

Impacts of SCR on Mercury Reductions

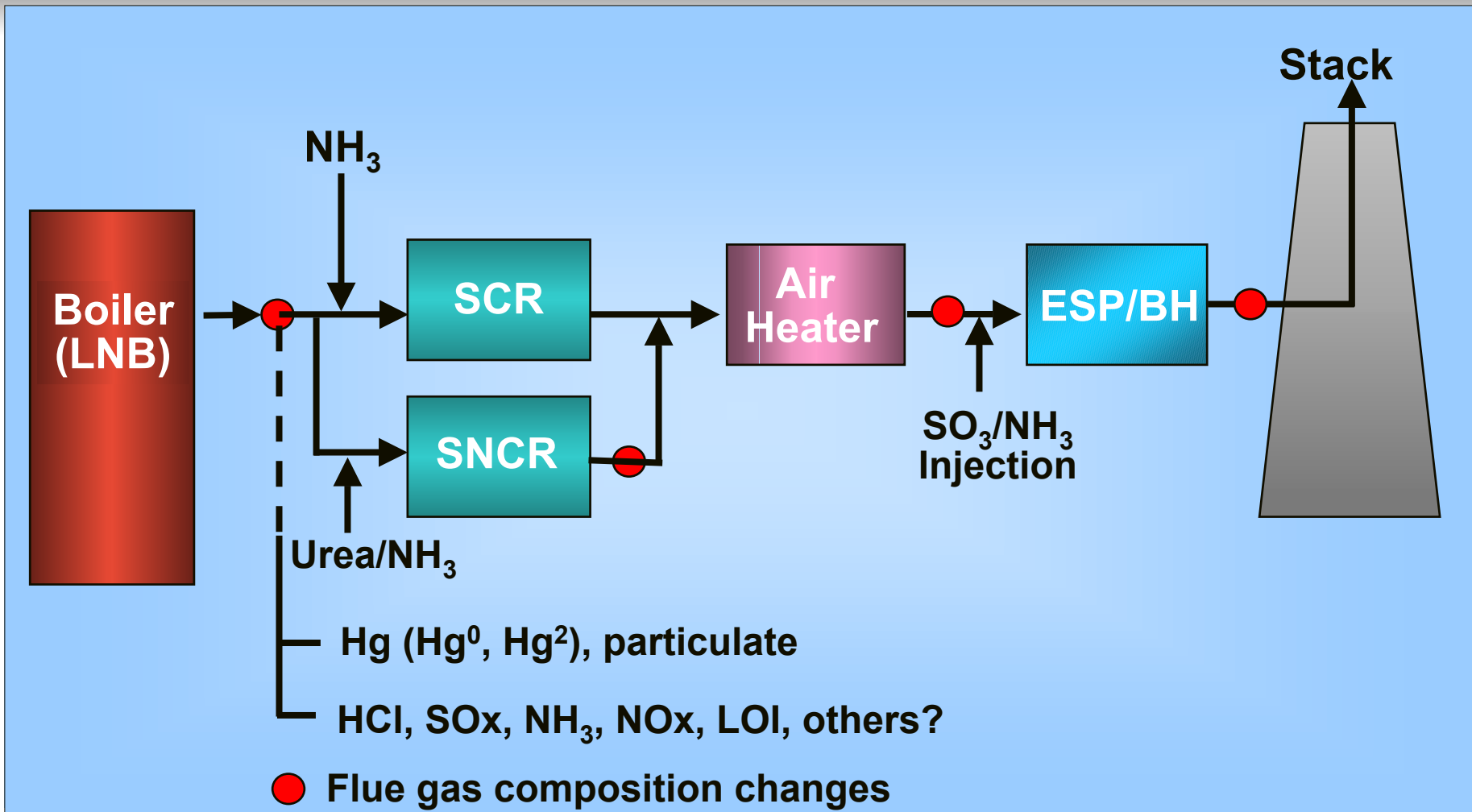


for
***EPA Mercury MACT
Working Group
June 3, 2002***

by
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EPRI

Where can SCR/SNCR & Gas Conditioning Impact Hg Emissions?



