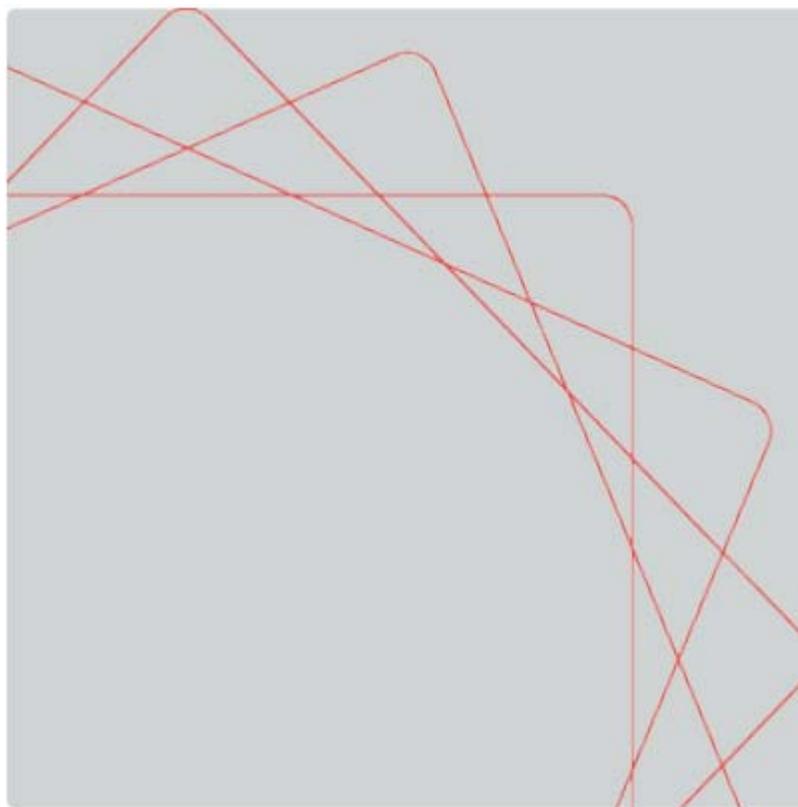




TRI Chemical Stories

Increases vs. Decreases

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Abt Associates



Outline



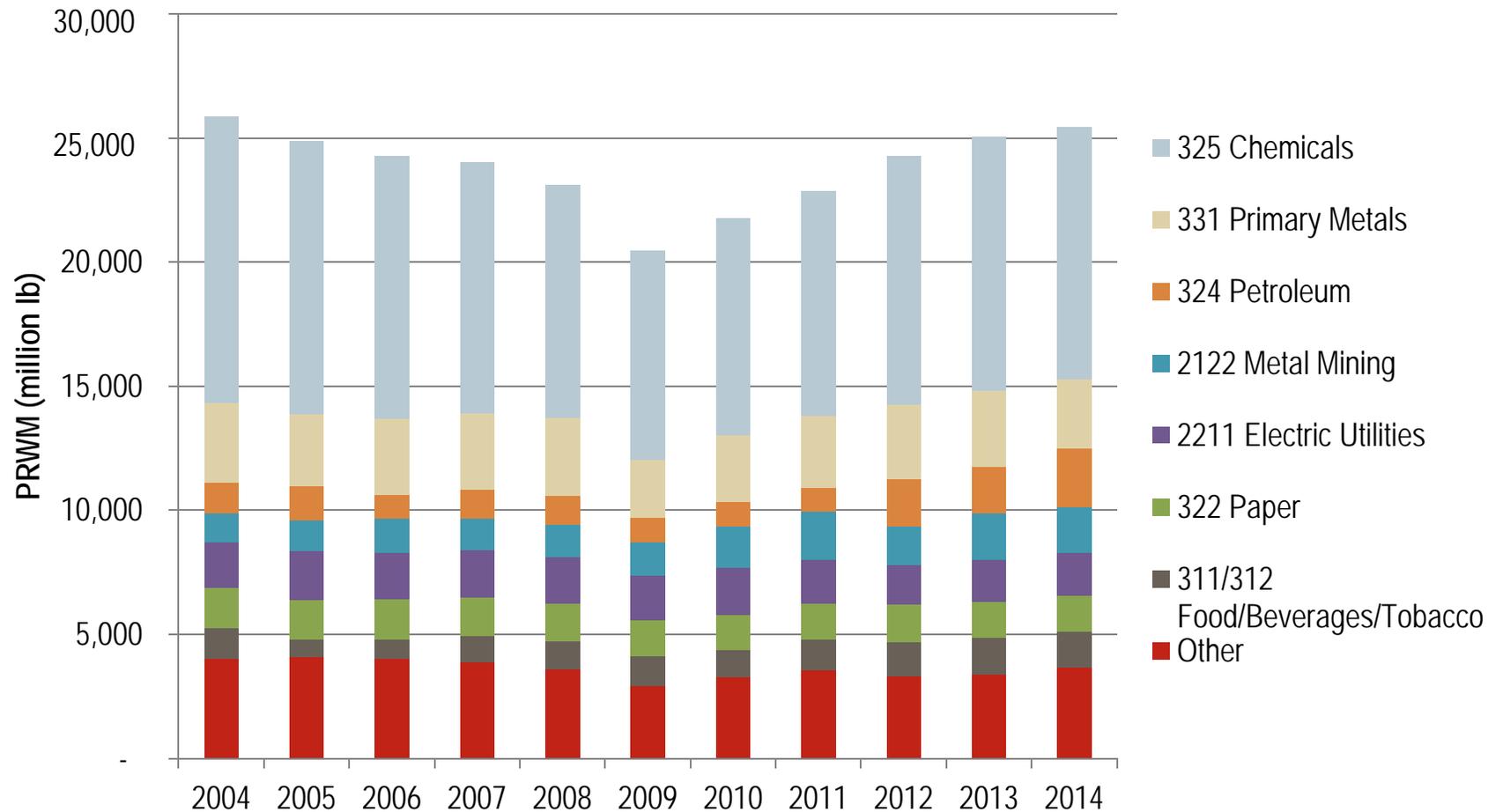
- Background
- Analysis Methods
- Case Studies
 - Increasing TRI chemicals
 - Decreasing TRI chemicals
- Discussion

Background



- More than 600 chemicals and chemical groups are included in TRI reporting
- Approximately 22,000 facilities report quantities of chemical waste managed and released each year
 - Production related waste managed (PRWM): all releases, energy recovery, recycling, and treatment
- TRI data can be closely tied to exogenous factors such as economic productivity
 - Significant changes in reported quantities are often associated with a single facility
 - One-time spikes or dips in reported quantities often occur

