

Mercury Control at Western Fueled Plants

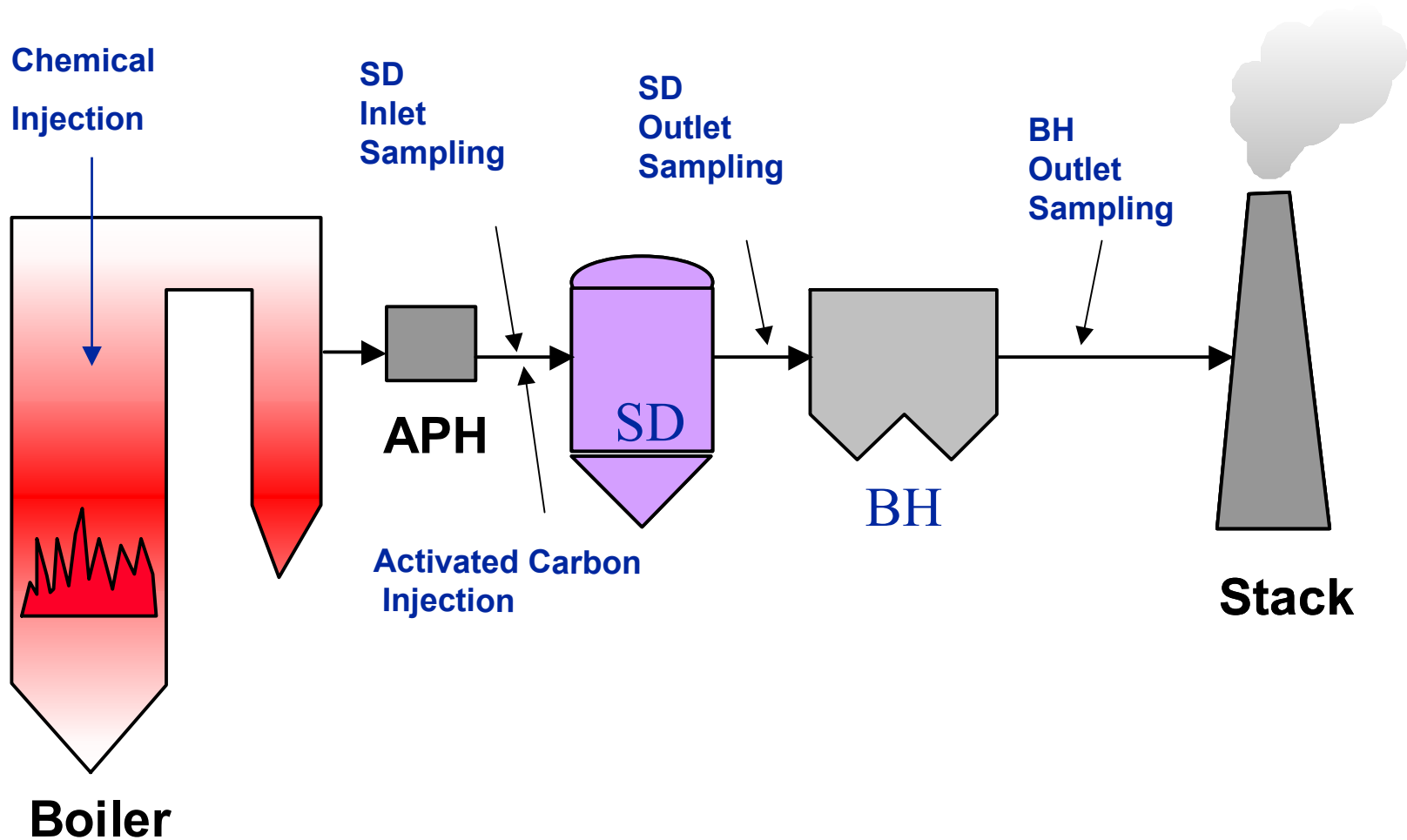


for
***EPA Mercury MACT
Working Group
August 8, 2002***

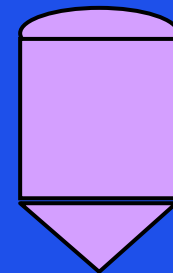
by
George Offen & Ramsay Chang

EPRI

ACI and Additive Testing at ND Lignite-fired SD/BH Unit

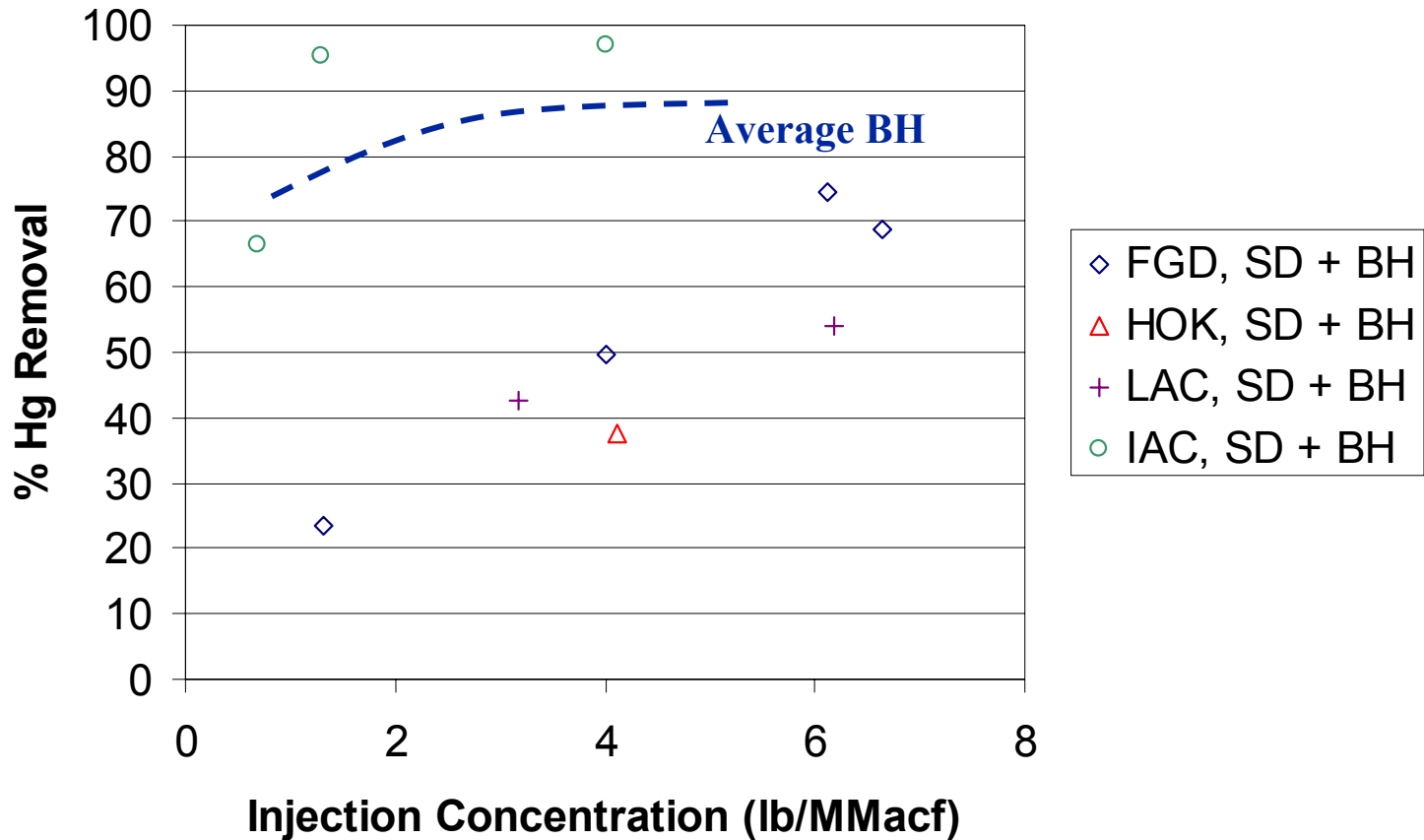


