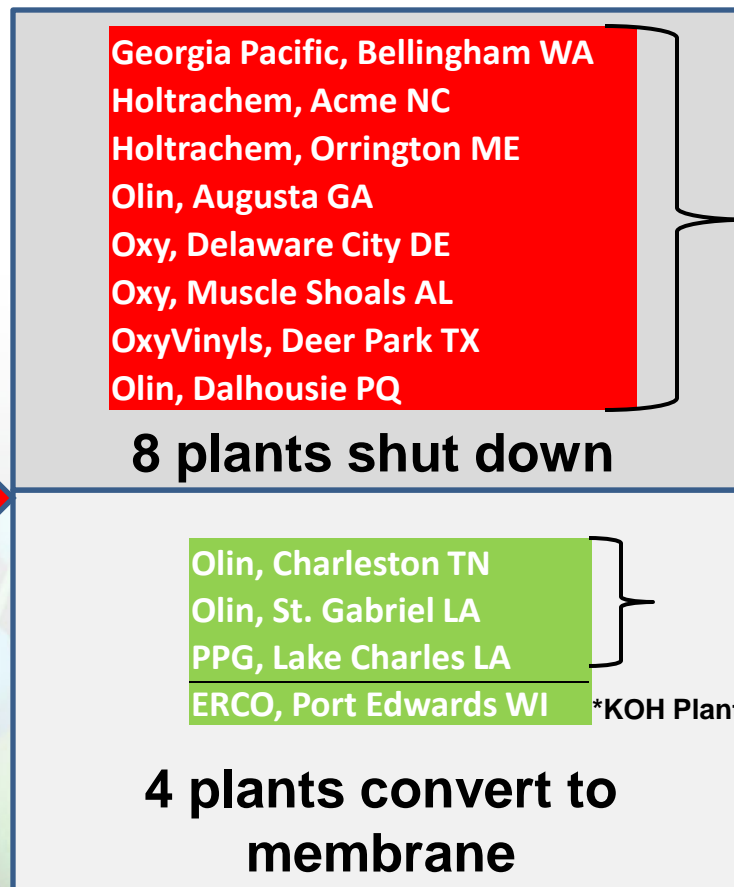
In 1999, there were 14 mercury cell plants in the U.S. and Canada....



Mercury Cell Plants in 1999	TPD
Ashta, Ashtabula, OH	115
Georgia Pacific, Bellingham WA	250
Holtrachem, Acme NC	160
Holtrachem, Orrington ME	200
Olin, Augusta GA	340
Olin, Charleston TN	740
Oxy, Delaware City DE	405
Oxy, Muscle Shoals AL	430
OxyVinyls, Deer Park TX	270
Olin, Dalhousie PQ	100
Olin, St. Gabriel LA	540
PPG, Lake Charles LA	710
PPG, Natrium WV	200
ERCO, Port Edwards WI	270

* Source: Publicly Available Information

By the end of 2012:



Average
Plant Size
270 tpd

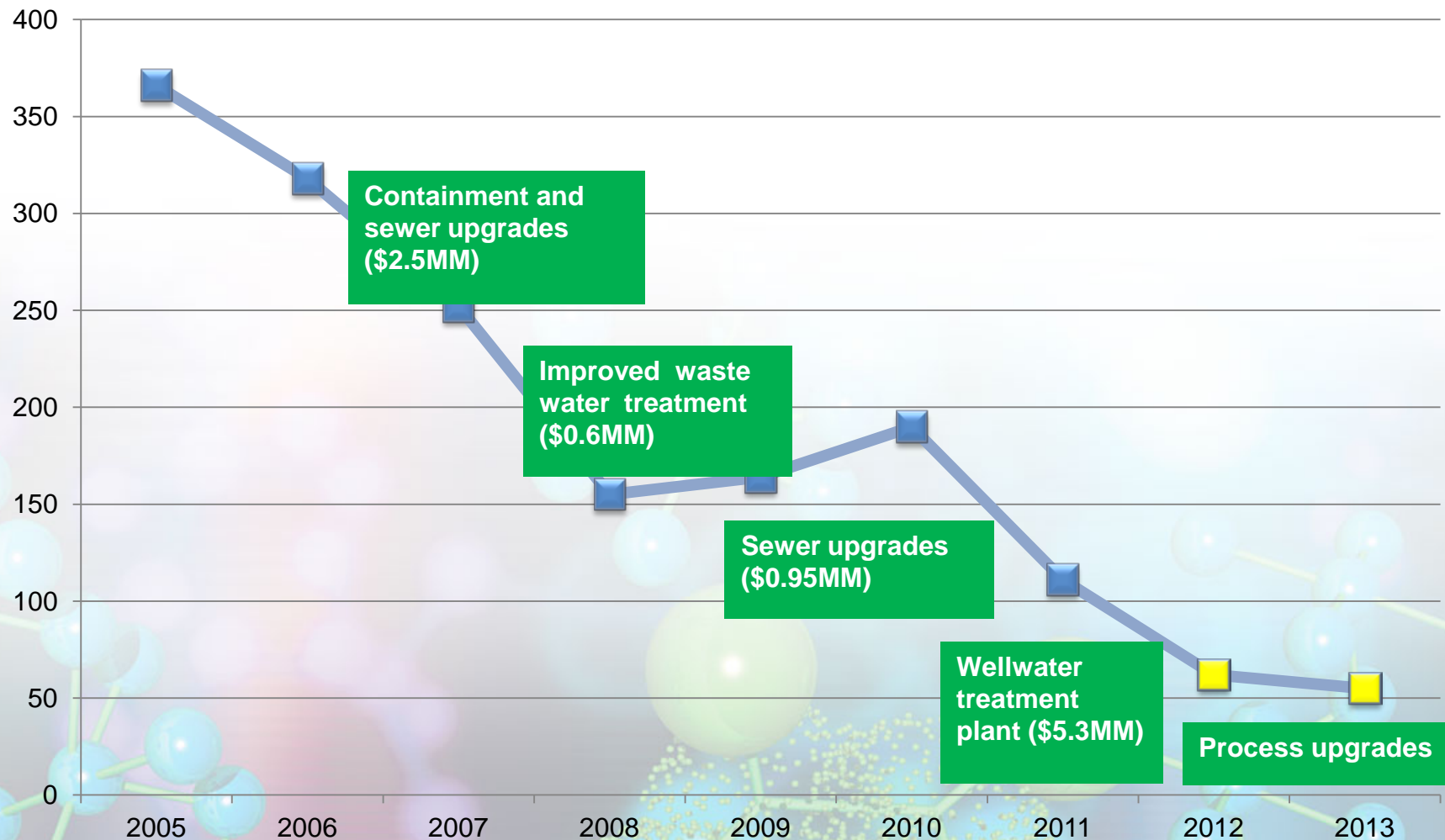
Average
Plant Size
660 tpd

Only larger plants and KOH plant have successfully justified conversion

What can be done in the future to identify and eliminate or reduce “unknown” sources?



Avg. Hg conc. (ppt)



What can be done in the future to identify and eliminate or reduce unknown sources?



- Internal monitoring program to identify potential sources that may be amenable to reduction
 - Continue and expand
- We cannot predict either the character or timing of any reduction plans
 - Results dependent upon timing and nature of sources identified

PPG is committed to ongoing efforts to identify mercury sources and treatment technologies

What are the possibilities for decreasing concentration of the managed streams to 12 ppt?



- Treatment technologies evaluated but not implemented include:
 - MAZYCK
 - Taconite Tailings
 - SAMMS™ Membrane Technology
 - Flocculation/Filtration System
- ENSR conducted an independent third-party review
- Continue to look for new technology

12 ppt is not feasible with technology currently available

What are the possibilities for decreasing concentration of the managed streams to 12 ppt?



Internal Sources	Average Flow (gpm)	Optimal Concentration of Hg (ppt)	
		Inlet	Outlet
Outlet 309	80-120	200,000 – 500,000	500-1000
Well 56	200	2000-8000	150-200

Why would treating managed streams to 12 ppt not make a measurable difference in the total discharge?



	Mass Load		Contribution to Outlet 009	
	2011 Actual (lbs/day)	Optimized (lbs/day)	2011 Actual (ppt)	Optimized (ppt)
Outlet 309	0.0035	0.0012	11	4
Intake Water	0.0013	0.0013	4	4
Well 56	0.013	0.00048	44	2
Other Historical	0.014	0.014	45	45
Total				
Outlet 009	0.032	0.016	104	55

Summary



- PPG has utilized currently available mercury reduction technologies through years of research, trial, and investment
- With these technologies PPG has reduced mercury discharges by 70% since 2006
- PPG will continue to reduce mercury levels in the effluent
- Analysis of fish tissue data indicate Hannibal Pool is well below 0.3 mg/kg MeHg allowable

Granting the variance will continue to protect human health and the environment.