

Boiler MACT Remand Proposal

OIRA Meeting
March 5, 2020

Overview

- Rulemaking started in late 1990s
 - 2004 - final rule
 - 2007 – rule vacated by court
 - 2010 – new proposal
 - 2011 – reconsideration
 - 2013 – new final rule
 - 2015 – reconsideration of startup and shutdown
 - 2016 and 2018 – court remands
- Final rule 2013 - \$1 billion in compliance investments by 2016
- Court remands on floor setting methodology and CO cutoff and surrogacy
- Provided EPA additional data and responded to requests
- Time to complete Boiler MACT rulemaking

Anticipated Emission Limit Changes

- MACT floor assessment per remand – top 12%/floor units changed
- Subset of subcategories impacted

- HCl - reduction
- CO – wet biomass stokers and biomass fluidized bed limit decreases
- PM – biomass fluidized bed drop as well as other biomass boilers
- Mercury – smaller drop

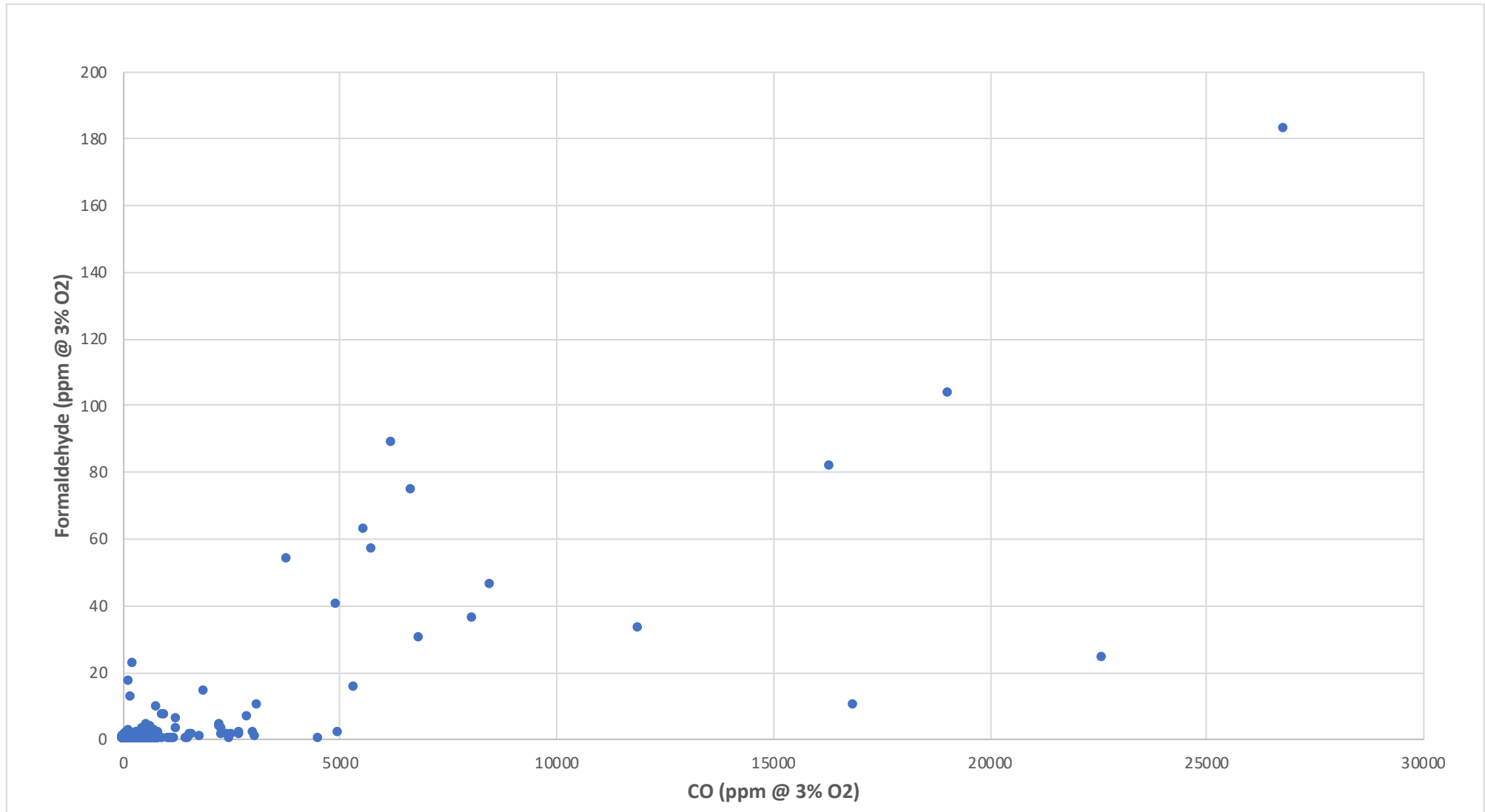
Cost Impacts

- Most of the solid fuel boilers unaffected
- Impacted boilers – estimated two dozen with capital costs
- Costs:
 - \$75M in capital costs
 - ~ \$8 M in annual costs
 - PM, CO, and then HCl are anticipated cost drivers
- Acceptable costs given court decision
- EPA may have overstated costs (and thus benefits)

