Fly ash and the Environmental Future

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OR

COAL THE NEW FOUR LETTER WORD!

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Coal/Fly ash?

- Coal is a natural material made up of organic materials. Limestone, silica sand, clay and iron.
- Fly ash is made up of Lime, silica, aluminum and iron in oxide form and is amorphous.
- Trace elements: mercury, cadmium, selenium, boron, chromium, copper, lead and zinc. Measured in PPM.

Coal/Fly Ash

- Trace elements and MSDS.
- Currently not listed as a hazardous waste, nor as a carcinogen.

  (solid waste subtitle D)
- Typical procedures should be maintained for handling.

US EPA Regulation
Clean Air Act

- Enacted in 1963, 65,66,67,68,70,77, 1990
- 1970 Clean Air Act was the first real step in clean air with enforceable regulations.
- 1970-1990 real changes in the limits of particulates, Sulfuric gases (acid rain) and Nitric Oxides (smog) etc.
- Changes included were primarily Fuel changes and scrubber additions.

US EPA Regulations
CAIR

- CAIR: reduction of pollution across state lines.
- Reduces Sulfur Dioxide (SOx/SO2) 70% 2003 levels.
- Reduces Nitrogen Oxide (NOx) 60% 2003 levels

What's New and Next?
Clean Air Mercury Rule/CAMR

- Purpose: To reduce 70% of the mercury released from coal fired power plants by 2018.
- Activated in 2005.
- No longer in play?
- Where does that leave us?