All Chemicals



Background



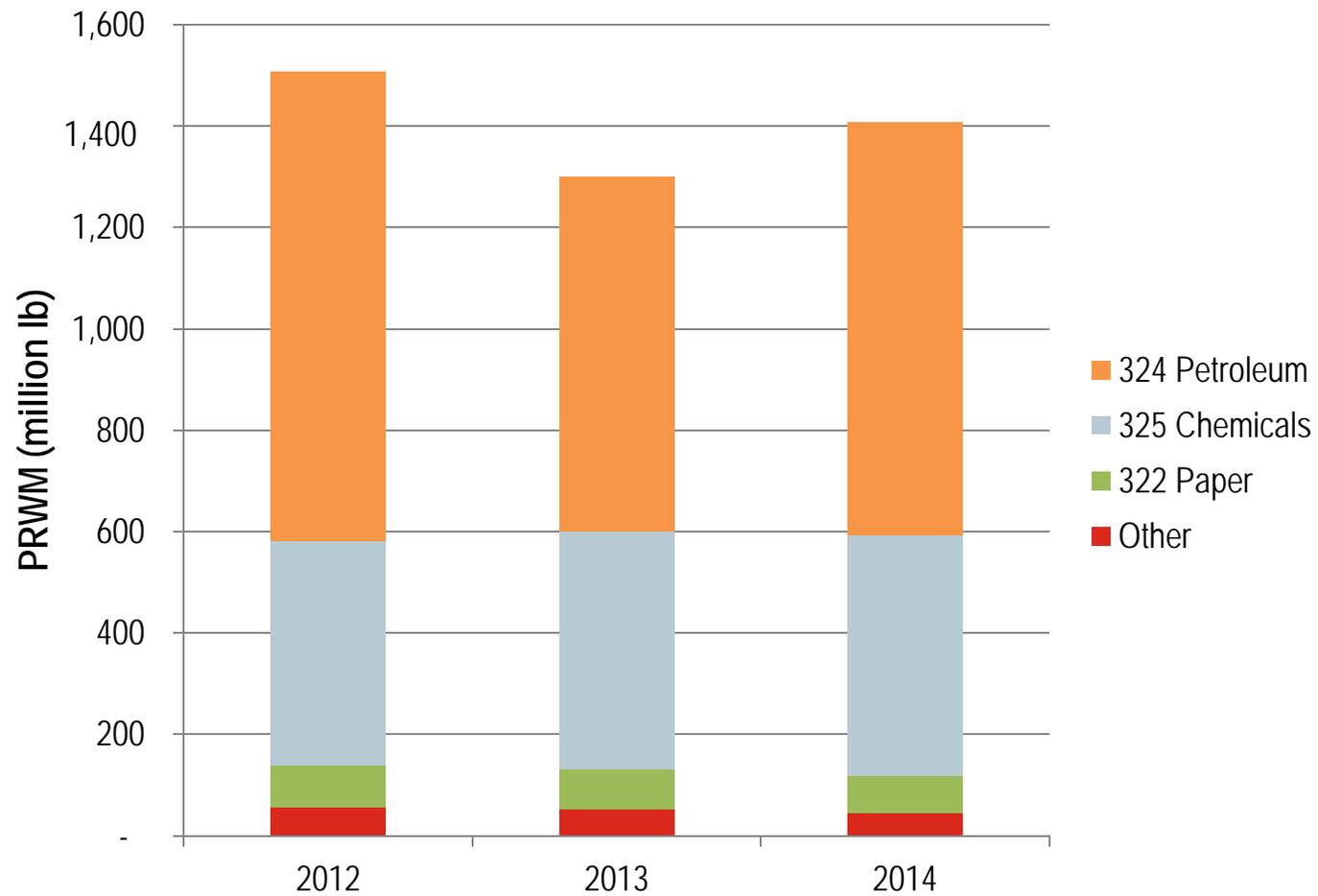
- General trend: quantities of chemical waste managed and released have decreased in recent years
- Question: are there additional trends within specific industrial sectors or trends within specific chemicals or chemical groups?
 - Are there specific chemicals or sectors driving the trend?
 - Is there any additional context looking beyond TRI data?
- Examine chemicals and industrial sectors associated with increasing or decreasing trends in TRI reporting quantities

Increasing TRI Chemicals: Hydrogen Sulfide



- Chemical stay lifted in reporting year 2012
- Production related waste managed quantities primarily driven by
 - Treatment in petroleum industry
 - Energy recovery and recycling in chemicals industry
 - Energy recovery in paper industry

