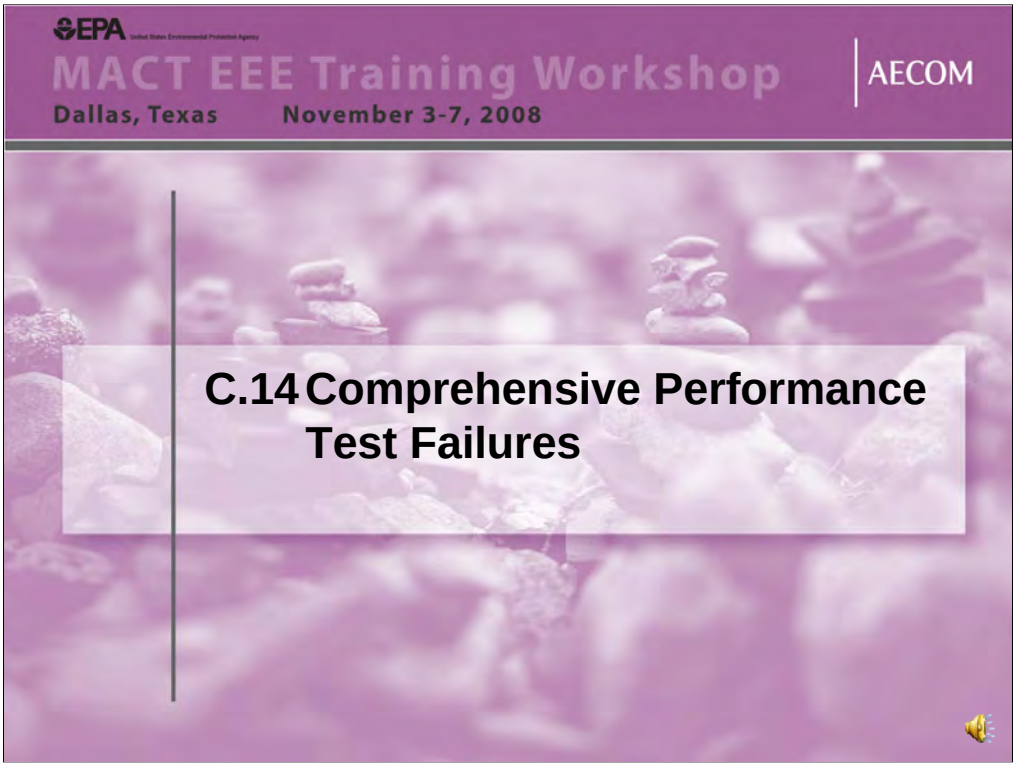


In this module, some of the key issues that can lead to CPT failures are discussed.

Presentation Overview

- Why do they occur
- Example types
- What are the regulatory implications
- What are the regulatory solutions
- What does the facility need to do to address the situation

The topics that will be discussed are:

Why do CPT failures occur,

Example types,

What are the regulatory implications,

What are the regulatory solutions, and

What does the facility need to do to address the situation.

Why do CPT Failures Occur

- Test conditions not designed correctly
  - Overfed waste or spiked compound
  - Operated unit at wrong condition - thermodynamics
- Equipment not operating as expected
  - Feed system or burner issues
  - APC problems
  - Needed maintenance not performed or not performed adequately
- Preliminary data results upon which test design is based are wrong
  - Waste or spiking concentrations wrong
- Lack of experience operating at desired test condition(s)
- Cyclonic flow in stack leading to incorrect results

There are several general categories of issues that can lead to problems with the CPT. First, the test may have had some design issues that result in conditions not being met or actual performance being different from expected performance. This could be a result of equipment issues but can also be because the preliminary or historical information upon which the CPT design was based, may have been wrong. Another key area that can result in CPT issues stems from having experience conducting the stack testing at the location(s) and operating condition(s) specified in the CPT Plan.

DRE Test Basics

- Select a POHC
  - That is more difficult to burn than organic HAPs
  - That is not a likely PIC
  - Better if not present in feeds at appreciable levels
- Feed enough to show required DRE
  - But not too much, unless other needs dictate
- Verify sampling methods will collect samples within their dynamic range
  - VOST is typically 25 – 1,000 ng in the VOST train
  - SVOC is typically 2 – 200 µg in the M0010 train

DRE testing is one are where issues can occur. First, from a test design perspective, POHCs should be selected based on historical experience if it exists. Key issues relating to test success are selecting one that is not likely to show up as another compound that may also be a second POHC. In addition, POHCs that may also be fed to the HWC say as part of a vent feed, may cause problematic results unless they can be fully accounted for as part of the feed amount. Another issue is selecting the proper feed rate. Too little in the feed and there will not be a sufficient difference between inlet and outlet to show the required DRE. Too much in the feed may overwhelm the sample and invalidate the results.