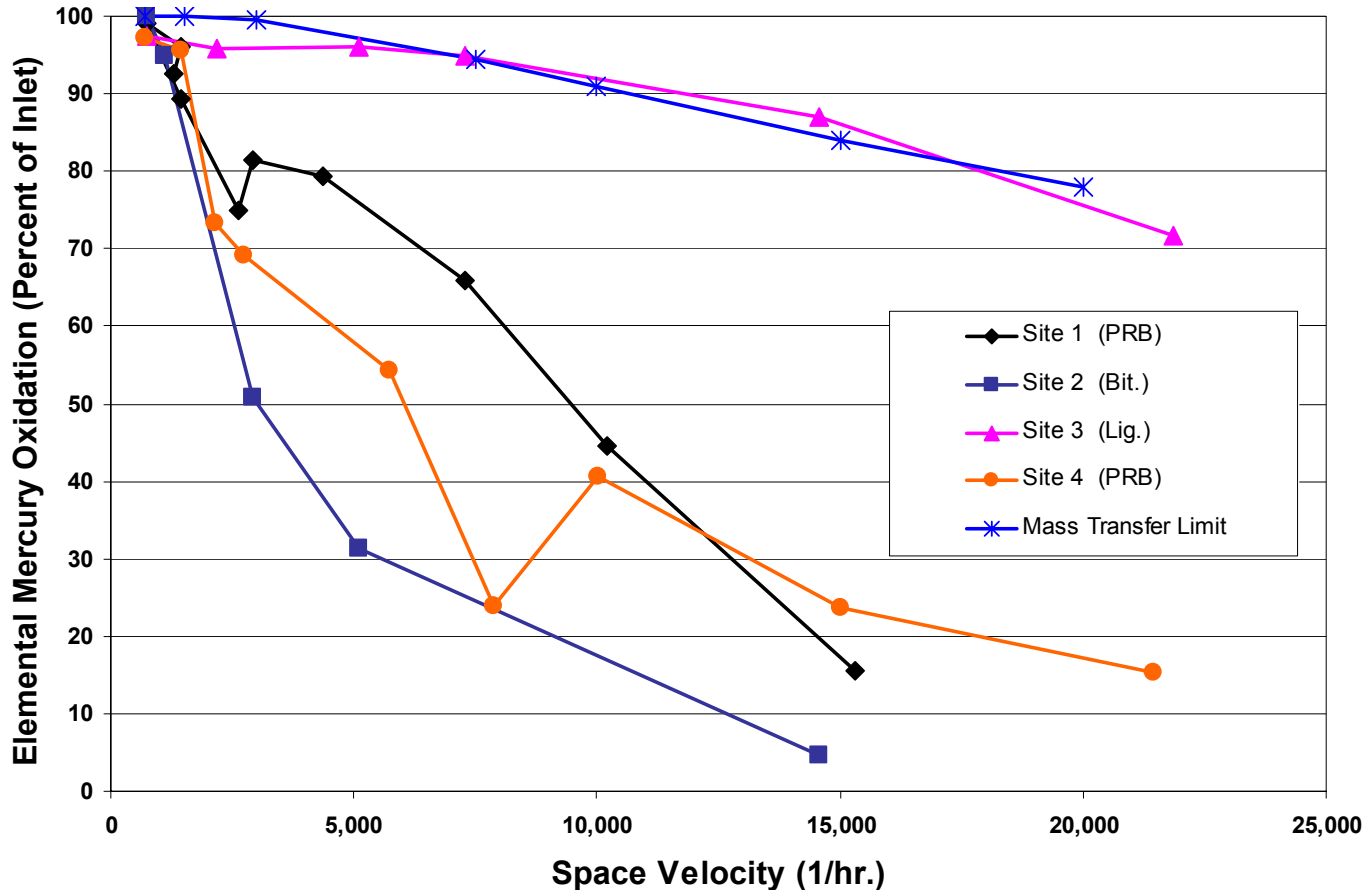
ICR Data Do Not Provide Guidance on Roles of SCR, SNCR, NH₃ on Hg

- **SCR - Logan, Birchwood**
 - Both are high Cl, high Hg removal sites with SD/FF
 - Removals similar to non-SCR sites with SD/FF
- **SNCR**
 - Salem Harbor (Columbian bit. coal/ESP)
 - High Hg removal
 - Due to 20-30% LOI fly ash, low temperature, long duct run?
 - AES Hawaii, Stockton Cogen (CFB/FF) - results consistent with non-SCR sites
- **No NH₃ gas conditioning sites tested**