Hydrogen Sulfide



Increasing TRI Chemicals: Peracetic Acid

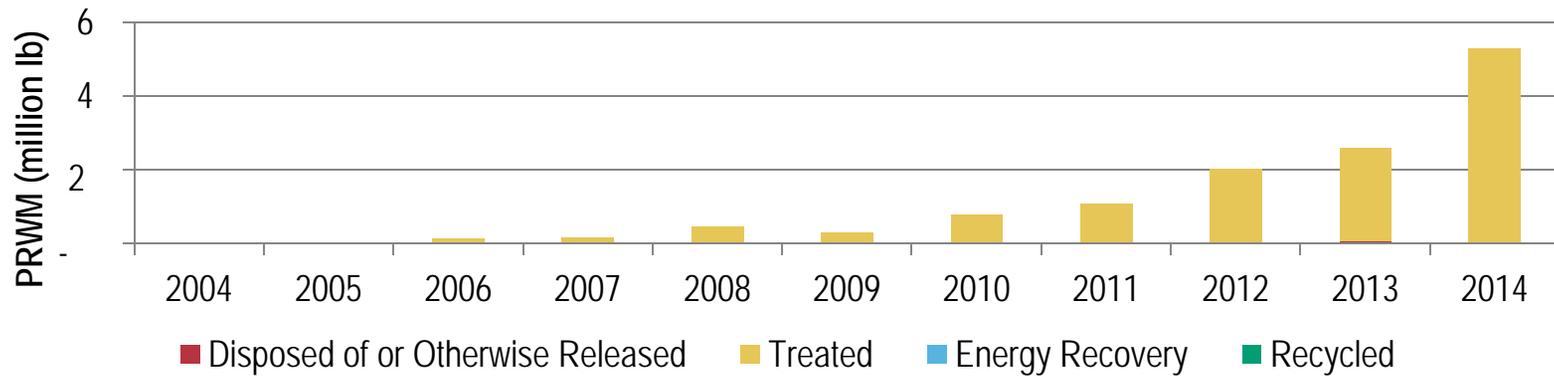


- Peracetic Acid
 - Waste managed quantities have increased in recent years
 - Largely associated with poultry processing, where peracetic acid is used as a disinfecting rinse
 - Chlorine was used a rinse on U.S. poultry exports, but Russia effectively banned chlorine residuals on poultry imports in 2009
 - Trade negotiations in 2010 allowed for the substitution of peracetic acid as an alternative rinse for poultry imports from the U.S. to Russia
 - Relative toxicity of peracetic acid is lower than chlorine

Increasing TRI Chemicals: Peracetic Acid

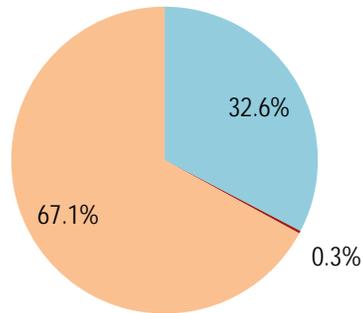


Peracetic Acid in NAICS 3116, 2004 - 2014



Production-Related Waste: Peracetic Acid
in NAICS 3116 in 2014

- 311611 Animal (except Poultry) Slaughtering
- 311613 Rendering and Meat Byproduct Processing
- 311615 Poultry Processing



