

Performance Test/RATAs Update



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New Unit

- Asbestos Control Program has been brought back to BOA within the Compliance and Enforcement Section
- The Performance Testing/RATA Program was combined with the Asbestos Control Program into a new unit
- Hiring a new staff member to help with both RATAs and asbestos abatement project inspections

What is a Performance Test?

- Commonly referred to as a stack test, trial burn or performance test
- A performance test is used to:
 - Measure the amount of regulated pollutants that are emitted from a point source;
 - Verify capture efficiency from a capture system;
 - Verify destruction/removal efficiency of a control device.

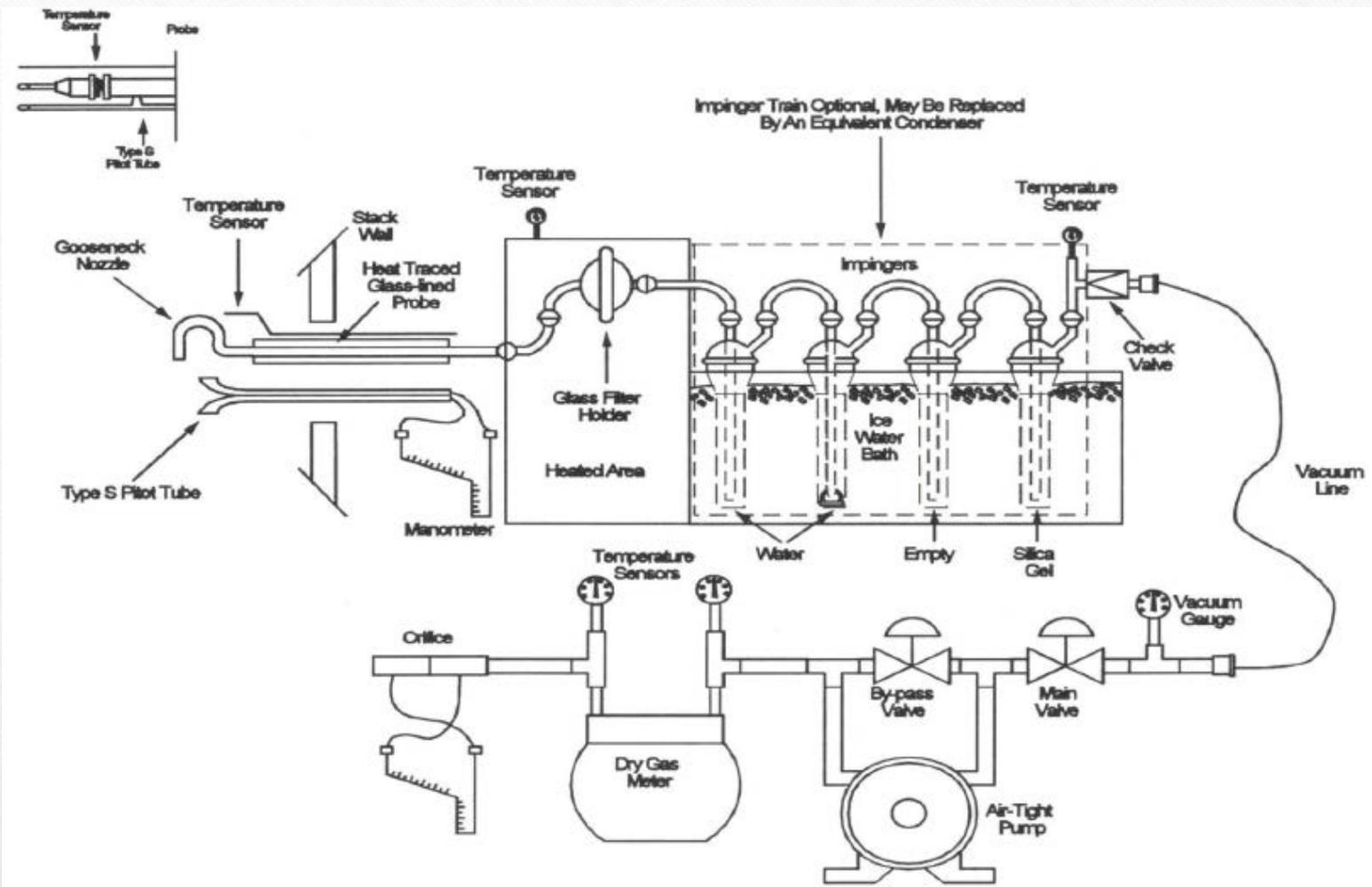
Types of Performance Testing

- Most common types of testing are:
 - Isokinetic Sampling
 - Instrumental Sampling (Analyzers)
 - To determine percent isokinetic:

$$\%I = \% \text{ isokinetic} = 100 \left(\frac{V_{\text{nozzle}}}{V_{\text{stack}}} \right) = \frac{0.0944 T_s (V_m)_{\text{std}}}{P_s V_s \left(\frac{\pi D_n^2}{4} \right) \Theta (1 - B_{ws})}$$