Co-benefits of SCR + FGD for NO_x & SO₂ on Hg – Findings to Date

- **Where seen, benefit strongly dependent on SCR catalyst volume**
- **80-90% Δ Hg possible with E. bit (2 sites w/FGD)**
 - No data with > 1 ozone season exposure
 - Both sites large SCR (high inlet NOx)
- **Rapid loss of Hg oxidation by SCR with PRB**
 - Mostly gone after 1,700 hr

Mercury Oxidation Strongly Dependent on Catalyst Volume



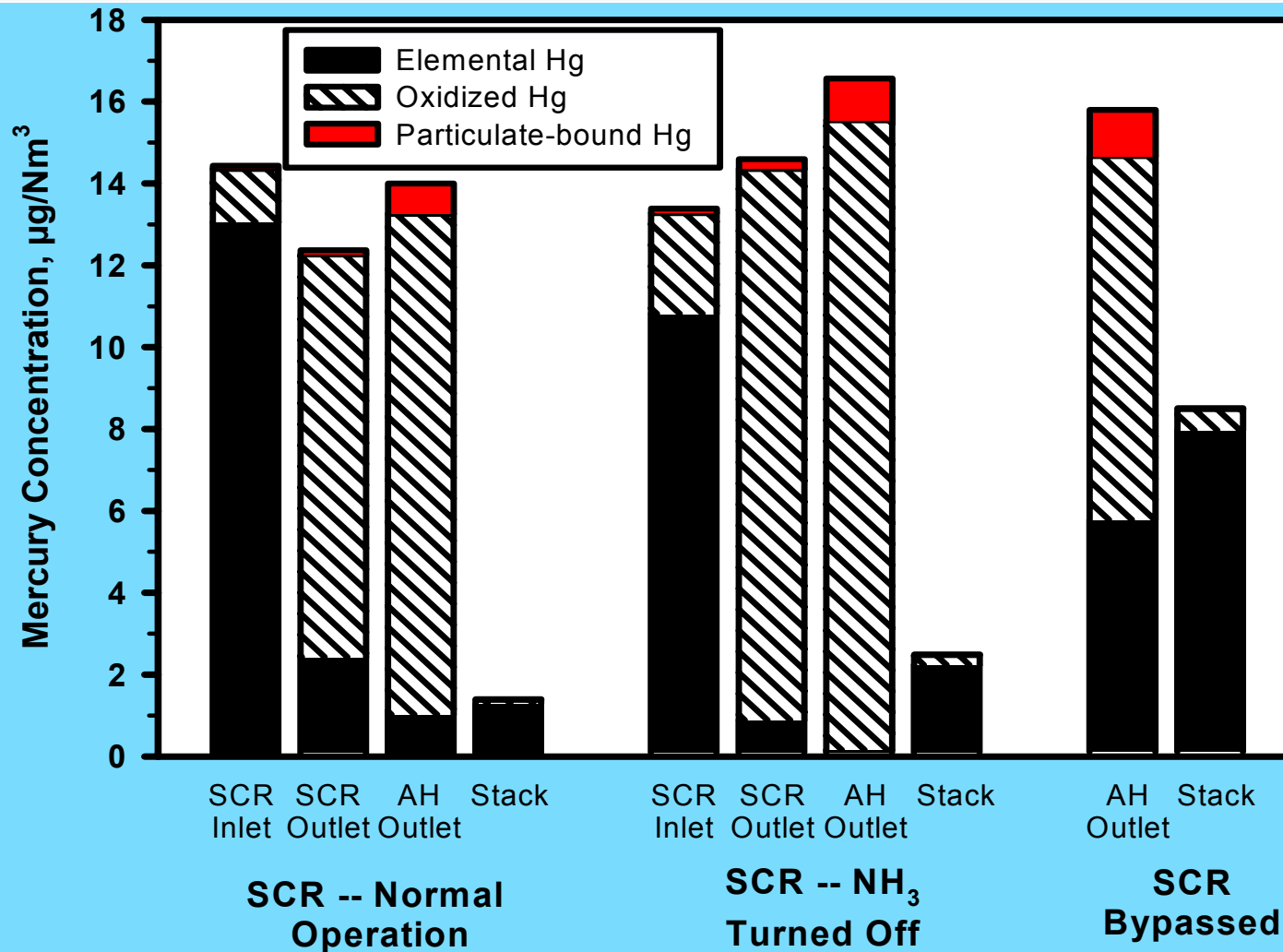
Diverse Power Plants Tested in 2001

- 4 SCRs - 3 bituminous, 1 PRB coal
- 1 SNCR
- 1 dual flue gas conditioning (NH_3/SO_3)