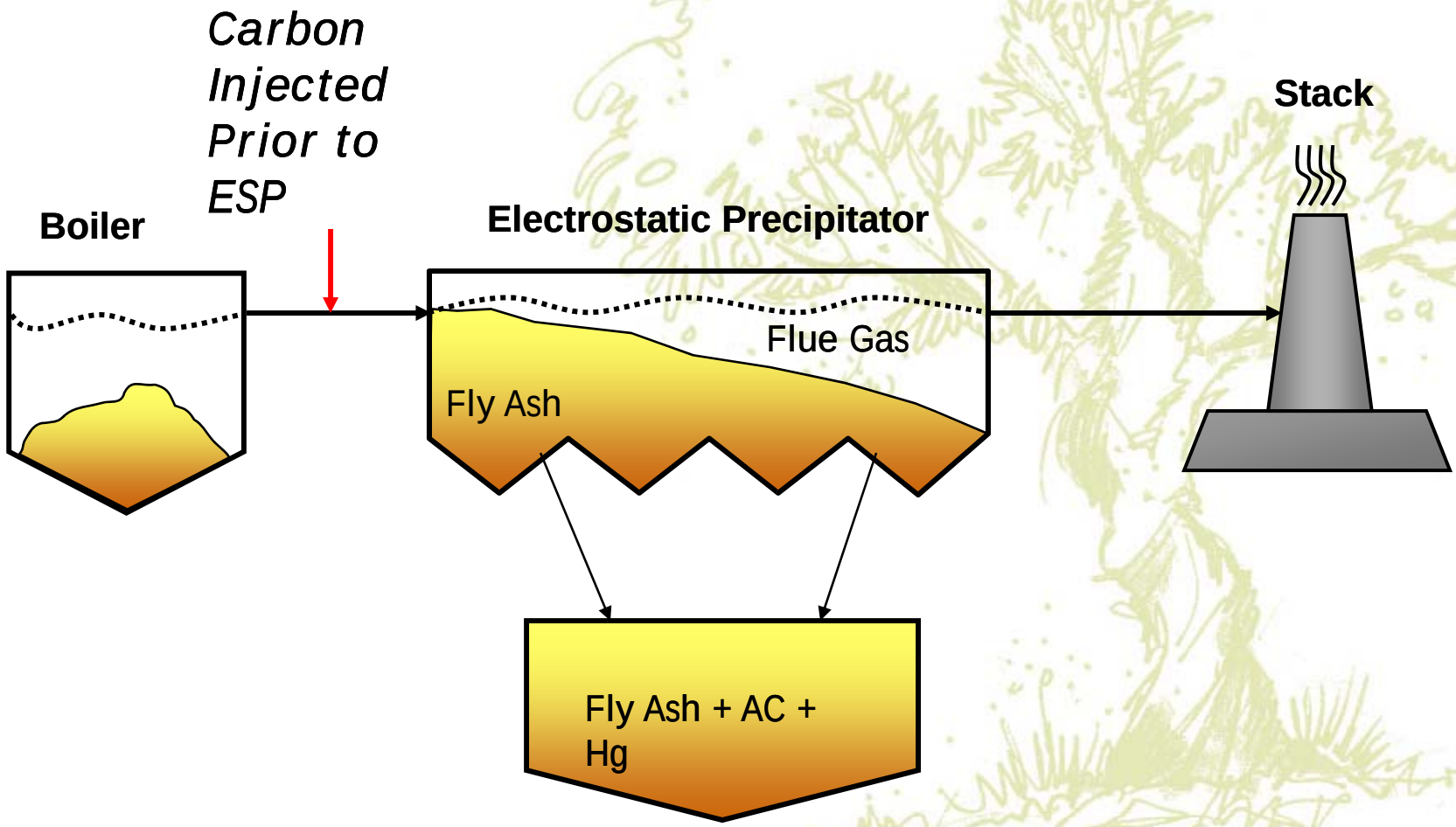
US EPA Regulations
CAMR

Fly ash in a mercury controlled world.

Challenge: Mercury Controls

- One approach to reducing mercury emissions from power plants is injection of powdered activated carbon sorbent into flue gases
- Too much carbon in fly ash can interfere with proper air entrainment of concrete
- Numerous strategies exist to protect fly ash quality

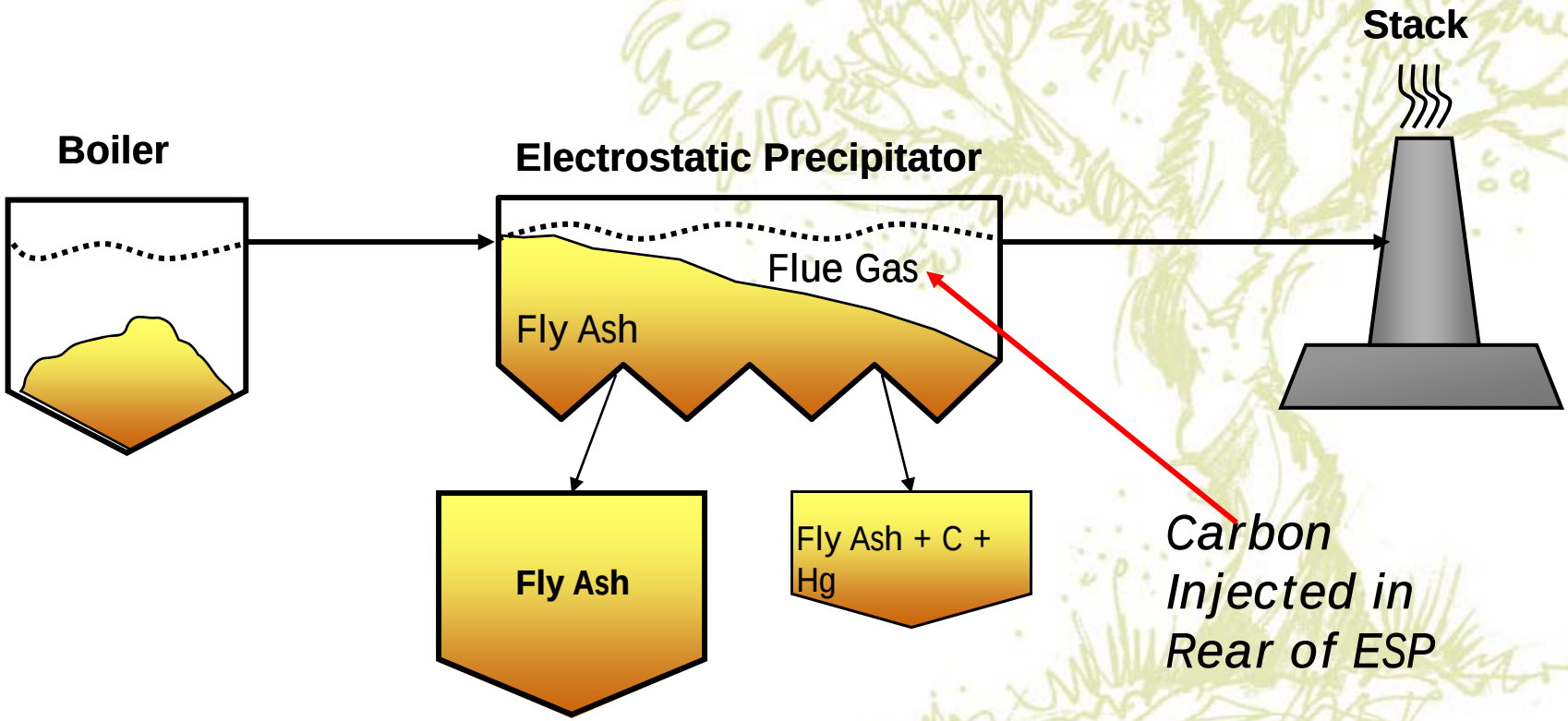
Activated Carbon Injection
Pre Fly Ash Collection