Types of Performance Testing

- Most common types of testing are:
 - Isokinetic Sampling
 - Particulate matter (PM) – RM5/202, RM17, RM201A
 - Dioxins/Furans (D/Fs) – RM23
 - Chrome & other metals – RM29, RM306
 - Lead – RM12



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USEPA Reference Method 5



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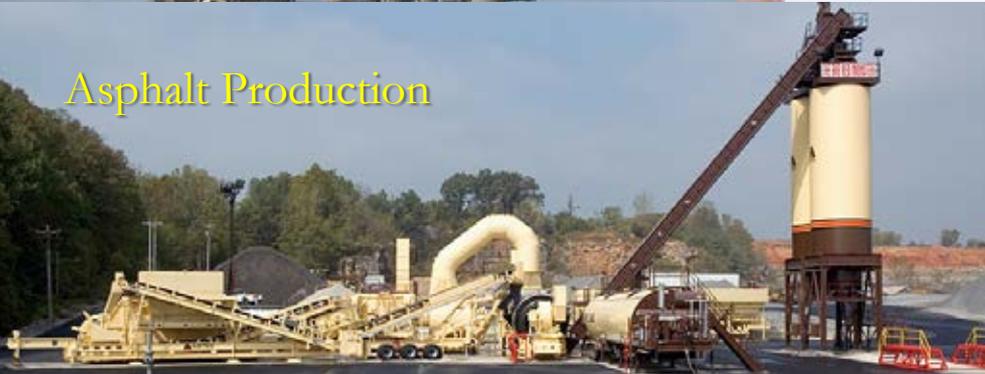
Coal burning



Cement production



Asphalt Production



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Grain Storage/Distribution



and Environment

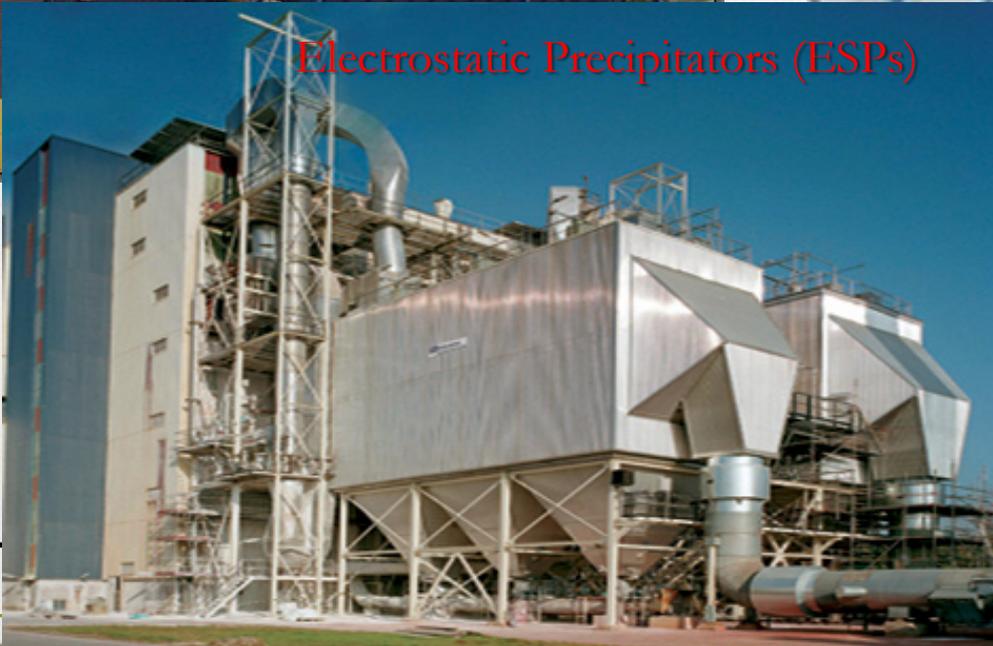
Baghouses



Cyclones



Electrostatic Precipitators (ESPs)



