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# Stack Testing Planning and Lessons Learned

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# Agenda

- > General Testing Information
- > Engineering Testing
- > Compliance Testing

# Centralized Scrubber



## General Testing Info (1 of 3)



- > Be ready for the unexpected! It usually does not go the way it is planned. Plan for additional test runs.
- > Be clear on what is being tested, and that the test methods to be used will provide data required.
- > This includes understanding gas matrix, analytical methods to be used for samples, and all detection limits.
- > Review detection limits with available data (e.g., air flow) to ensure that detection limits will provide usable results.
- > Work with site personnel to determine if any data could be useful for them.

## General Testing Info (2 of 3)

- > Understand before testing how to review data once available (don't sample for unusable data). Review sampling locations to meet EPA Methods.
- > Work with testing companies that are similar in your approaches and want to assist facility personnel.
- > Provide safe access for testers. Understand safety equipment needed, provide safety training, and provide company safety procedures.

## General Testing Info (3 of 3)

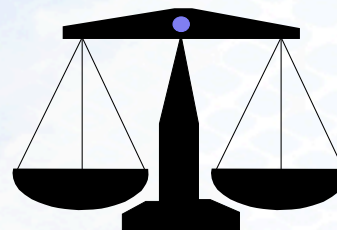
- > Work closely with all personnel involved (including process, engineering, and facilities), with frequent planning meetings. Understand how each process and control device operates, and ensure enough product flow and chemicals available for testing.
- > If control device is involved, ensure operation is reviewed for what is needed for testing (minimum combustion temperature, scrubber recirculation rate, maximum air flow, etc.).
- > Secure enough funding, including contingencies.

## Engineering Testing (1 of 2)

- > Engineering testing, including compliance pre-testing, is generally used for understanding control device performance, control device trouble-shooting, and emissions characterization (including process byproducts).
- > Test methods do not need to be performed by EPA or other regulatory test methods. However, these regulatory test methods should be considered if it relates to future compliance testing.
- > There are test methods provided by industry guidance documents (e.g., semiconductor). These test methods can be used for other industries.

## Engineering Testing (2 of 2)

- > Good to have test plan for engineering testing.
- > If the engineering testing is prelude to compliance testing, ensure the results will assist in what is needed for compliance testing (meeting permit limits, control device trouble-shooting and repairs, etc.)
- > Consider whether it should be done under Attorney-Client Privilege.





# Compliance Testing

- > Also called performance testing.
- > Usually done for air permit conditions and other regulations (NSPS, NESHAP, local regulations, etc.).
- > “Passing” is critical for success.
- > Important to work closely with regulatory agencies and testing companies.

## Compliance Testing - Possible Steps (1 of 5)

- > Review air permit conditions and relevant regulations to determine all requirements.
- > Review regulatory agency compliance test guidelines.
- > Develop in-house test plan, with test methods, detection limits, timeline, resources, access equipment, physical stack/exhaust duct modifications, etc. Develop testing company scope of work. Will engineering test be done?

## Compliance Testing - Possible Steps (2 of 5)

- > Select testing companies to quote, if quotes needed. Provide detailed scope of work to testing companies, and request quotes with due date.
- > Get funding approved, including contingencies.
- > Select testing company and issue authorization to proceed (e.g., P.O.). Have on-site pre-test meeting and sampling location(s) survey. Develop timeline, actions needed, testing variances, and responsibilities.



## Compliance Testing - Possible Steps (3 of 5)

- > Develop test protocol, with regulatory agency submittal form if applicable. Due to business information, confidentiality may need to be claimed and included. Send certified to regulatory agency (some agencies want hard copy and electronic copy). Please ensure enough time before test dates (usually specified in permit conditions).
- > Receive regulatory agency approval of test protocol before test date(s).

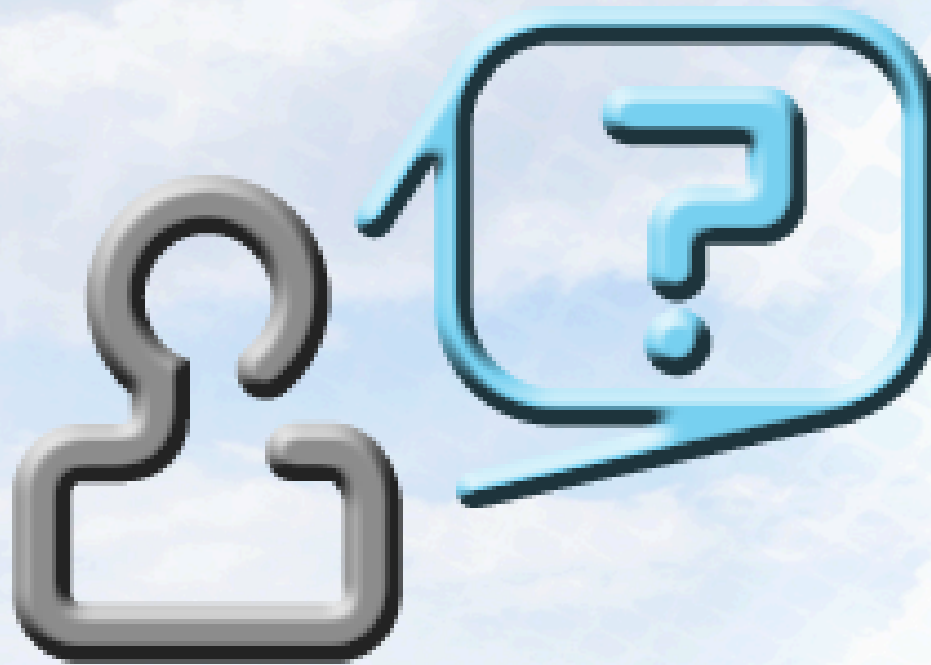
## Compliance Testing - Possible Steps (4 of 5)

- > Test date notifications may be required, so make sure this is done in test protocol as a defined statement or separate communication as required.
- > Good idea to determine if regulatory agency is observing compliance test, and make sure facility agency access approval is completed.
- > Test day(s): conduct engineering test if applicable, and then compliance test. Testing coordination between all parties involved is critical. Review any data available as it is generated. Food and water are always good!

## Compliance Testing - Possible Steps (5 of 5)

- > Review test data and QA/QC as part of draft report development. Testing company should notify facility personnel of any concerns prior to sending draft report.
- > Review and issue final test report to regulatory agency within timing allowed. There could be a regulatory agency submittal form. Also further confidentiality claims if needed.
- > Ensure compliance test report approval communication is received from the regulatory agency.

# Questions?



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- Mike Sherer serves as a Principal Consultant in the Trinity Phoenix, Arizona office. He has 37 years of environmental permitting and compliance experience in aerospace, chemical, semiconductor, solar, and several other industries in North America, and also has experience with several industries in Asian and European countries.
- Mike has worked on numerous air projects including permitting, compliance audits, emissions calculations (including process and abatement byproducts), and stack testing.