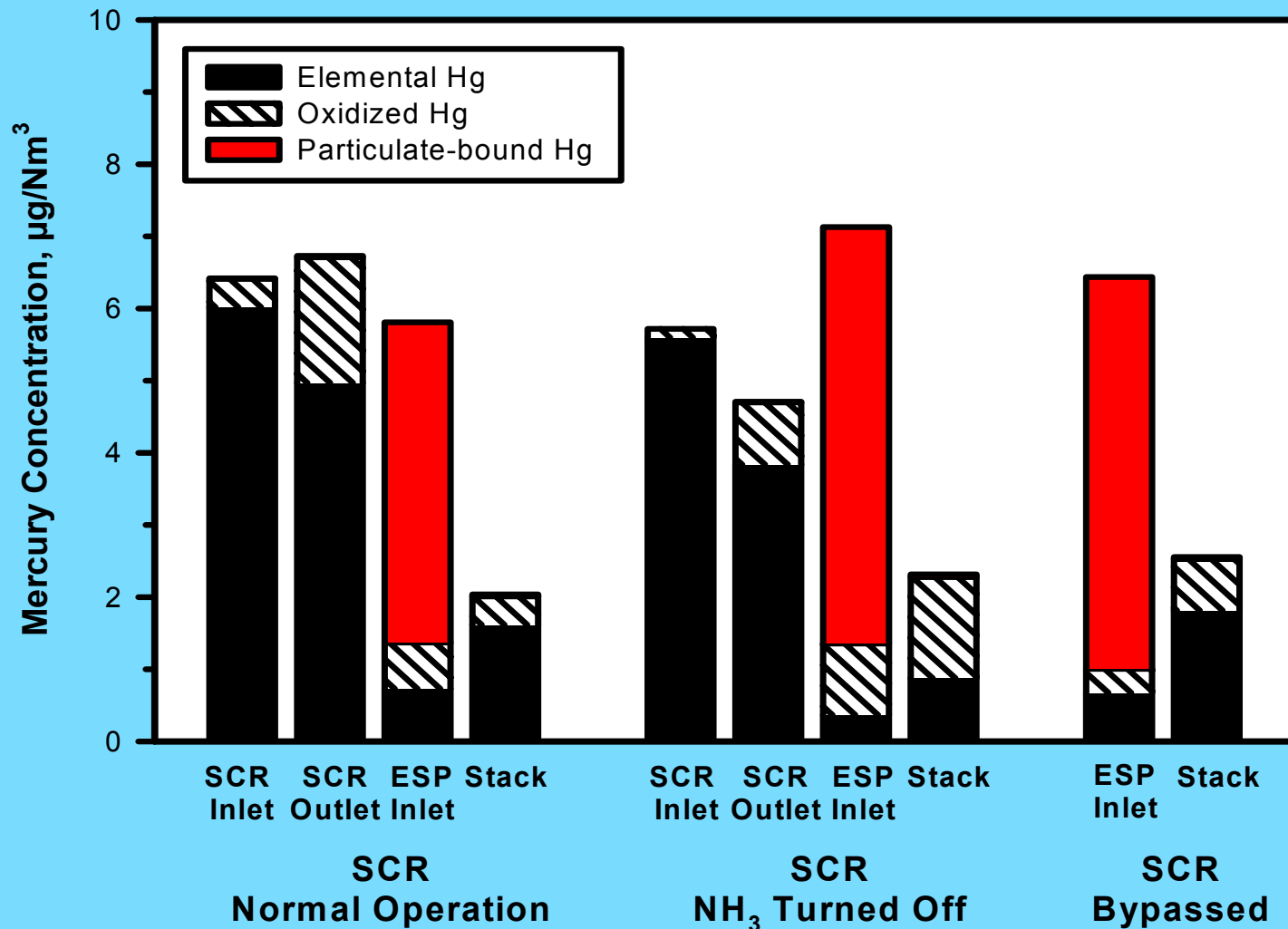
Site	Type	Coal	% S	ppm Cl	Controls
1	NH_3/SO_3	PA Bit., PRB	0.4	150	ESP
2	SNCR	OH Bit. (med S)	2.5	1400	ESP
3	SCR	PRB	0.2	50	ESP
4	SCR	OH Bit. (hi S)	4	1600	ESP, FGD
5	SCR	PA Bit.	1.7	1150	ESP
6	SCR	KY Bit.	3	350	Vent. Scrubber