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Types of Performance Testing

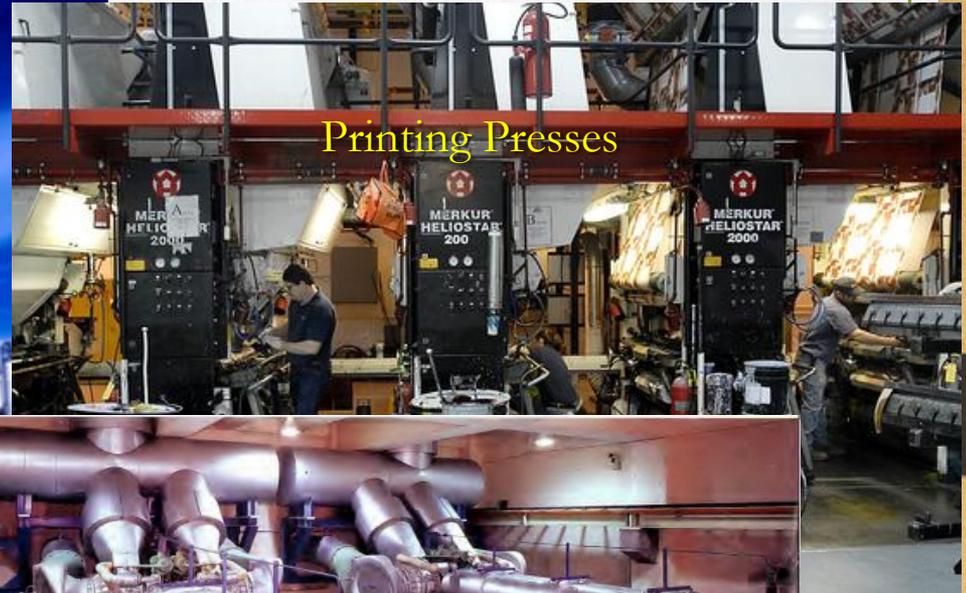
- Most common types of testing are:
 - Instrumental Sampling
 - CLD (Chemiluminescence Detector)
 - » NO_x – RM7E
 - FID (Flame Ionization Detector)
 - » VOC - RM25A
 - NDIR (Non-dispersive Infrared)
 - » CO – RM10
 - » O₂/ CO₂ – RM3A
 - Pulsed Fluorescence
 - » SO₂ – RM6C
 - FTIR (Fourier transform infrared spectroscopy)
 - » Non-diatomic molecules (mainly used for HAPs) – RM320

Sources of NO_x, CO, SO₂, VOC, HAPs

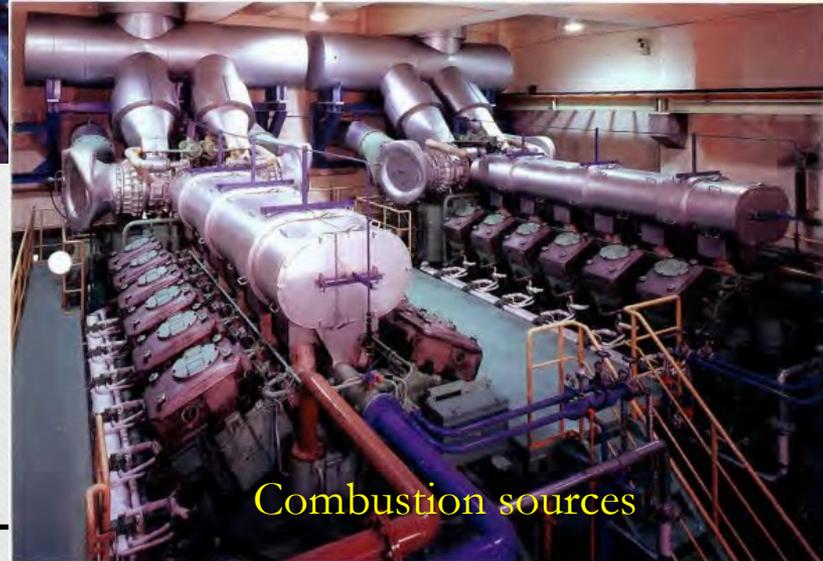
Refineries



Printing Presses



Ethanol Plants



Combustion sources

and environment of all Kansans



Common Gas Scrubber

Thermal Oxidizer



Scrubber



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Continuous Emissions Monitoring System (CEMS)