Pre Fly Ash Collection Injection

- Strategies to Protect Ash Quality:
  - Use of concrete friendly sorbent
  - Chemical fixation of carbon in ash
  - Carbon removal

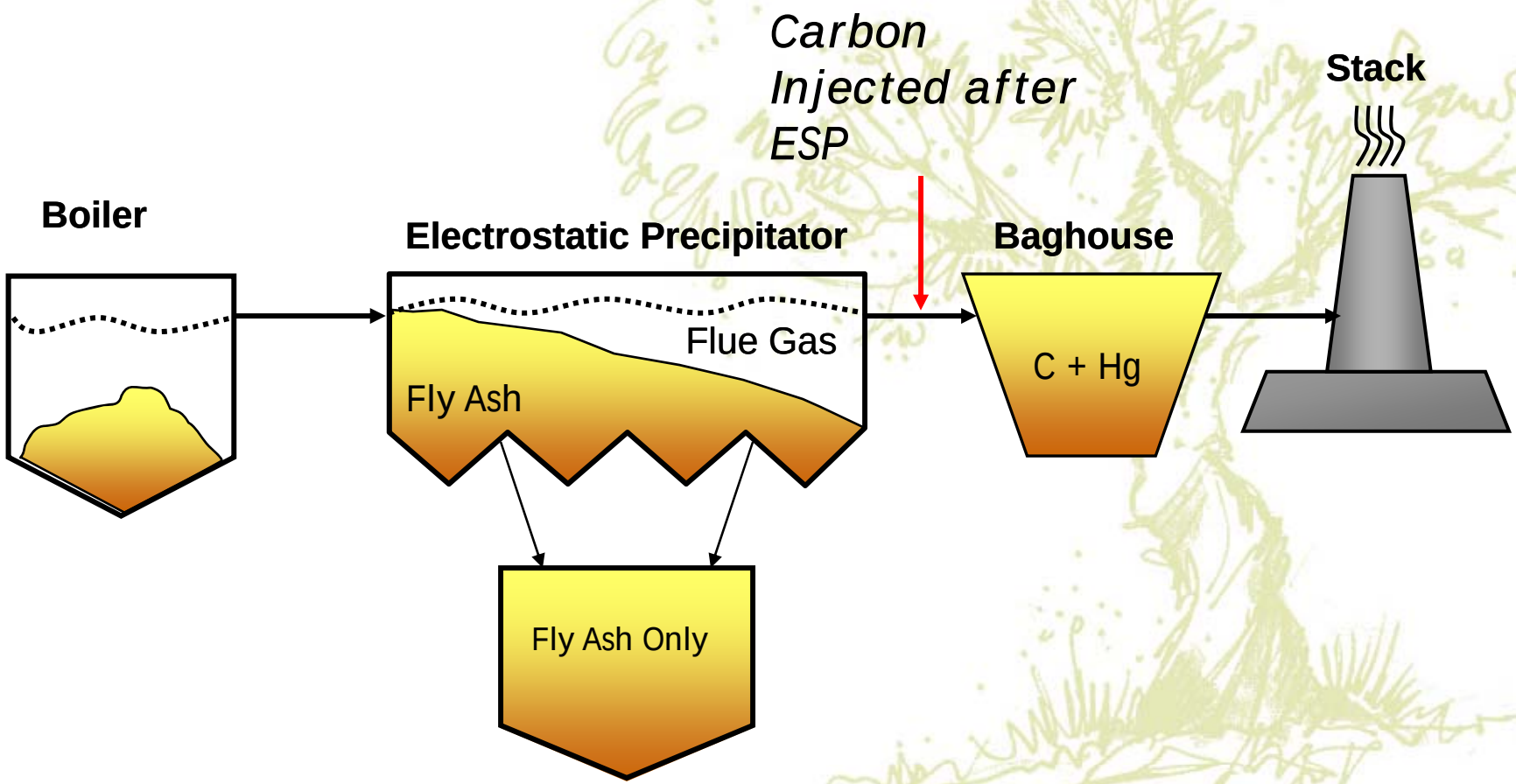
Activated Carbon Injection
Last ESP/Baghouse Row