CO surrogacy for HAPs is well established

- Court Remand sought better explanation of rationale by EPA
- Based on fundamentals of chemistry and experimental data
- Chemistry
 - Degradation of hydrocarbons is a two step process
 - First step breaks hydrocarbons to smaller pieces and CO
 - Second step further oxidizes CO to CO₂ and is more difficult than the first step
 - If CO is high, hydrocarbons can be high
 - If CO is low, hydrocarbons will always be low
 - CO is a conservative indicator of hydrocarbons
 - Exactly what is found in experimental data

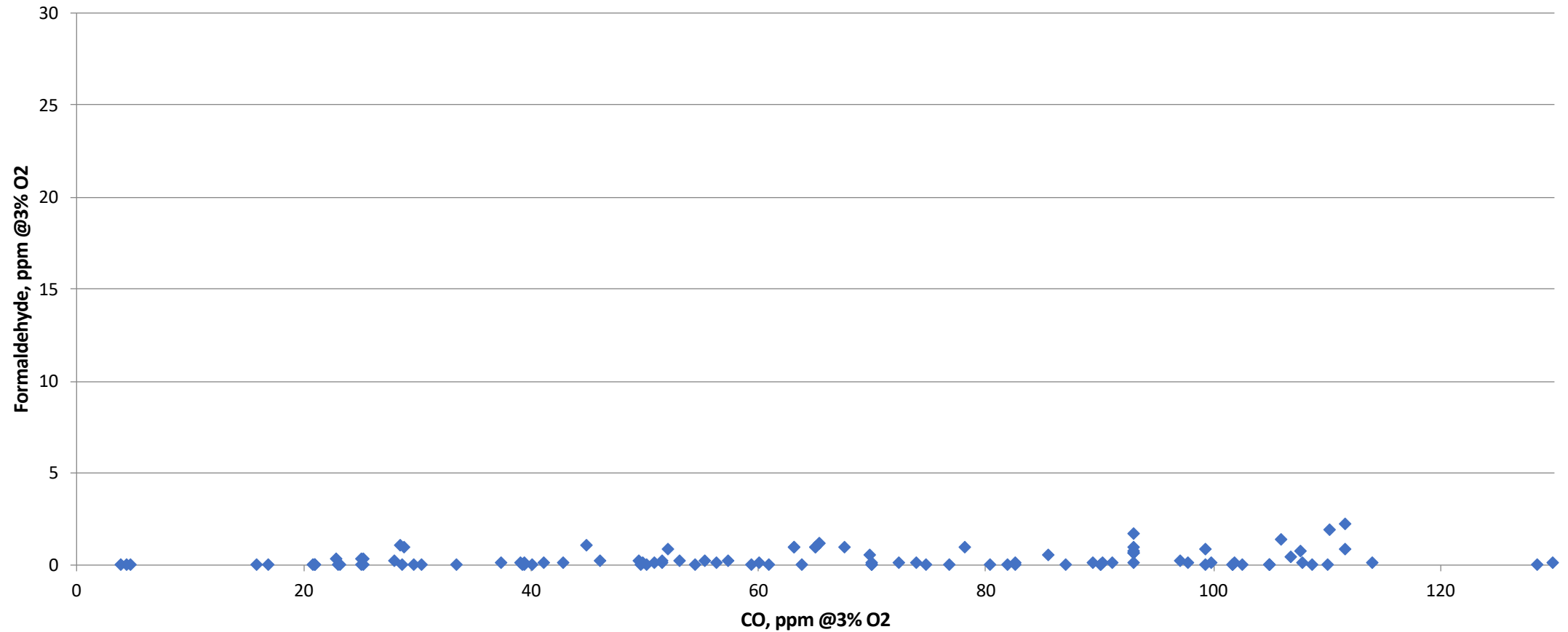
Paired CO and Formaldehyde Data for Boilers



130 ppm CO threshold is well supported

- EPA sponsored research - 1980's
 - No relationship between CO and hydrocarbons below 400 ppm CO (at 7% oxygen)
 - To be conservative, EPA chose 100 ppm CO (at 7% oxygen) as a regulatory limit for combustion of hazardous waste
 - EPA could have chosen 200 or even 400 ppm CO as the cutoff.
 - 100 ppm CO at 7% oxygen is the same as 130 ppm CO at 3% oxygen

Paired CO and Formaldehyde Data for Solid Fuel Boilers Where CO <130 ppm



Summary/Wrap-up

- Get proposal out for comment – regulatory certainty critical
- Succinct comment period
- Court issues fairly straightforward
- Strong record/data for rulemaking
- Finalize this year