- Similar to analyzers used for instrumental sampling
- CEMS also available for measuring PM, mercury (Hg), flow rates, moisture, opacity



RATAs

- Relative Accuracy Test Audits
 - Quality assurance test for CEMS
 - Tested by comparing the Relative Accuracy (RA) between a tester's analyzers reference method (RM) against the CEMS
 - RATA consists of nine to twelve 21-minute runs
 - $RA = (|avg\ diff| + |cc| / |avg\ RM|) * 100$

Performance Tests/RATAs

- Example of large tests performed in 2014
 - Monarch Cement (D/Fs, HCl, PM, etc.)
 - Case New Holland (D/Fs, HCl, PM, etc.)
 - Exide (Pb testing)
 - Sunflower – Rubart (PM, NO_x)
 - ...stries (Hex Chr



Performance Tests/RATAs

Total number of Performance tests from
January 2014 to December 2014:

172 tests* were conducted, 90 were RICE tests

Of the 82 non-RICE tests, 51 were observed by KDHE, so
(62%) there may actually be dozens of units tested in "1" test.

Over 20 RICE tests were also observed by KDHE



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Performance Tests/RATAs

Total number of RATAs from January 2014 to December 2014:

29, of which 24 were observed by KDHE (83%)

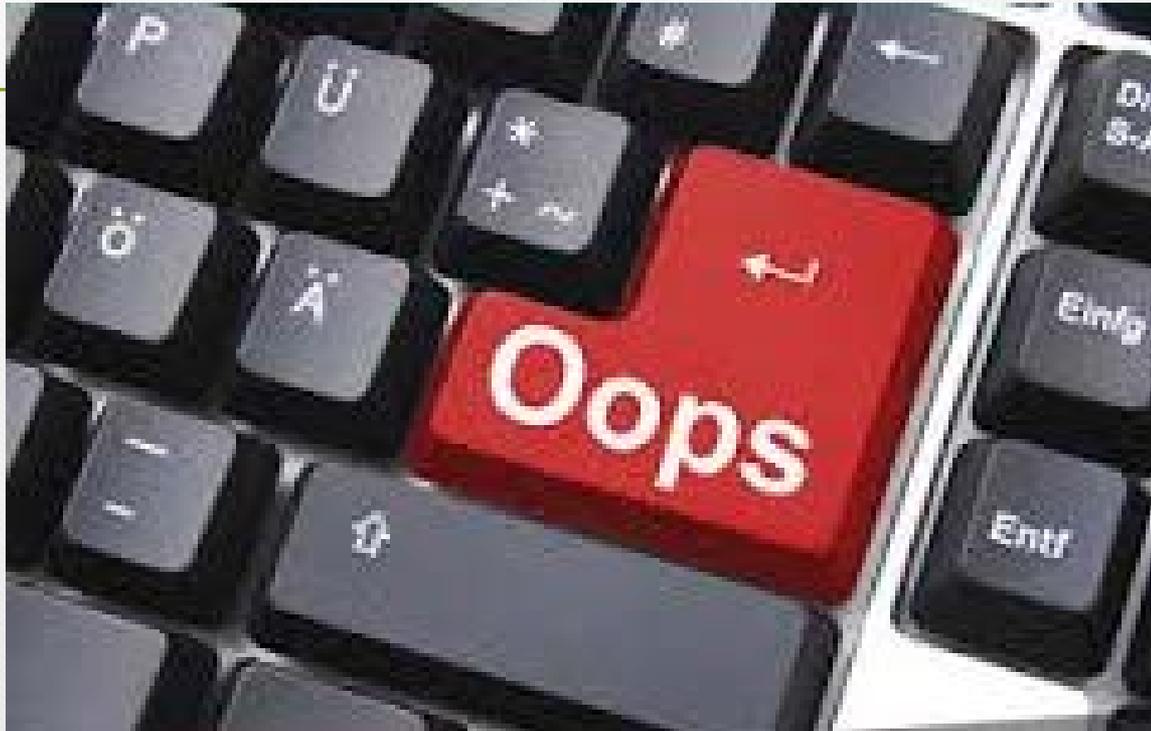
Required to observe at least 25% of all RATAs



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Avoiding Problems



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Avoiding Problems

- Portable analyzers
 - Outside temperature changes
 - Make sure to have a continuous flow rate
 - Proper gases for calibration and drift checks
 - Keep an eye on filter

Avoiding Problems

- Time management
 - Don't wait until the last minute to conduct the test
 - Make sure to notify within the specified deadline
 - Must be submitted at least 30 days prior to the test date, *unless specified differently in the regulation*
 - Make sure to submit the test report timely
 - Submit test report within 30 days after the final day of testing, *unless specified differently in the regulation*

Avoiding Problems

- Time management (con't)
 - Try to give us an actual day if at all possible rather than the week of testing.
 - We understand that dates and start times can change for the testing, try to keep us in the loop.