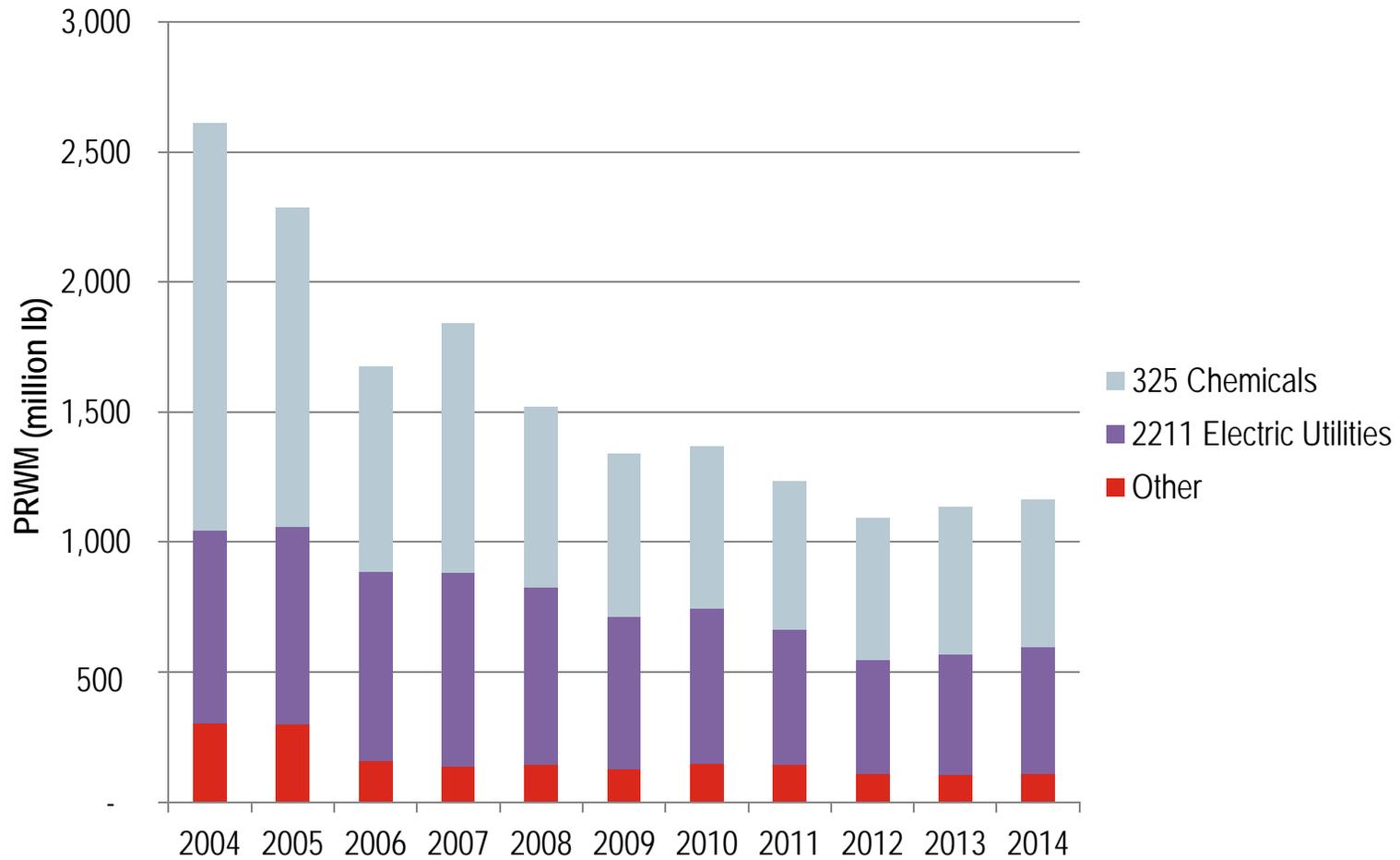
Source: CBS News

Decreasing TRI Chemicals

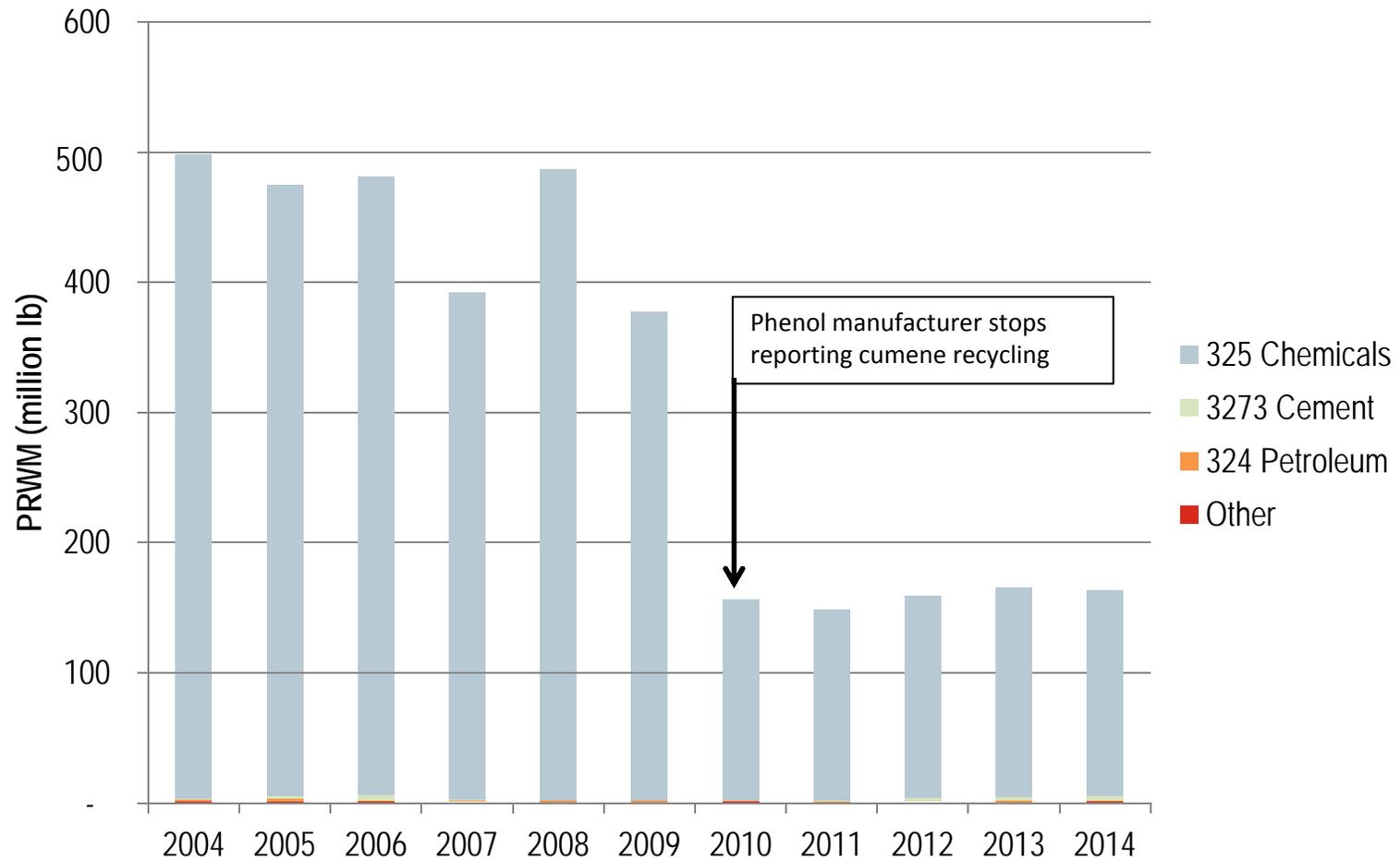


- Hydrochloric acid
 - Decreased HCl byproduct production by chemicals industry, alternate vinyl chloride synthesis pathways
 - Decreased production in electric utilities by shifting fuels
- Cumene
 - Decreased demand for derivatives phenol and bisphenol-A (BPA)
 - Two facilities account for >95% of cumene TPRW; one facility stopped reporting recycling
- Copper and copper compounds
 - Decreased copper price => decreased copper production => decreased waste in metal mining and primary metals industries