Bituminous Coal - 3% S, 350 ppm Cl

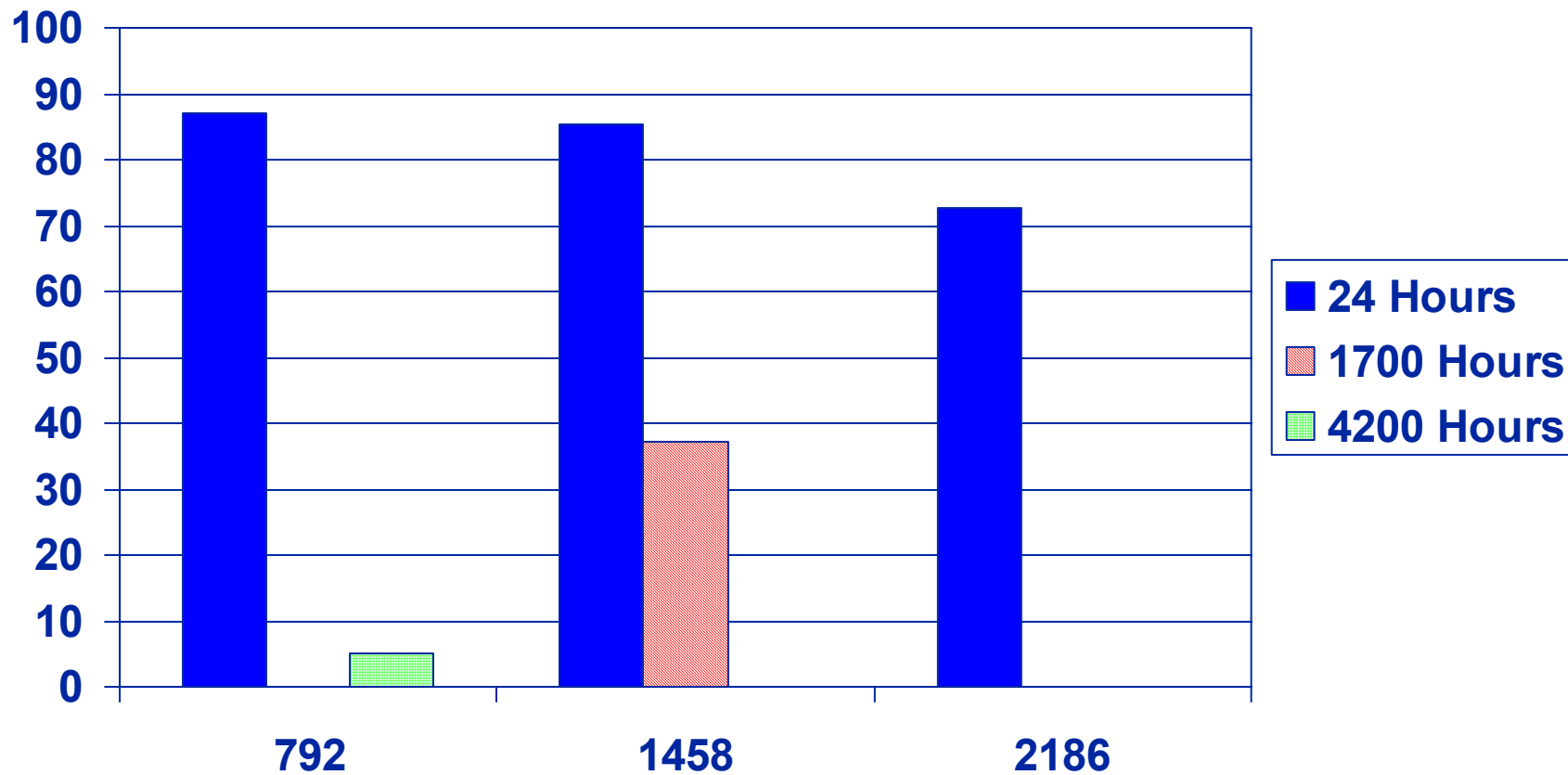
Increased Hg Oxidation and Removal



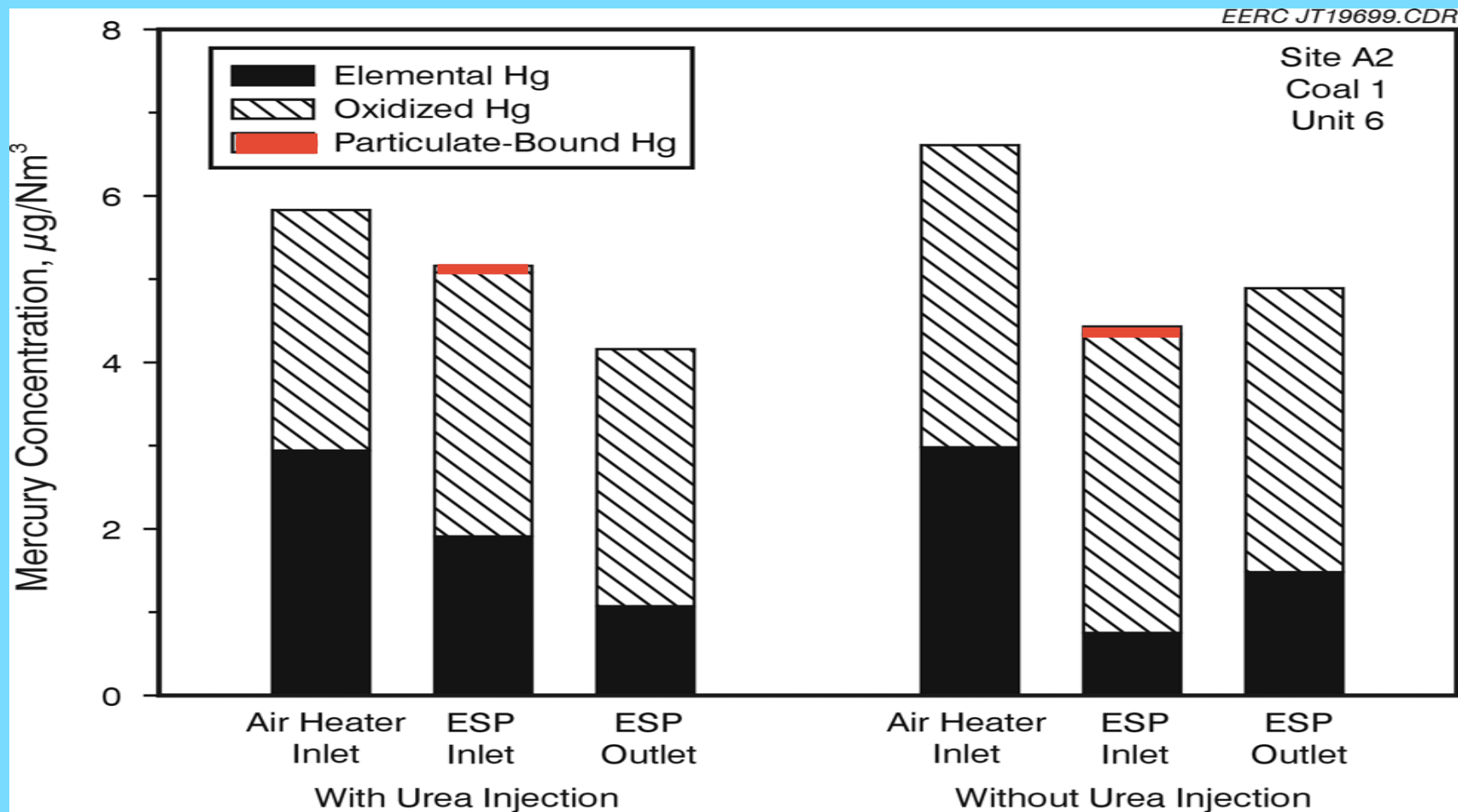
PRB Coal - High LOI, Hg Removal No Significant Effect of SCR



Catalyst Deactivation in PRB Flue Gas (pilot slipstream; 300 ppm NH₃)



SNCR – Bituminous Coal, High S, Cl No Significant Effect



Full-scale Test Plans for 2002

- **Focus on SCRs over SNCR, flue gas cond.**
 - 1 dual flue gas conditioning site completed
- **Effect of coal (S, Cl, etc.)**
 - Four bit. coals, including low-S compliance coal
 - PRB PC-fired (not firm yet)
- **Retest both 2001 sites w/high oxidation**
 - Effect of catalyst life
- **Longer term tests (weeks to month)**
 - Depend more on Hg analyzers