Avoiding Problems

- Be ready
 - Make sure all parties know what is happening
 - Stress to Operations the importance of the testing
 - Tests must be run at max load (>90%)
 - Must follow the test protocol
 - Changes to the schedule should be made no later than 7 days prior to the test
 - Ensure testers have what they need
 - E.g. electricity, proper test ports, safe testing location

Avoiding Problems

- Be ready (con't)
 - We try to notify the facility in some way when we are coming to observe a test.
 - Expect us
 - It should be no surprise when we show up
 - Any check in/security measures taken before we arrive will expedite the process and get us out of your hair sooner!

Avoiding Problems

- Be ready (con't again)
 - Monitor required operating parameters during the test; be sure they are included in the report
 - Examples:
 - Load (lb/hr, ft/min, MW, tph, bhp, etc)
 - Controls (temperatures, pressure drops, water flow, etc)
 - Operating Parameters (fuel flow, HHV, manifold pressure, etc)

ALT-0061 Withdrawn

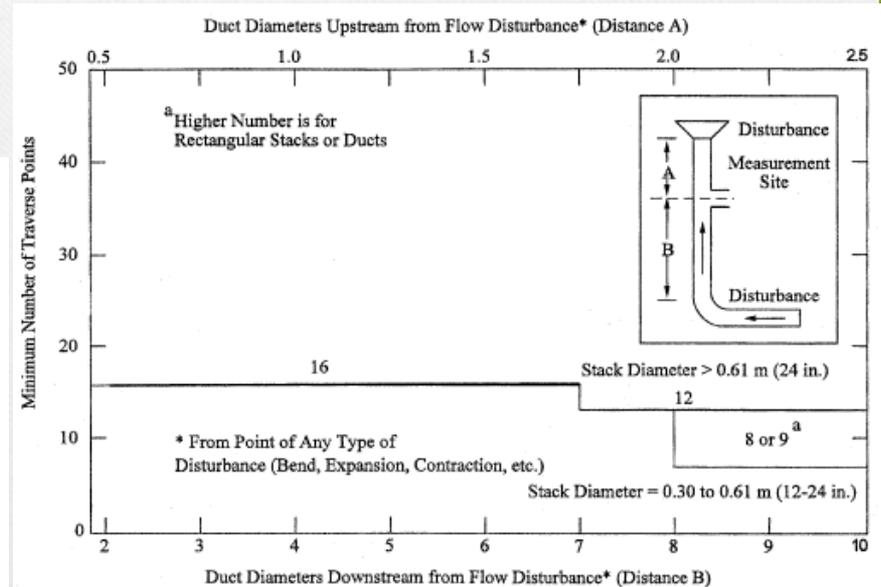
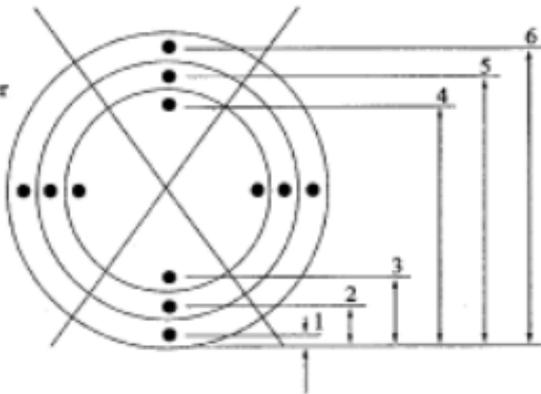
- Alt-0061, EPA approval for single point sampling in RICE
 - Withdrawn due to possibility of stratification of exhaust stream
 - Possibly due to breakthrough or poisoning of the catalyst

ALT-0061 Withdrawn

- Alt-0061, EPA approval for single point sampling in RICE
- Now requires either a stratification check, or minimum 3 points sampling in all RICE stacks larger than 6” in diameter
 - Ports do not need to meet RM1 requirements

ALT-0061 Withdrawn

Traverse Point	% of diameter Distance
1	4.4
2	14.7
3	29.5
4	70.5
5	85.3
6	95.6



Summary

- Most importantly...

Stay under your emission limits!

Questions?

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