Full-scale Tests Seek Solutions for Western Fuels



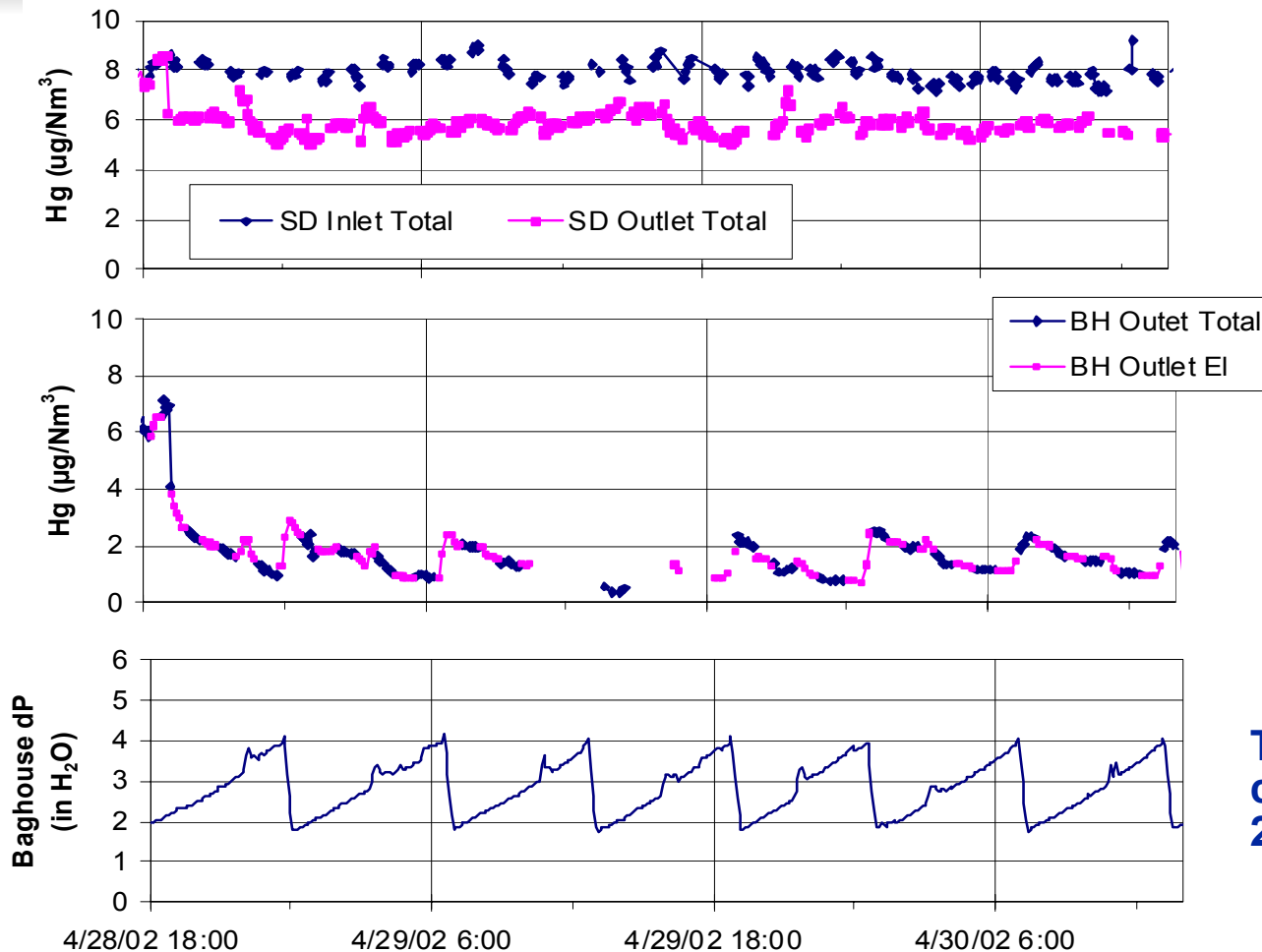
- **All results are preliminary, short-term**
 - Subject to change
 - Some indications, many questions
- **ACI less effective at western-fueled plants with SD/BH than at other sites**
 - Near-zero baseline capture
 - ACI \ll effective than at BH only sites
 - IAC \rightarrow high removals; many questions
- **Chemical addition \rightarrow proportional oxidation, mixed results for capture by SD, PM scrubber**

SD/BH Reduced Effectiveness of ACI



Note: Bituminous SD/BH > 90% w.o. ACI (per ICR)