Rear Row of ESP/Baghouse Injection

- Strategies to Protect Ash Quality:
  - Typically 4 – 8% of overall fly ash production is collected in rear row, so carbon contamination is minimized
  - Use of concrete friendly sorbent
  - Chemical fixation of carbon in ash

Activated Carbon Injection
Post Fly Ash Collection



Post Fly Ash Collection Injection

- Strategies to Protect Ash Quality:
  - No impact to fly ash quality
  - Potential to recycle sorbent

Regulatory Outlook or New EPA Regulations for CCB's

Coal Ash Regulatory History

- **1980 Bevill Amendment to Resource Conservation and Recovery Act**
  - Instructed EPA to "conduct a detailed and comprehensive study and submit a report" to Congress on the "adverse effects on human health and the environment, if any, of the disposal and utilization" of coal combustion products
- **1988 and 1999 EPA Reports to Congress**
  - Recommended CCPs should not be regulated as hazardous waste
- **1993 EPA Regulatory Determination**
  - Found regulation as a hazardous waste "unwarranted"
- **2000 EPA "Final" Regulatory Determination**
  - Concluded CCPs "…do not warrant regulation [as hazardous waste] " and that "the regulatory infrastructure is generally in place at the state level to ensure adequate management of these wastes."

Kingston Power Plant Impoundment Failure

- December 22, 2008, failure of containment dike released 5.4 million cubic yards (approx. 1 billion gallons) of ash slurry.
- Approx. 300 acres, several homes, and portions of Emory River affected.
- Fortunately, no deaths or injuries; families likely relocated; obvious immediate environmental impacts, long term impacts yet unknown.
- TVA clean-up costs publically estimated at $1 million per day; $525 to $850 million in “total” clean-up costs.

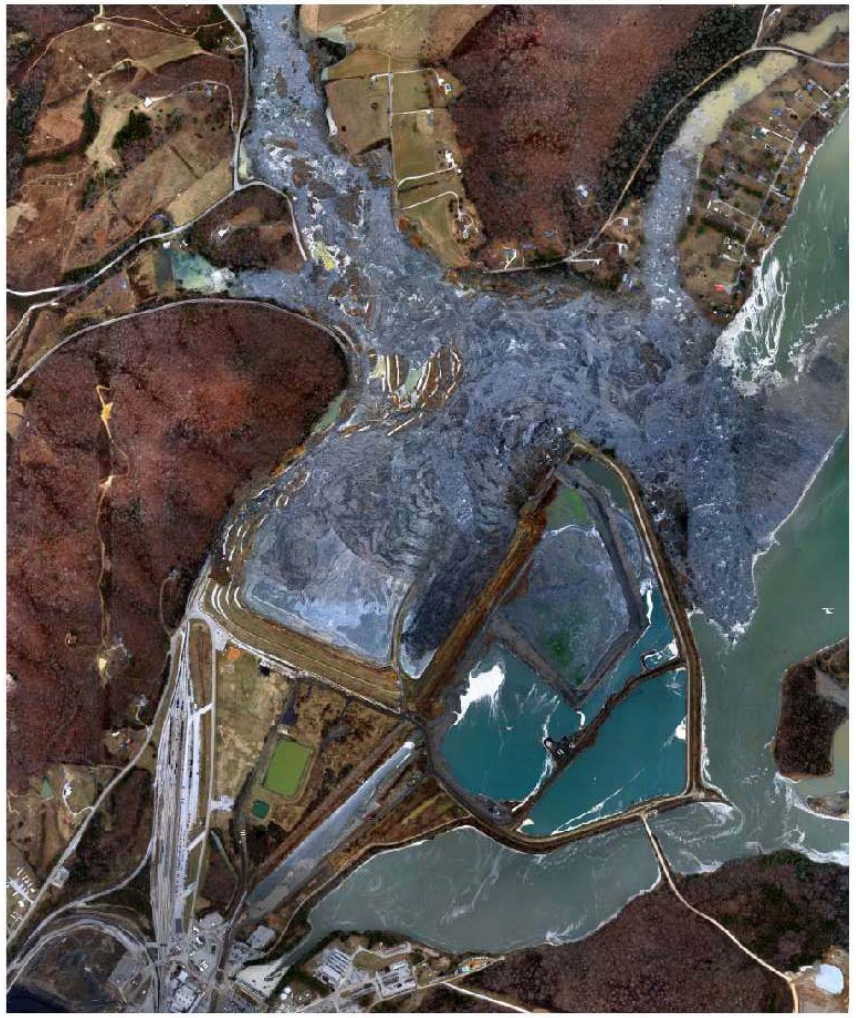
TVA Kingston “Pond” Failure - Before and After