Failed DRE

- Combustion issues
  - Combustion chamber(s) temperature too low
  - Poor/no atomization of liquids
  - Too high target throughput rate
- POHC feedrate too low
  - Need 10^4 X difference between lb/hr fed vs emitted for 99.99% DRE
  - Need 10^6 X difference for 99.9999% DRE
- POHC feedrate too high
  - Overwhelm sampling train
- POHC is introduced from unexpected source
  - In waste or process vent system

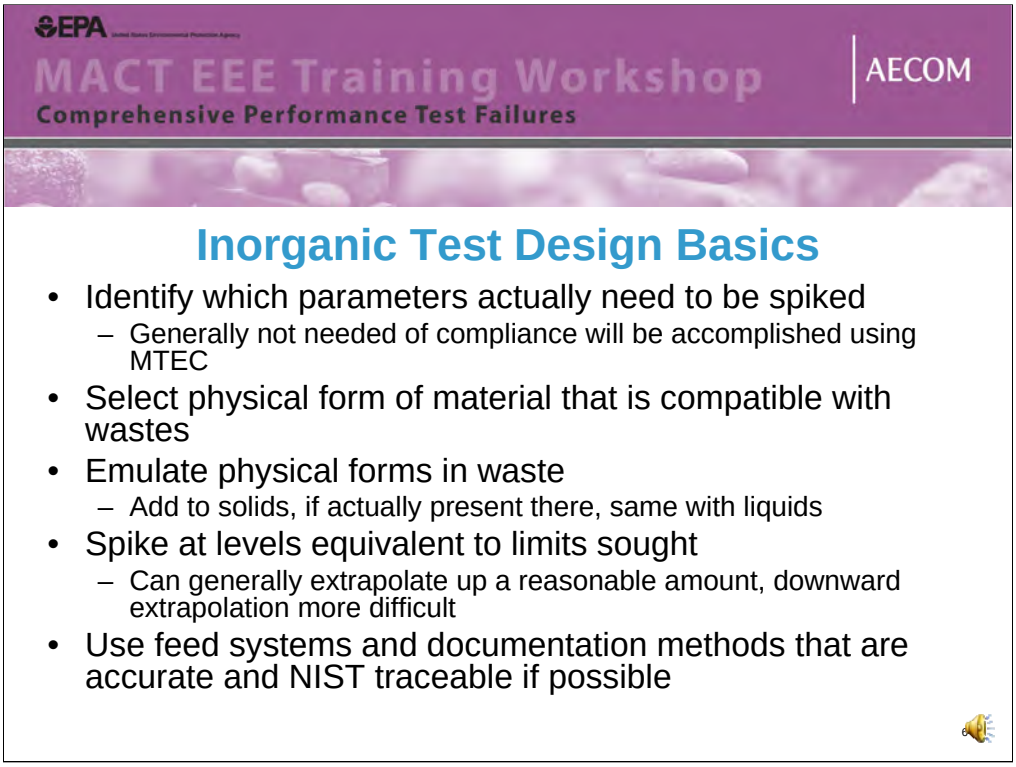
This slide provides some examples of how DRE testing can fail such as