Outlet Hg Emissions Vary: Bag Cleaning Effect



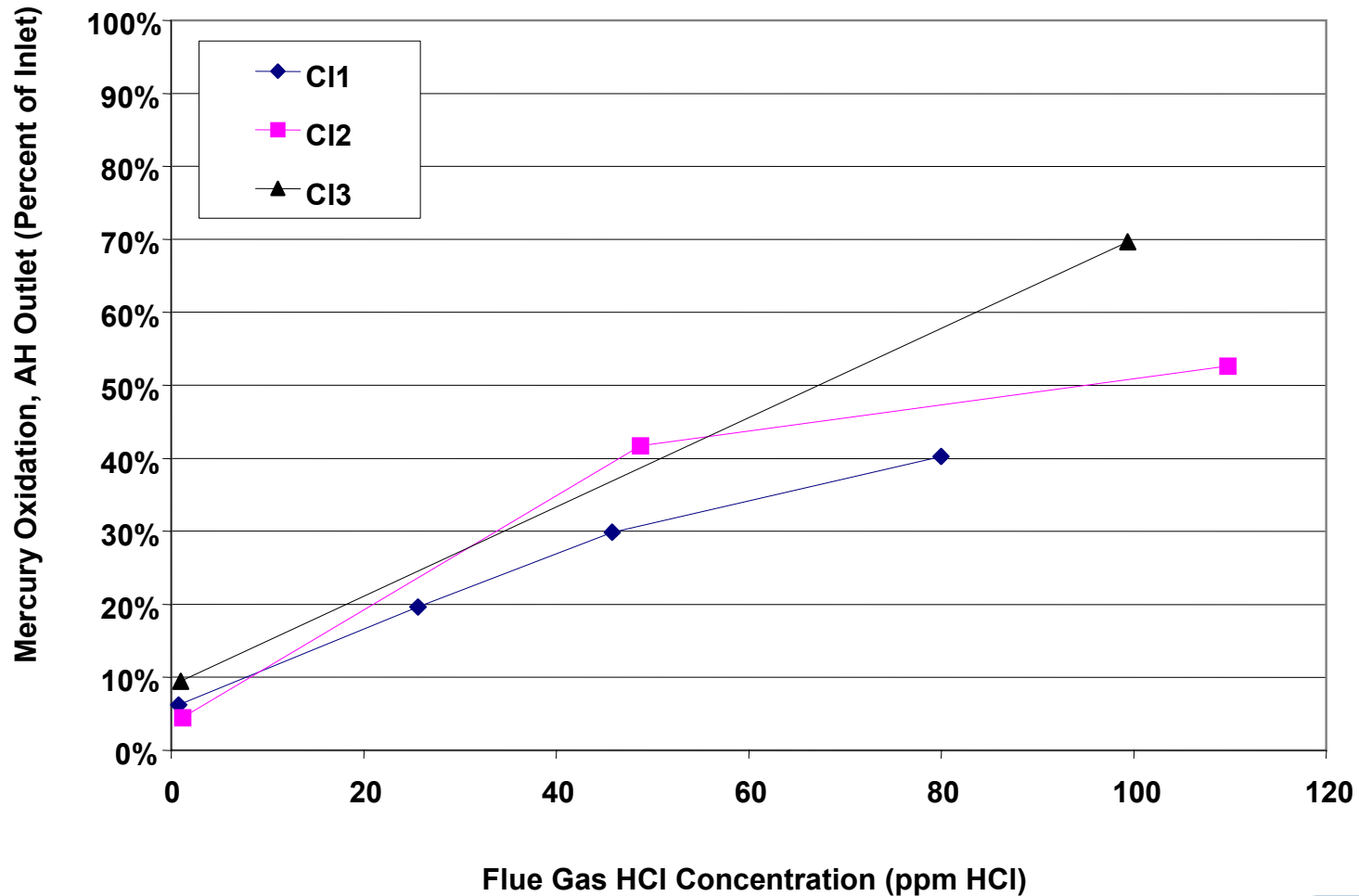
Typical industry
cleaning cycle =
2 – 6 hr