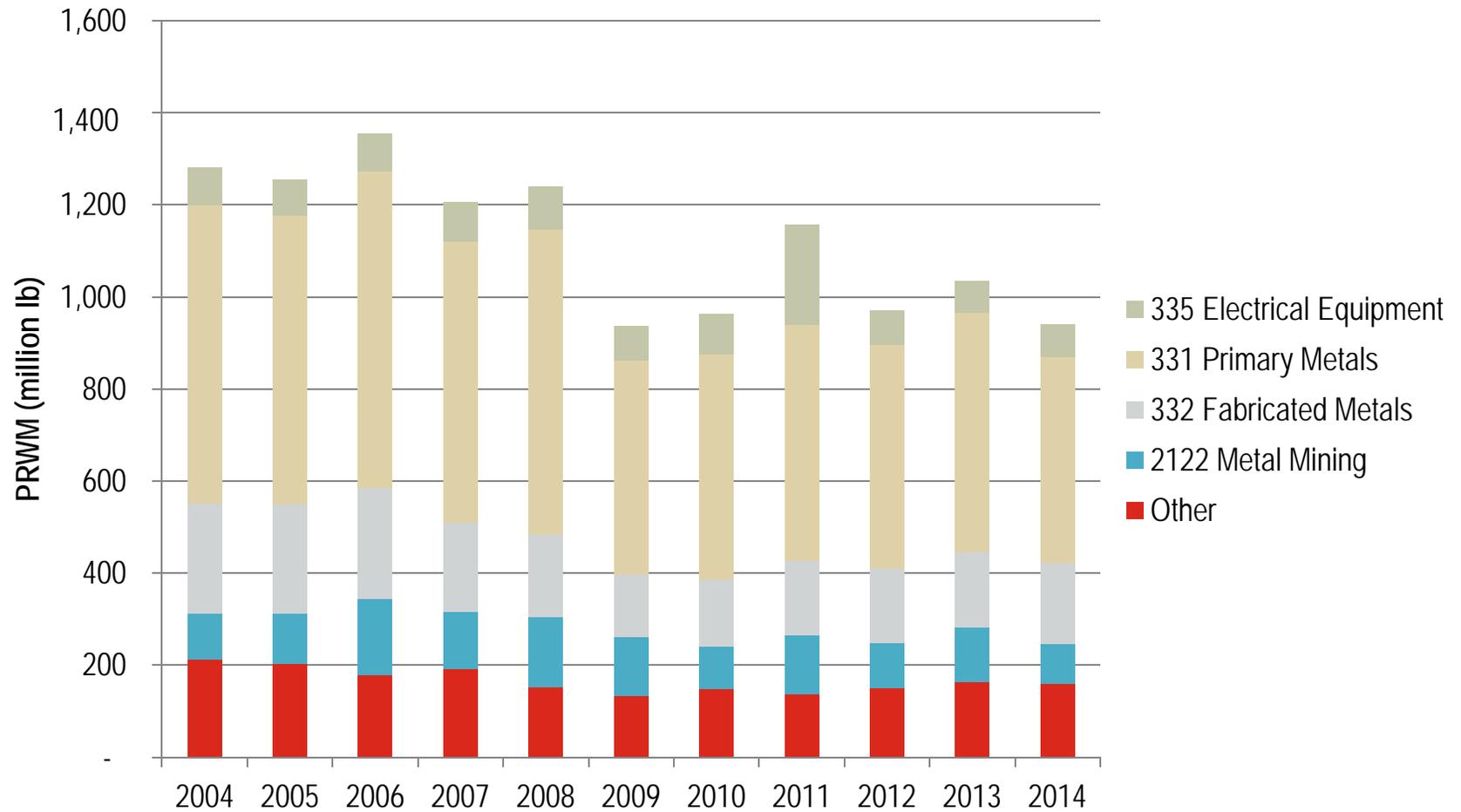
Hydrochloric Acid



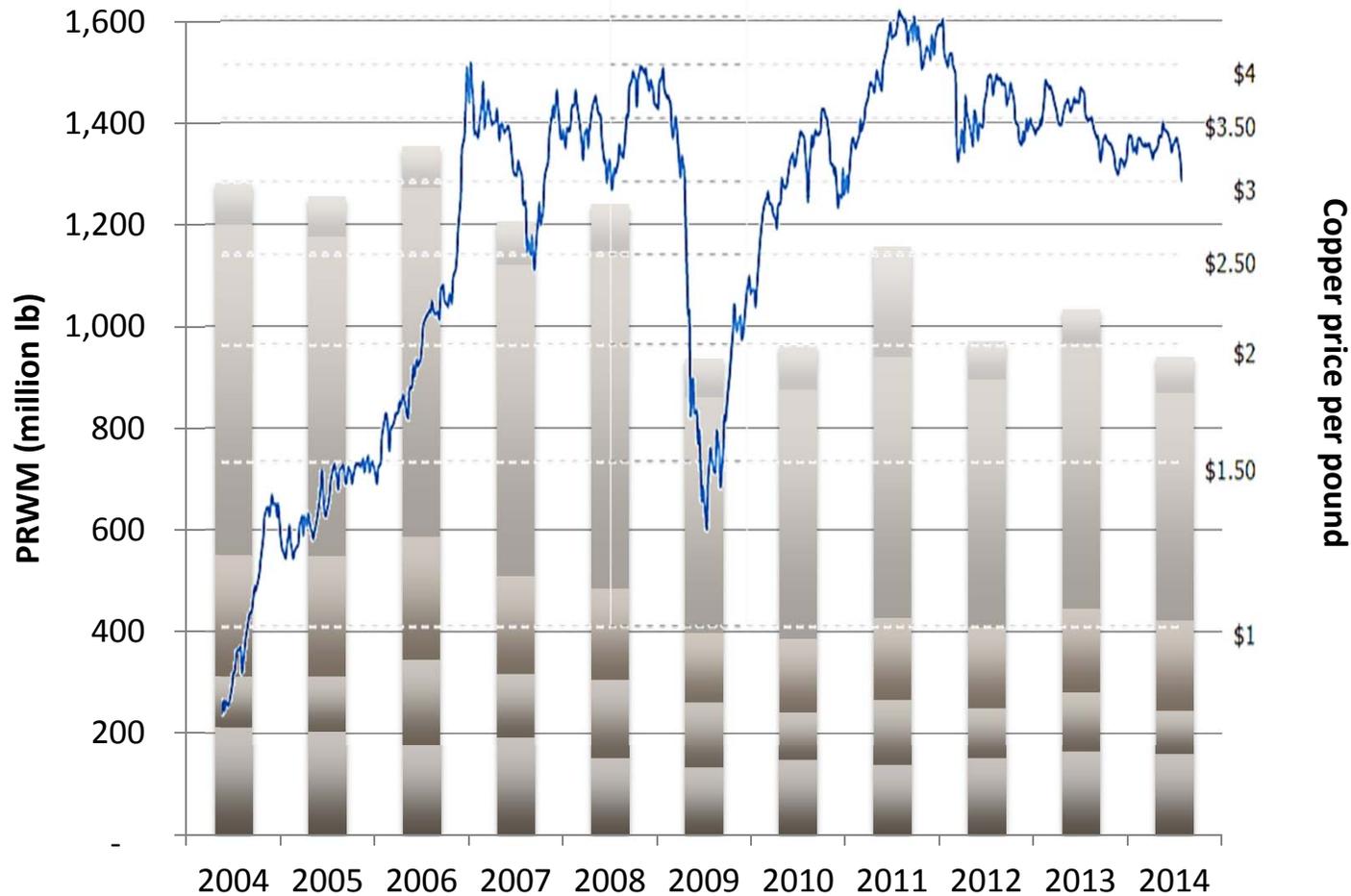
Cumene



Copper and Copper Compounds



Copper and Copper Compounds



Discussion



- For all:
 - Utilizing TRI P2 and external data sources help compete narrative
 - Economic factors often drive changes
 - Single facilities drive changes, but are indicative of trends
- For PRWM increasers:
 - Regulatory additions may cause increases
 - Chemical substitution may cause increases
- For PRWM decreasers:
 - General declining trend for most chemicals over time
 - Source reduction causes decreases

Any questions?

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Hydrochloric Acid Air Emissions



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