Combustion-related issues

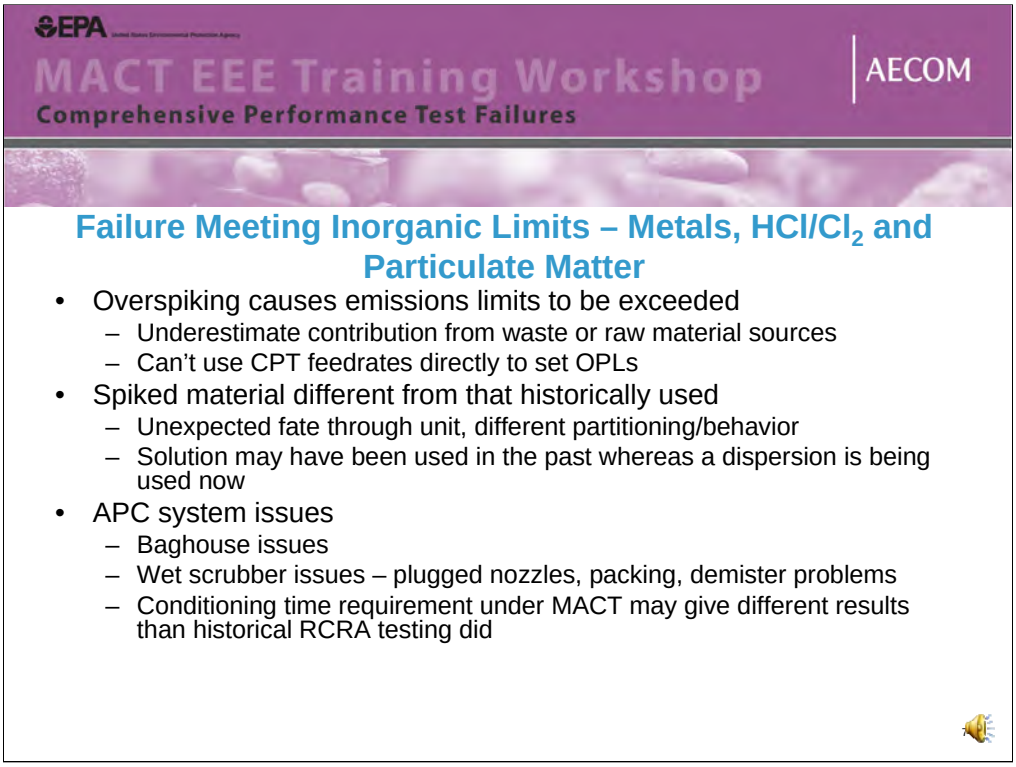
POHC feed rate too low,

POHC feed rate too high, and

POHC is from an unexpected source.



In design the CPT for any inorganic feeds, there are several issues that must be incorporated into the Plan. First, the decision to spike an inorganic should be based on whether the historical levels and the expected native levels during the CPT will be high enough to set a workable feedrate. This decision should also be based on how close to the emission standard, that particular parameter is expected to reach. If normal levels are very low or non-detected, MTEC can be used and spiking is generally not needed. Next, the form selected for the spiked materials needs to be compatible with the waste feeds it will be introduced with and should emulate the physical form actually seen in the waste. The rates selected should be close to the limits sought, so if extrapolation is needed, this can be done reasonably. And while upward extrapolation is generally supportable within certain ranges, downward extrapolation must be well supported by the data as removal efficiencies are not necessarily linear in the direction. Finally, feed systems should be selected that are accurate and where possible, NIST traceable.



Some areas of the inorganic spiking regime where problems in the CPT results can occur include overspiking or using spike materials that are different than what has been used historically. The first issue can arise from underestimating the contribution from wastes or raw materials, or the SRE ends up being less then expected. This can result in not being able to use these results to directly set OPLs. Using a different spiking material than in the past or not having any past experience with the spiking material being used can result in unexpected results and may require re-testing if the results don't show compliance. And finally, operational issues can occur that were not expected, particularly with the APC equipment.

Other Types of Failures

- D/F emissions standard
  - APC temperatures
  - Carbon system issues
- THC/CO emissions standard
  - Overfiring liquids
  - Flame quenching

Other types of issues can occur as well such as with D/F emissions or THC and CO emissions which are typically due to operational problems.

Regulatory Implications of CPT Failures – 40 CFR § 63.1207(l)(1)(i)

- If facility determines that they exceeded an emissions standard during a CPT
  - They must cease burning hazardous waste immediately under that mode of operation
  - Determination must be made within 90 days
- Facility can burn waste for up to 720 hours for purpose of re-testing
- Facility must conduct another CPT under revised conditions and submit a Notification of Compliance

There are several approaches provided in the regulations that may be appropriate depending on the issue and circumstances. These are summarized on this slide. In all of these cases, the facility should be communicating with the appropriate agency staff to agree on the best and most appropriate course of action. It is not unusual in these circumstances for facilities to request additional time to evaluate the issues, develop an action plan and implement corrective actions or make improvements and it is not unusual for this to take several months.

Regulatory Options

- Consider situation, discuss with facility staff, provide time extension under 40 CFR § 63.6(i)
  - Facility must request this
- Execute a Consent Order with a compliance scheduled
- Enforce cessation of feeding hazardous waste

Agency personnel must consider the facility's situation in order to make an appropriate determination on the best course of action.

Technical Solutions

- Facility needs to analyze cause of failure
  - Literature review
  - Vendor review
  - Engineering/technical analysis
  - Physical inspection of source equipment
- Not unusual for this to take 30-60 days, particularly if
  - Waiting for lab results
  - Repair is needed
  - Cause is not entirely understood

Understanding the actual cause or causes of failures can involve a detailed and detective-like analysis which can range from literature and vendor reviews, engineering analysis and a thorough inspection of the HWC, including opening the equipment up and evaluating internal components for proper configuration and condition. The initial investigation itself may suggest the need for certain sampling and analysis activities or equipment repair, both of which can require time to complete, waiting for lab results or contractors or equipment to be scheduled or delivered. Additionally, in some cases, the cause of the failure may not be fully understood at first, despite the facility's best efforts.

Once causes have been identified, time will also be needed to make repairs or upgrades, in some cases, CPT Plans will need to be revised and re-approved and often, the HWC aill need to conduct mini-burns to confirm that improvements work.

Finalizing CPT, DOC, NOC

- Finalize test report with re-test results included
- Incorporate results from successful CPT into single set of OPLs
- Facility then amends DOC and files revised NOC

Once re-testing is complete, the final results need to be reported and the appropriate OPLs set and incorporated into the DOC and NOC.