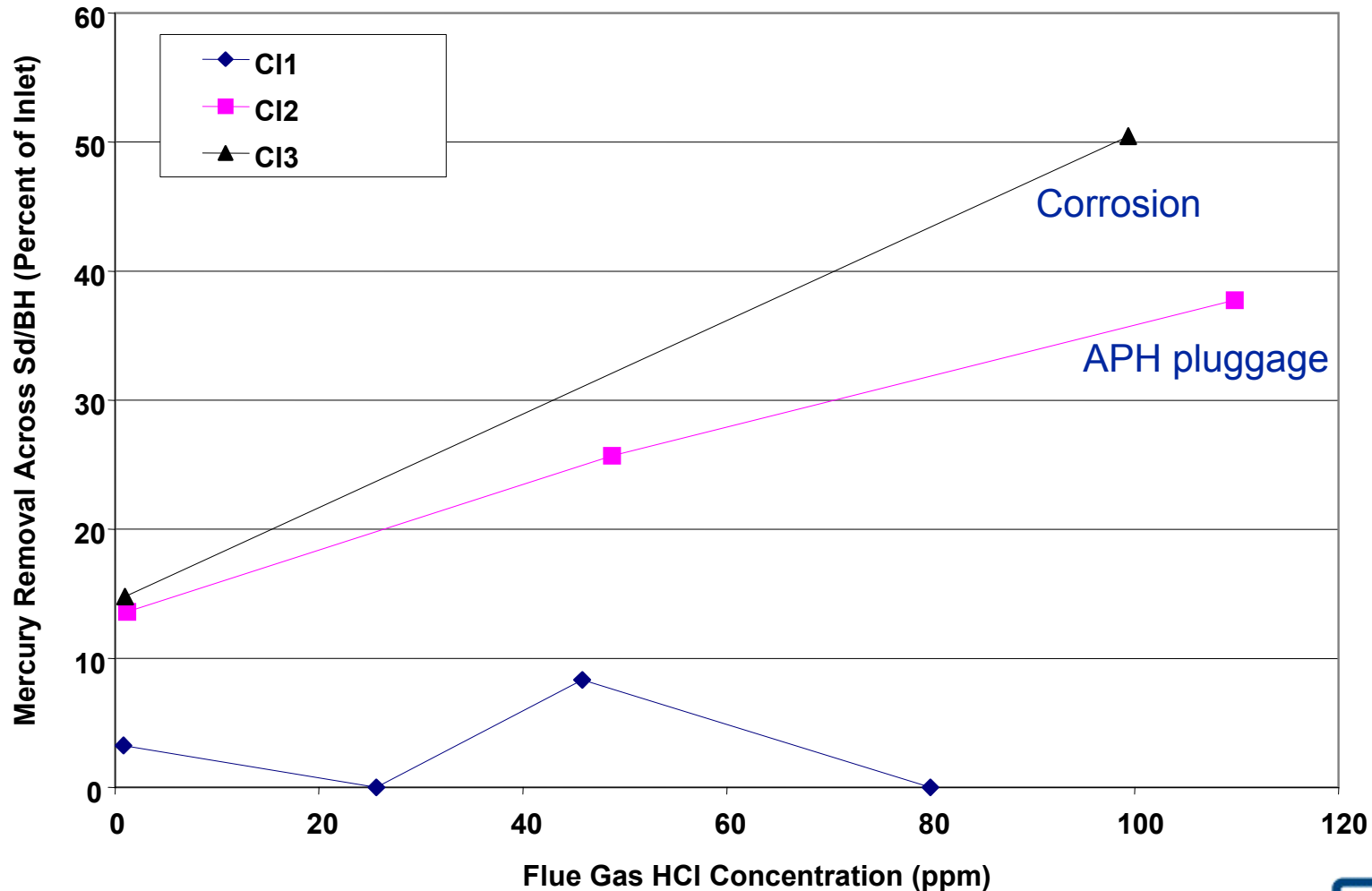
Summary – ACI at Western-Fueled SD/BH Plant

- **ACI achieved ~70% Δ Hg short-term**
 - Injection rate ~ 5x BH only
 - Performance beyond injection rate tested unknown
 - Emissions vary with cleaning
- **Iodine impregnated carbon (IAC) achieved 90+%, single test, short term**
 - Unit cost much higher; total cost?
 - Special carbon source; commercial availability?
 - Stability of iodine → corrosion, Hg re-release, iodine or Hg leaching