Aerial Image of Kingston Ash Slide Pre-Event 2008

0 500 1,000 1,500 2,000 Feet

Tennessee Valley Authority
OE&R - ER&S
Geographic Information & Engineering

Aerial Image of Kingston Ash Slide 12/23/2008



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Tennessee Valley Authority
OE&R - ER&S
Geographic Information & Engineering

Responses to Kingston

- U.S. Senate hearing on Kingston incident in January
- Significant national news coverage
- More than 100 environmental groups petitioned EPA to regulate CCPs as hazardous waste (3/2/09)
- U.S. House Bill (HR493, Rahall) to increase ash impoundment standards (subsequently withdrawn)
- U.S. Senate Resolution (SR64) filed this month urging EPA to revisit CCP regulations
- U.S. EPA conducting survey of ash impoundments
- U.S. EPA indicating new draft regulations to be completed by end of 2009
- State legislative bills are beginning to appear (e.g. Texas HB 1450 – public records and Class I wastes; SB 2215 liners for impoundments)

Disturbing Trends from Washington

- Anti-coal environmental groups openly lobbying for hazardous waste designation.
- Increasing numbers of key staff at EPA being hired from anti-coal environmental groups.
- Utilities are becoming increasingly conciliatory.
- In separate private conversations, EPA Office of Resource Conservation and Recovery director Matt Hale has indicated that they may reopen Bevill completely because they "see patterns of management issues arising." (citing PPL, Constellation, Dominion and TVA)
- Hale has indicated that a "hazardous for disposal" designation remains fully on the table (private conversations).

The Good, the Bad and the Ugly Since 2000

- Good News
  - Beneficial use rate of CCPs increased from 30% to 43%
  - EPA cooperating in encouraging beneficial use through its C2P2 (Coal Combustion Products Partnership) program
  - Even (most) environmental groups like conservative CCP utilizations
  - The vast majority of disposal operations are run well
- Bad News
  - CCP disposal issues, in general, are attracting increased attention from regulators, news media and environmental activists
  - Several large incidents help fuel the attention
- Ugly News
  - TVA Kingston Spill
  - “Hazardous Waste” appears to be coming back to the table.

Legislative and Regulatory Outlook

- Increased CCP disposal standards are very likely.
- A ban on wet handling disposal may be possible.
- A “hazardous waste for disposal only” designation may be possible.
- A new regulatory category of waste may be possible (eg. RCRA Subtitle C “Lite”?).

Legislative and Regulatory Outlook (continued)

- Key Congressional committees appear to be waiting to assess EPA's course of action before filing additional bills.
- OMB to conduct study
- EPA to wait on OMB study.

Actions by Industry

- Industry associations publishing data and briefing Washington DC policymakers
  - Edison Electric Institute and Utility Solid Waste Advisory Group leading discussions on disposal practices
  - American Coal Ash Association leading discussions on beneficial use
  - Other key industry supporters:
    - American Coal Council considering update to Economic Benefits analysis
    - National Mining Association supporting lobbying efforts
    - Electric Power Research Institute supporting technical analysis

Key Messages

- Disposal practices can be addressed without designating CCPs as “hazardous waste”.
- A hazardous waste designation would seriously damage efforts to beneficially use CCPs.
- Scientific evidence does not support a hazardous waste designation.
- Beneficial use creates significant environmental, social, and economic benefits that could be lost.

ACAA is launching www.coalashfacts.org to distribute fact sheets and other supporting information

Lisa Jackson/EPA

- Industry personnel, companies, associations being asked to write letters.
- Some who have written letters: Congress members, Governors, State DEQ's, State DOT, Tribal Governments,Technical Groups. Notably, ACI, ASTM, NRMCA, PCA/ACPA, Ready Mix, Pipe, Precast, block producers etc..
- We would like to ask for your help!

Letters to the EPA

- All copies of the letters can be viewed at:
- http://www.uswag.org/ccbletters.htm
- More letters have been sent than are located at the site however.
- www.coalashfacts.org/
- www.smartash.info
- New blog: www.recyclingfirst.org