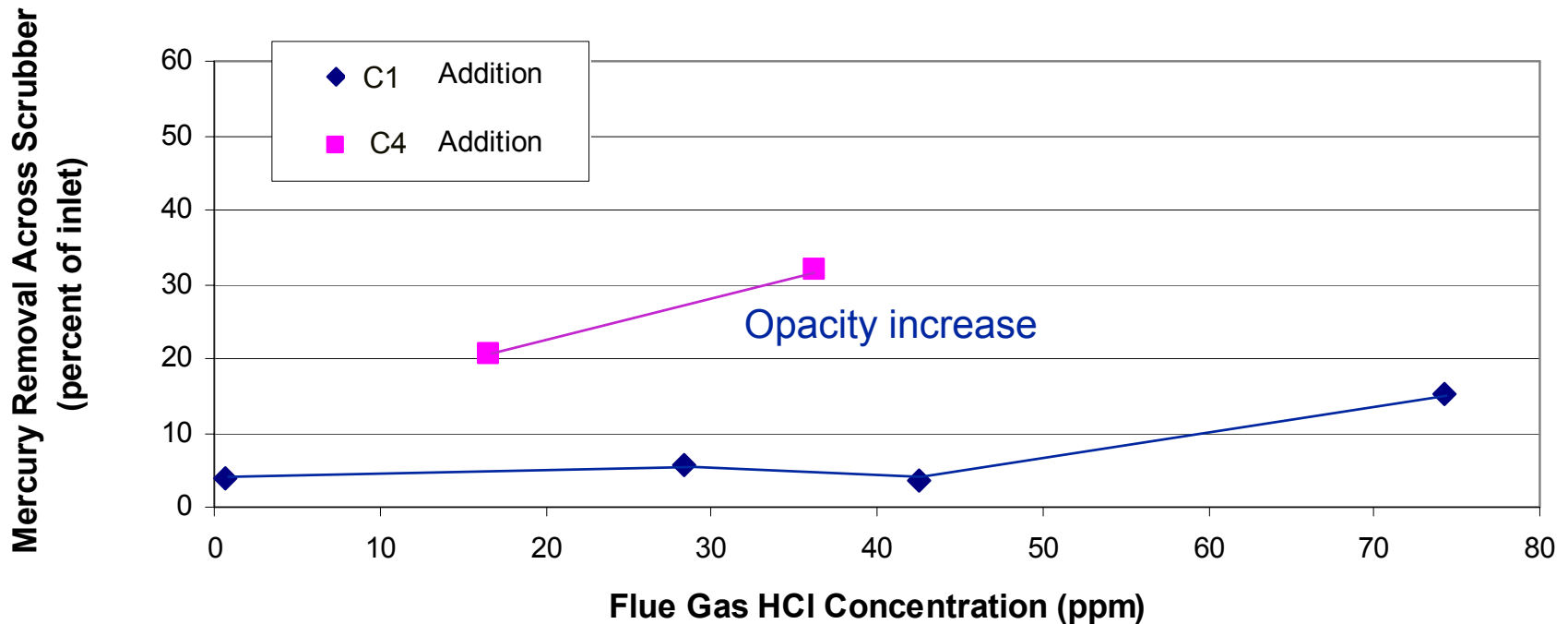
Mercury Oxidation Proportional to Created HCl Concentration



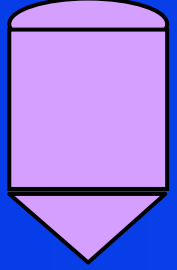
Mercury Removal by SD/BH Depends on Injected Cl Compound



Similar Effect at Wet Scrubber PRB Site



Max HCl correspond to 0.1-0.2% Cl in coal



Chemical Additives Promising, But Need...

- **Understand compound-dependent removals**
- **Manage air heater pluggage**
 - **Worst with most effective Hg removal compound**
- **Assess boiler slagging, tube deposition, corrosion**
- **Counter opacity increase at wet particulate scrubber**
- **Determine impact on other air emissions**
- **Quantify total, long-term cost**