

# **Stack Testing: What is it and why is it necessary?**

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Quality

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# Who will you hear from?

- Jeremy Howe  
Environmental  
Quality Analyst



- Jenifer Dixon  
OEA Air Specialist



# Webinar Set Up

- All lines will be muted
- Questions can be sent to us via the question/chat box
- We will record and post the webinar online



# AQD and Stack Testing

- What is stack testing?
- Why do stack testing?
- Who in AQD attends stack tests?

How to streamline your stack testing experience and path to compliance.

# AQD and Stack Testing

- Technical Programs Unit (TPU)
  - Stack Testing
  - CEMs
  - Asbestos
  - Dry Cleaning



# AQD and Stack Testing

What Does TPU staff do?

- Observe source sampling
- We do not perform testing
- We travel state wide
- Sometimes climb the stack

# What is Stack Testing?

The physical measurement of a representative sample of the emissions from a source to verify concentrations and/or emission rates/factors.



# Why do Stack Testing?

- Requirement of a regulation
  - State Rules (See Part 10 Rules)
  - Federal Rules
    - NSPS (40CFR60)
    - MACT (40CFR63)
    - NESHAP (40CFR61)
- Cited in permit
- Consent Order
- CAA 114



# Why do Stack Testing?

You have an emission limit in the permit, but what does that mean?

Sometimes it means you must conduct stack testing to show your source's compliance with the limit.

That's where we come in!

# What is Stack Testing?

- A stack test consists of three runs.
- Each run typically 60 minutes long and/or 30 dry standard cubic feet sampled.
- Average of the three runs is “the number” compared the emission limit in the permit.



# Before the Test

# How do I get “the number”?

1. Apply to DEQ for a permit.
2. Receive a permit from DEQ.
3. Build source.
4. Optimize source.
5. Select testers.
6. Submit test plan to DEQ.
7. Test.
8. Report results to DEQ.

# Dates, Dates, Dates

- Submit Test Proposal at least 30 days before you want to test (could be more).



# Dates, Dates, Dates

## Submit Test Proposal

- Outline test event
- Include Source info:
  - Source name in permit
  - Pollutant      -Value of limit
  - Methods      -Unit of measure of limit
  - Short description of the process being tested

***Please see FORMAT FOR SUBMITTAL OF SOURCE EMISSION TEST PLANS AND REPORTS***

# Department of Environmental Quality

- ABOUT THE DEQ
- AIR**
- LAND
- WASTE
- WATER
- SUSTAINABILITY

- AIR
- News & Info
- Compliance
- Emissions
- Permits
- Monitoring
- SIP & Attainment

DEQ / AIR



## AIR QUALITY

**PROTECTING MICHIGAN'S AIR**  
 The DEQ ensures that Michigan's air remains clean by regulating sources to minimize adverse impact on human health and the environment. Goals are to maintain air quality standards, limit emissions of hazardous and toxic pollutants, and provide the public about current air conditions.

- Staff Directory
- Organization Chart

- News & Info
- Compliance**
- Emissions
- Permits
- Monitoring



### Compliance Information

- Permits (PTI/NSR) Public Notice
- A Citizen's Guide to Participation in Michigan's Air Pollution Control
- Reporting Agricultural Air Quality Concerns
- Clean Air Assistance Program
- Air Quality Source Information
- Air Quality Division (AQD) News and Reports
- Environmental Assistance Program (EAP) - Help with Air, Land, Water Regulations
- Michigan Guide to Environmental, Health, and Safety Regulations
- Customized Workshops
- Air Publications

- Compliance Topics
- Compliance Assistance for Industry
- Compliance Assistance Resources

- Dry Cleaning**
- Dry Cleaning Emissions

## Technical Assistance

- Continuous Emission Monitoring Systems Program Introduction
- Source Emissions Monitoring and Testing
- Continuous Emission Monitoring Systems Program
- Emissions and Opacity Monitoring



AIR

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DEQ / AIR / MONITORING

### Source Emissions Monitoring and Testing

#### [Introduction to Source Emissions Monitoring and Testing](#)

The Stack Testing & Sampling program provides statewide oversight of compliance and quality assurance activities relating to stack emission testing performed in Michigan as required by permit conditions or state and federal regulations. Staff assure proper sampling, analytical methods and calculations are used to produce accurate air emission data to determine compliance.

Specific activities include assisting facilities in siting sampling ports, conducting reviews and approvals of stack test protocols, on-site observation of source sampling testing and review and approval of final emission test reports.

## Information



[MDEQ-AQD Format for Submittal of Emission Test Plans and Reports](#) 

- [Renewable Operating Permit Report Certification Forms](#)

### Emission Measurement Contacts

- [AQD Emission Testing Contacts](#) 

### Related Links

- [EPA EMC: Audit Program](#)
- [ASTM Methods](#)
- [SW 846 Methods](#)
- [CARB Methods](#)
- [Stack Testing Consultants](#)

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY  
AIR QUALITY DIVISION



**FORMAT FOR SUBMITTAL OF SOURCE EMISSION TEST PLANS AND REPORTS**  
December 2013



**INTRODUCTION**

The source emission test is often the ultimate determination of compliance. The results of a test are of great significance to both the regulatory agency and the source. Since the results may determine the course of future enforcement discussions between the agency and the source, it is important that the test be performed in a valid and representative manner. The complex nature of the various sampling methods places great responsibility on both agency and testing personnel to assure each test is an accurate representation of a source's actual emissions.

The objective of this document is to describe the Air Quality Division's (AQD's) technical submittal requirements for a source test. The format described applies to the requirements of the Michigan Department of Environmental Quality (MDEQ) Rule 1001 (4), federal regulations (Part 60-New Source Performance Standards, Part 61- National Emission Standards for Hazardous Air Pollutants (NESHAP), Part 63-Maximum Achievable Control Technology) and to any other emission test submitted for reasons such as a permit requirement, for a consent order, consent judgment, or at the request of the AQD.

**TEST PLAN SUBMITTAL**

In order to establish uniform requirements and help ensure proper test methods and procedures are employed, **the information specified below should be submitted to the appropriate AQD district office (DO) and the Technical Programs Unit (TPU) in Lansing**, at least 30 days prior to the scheduled test date. A complete submittal will minimize the possibility of a test rejection as a result of improper sampling or data collection methods.

Testing shall be performed in strict accordance with the procedures specified in Title 40 of the Code of Federal Regulations, Part 60 (Standards of Performance for New Stationary Sources, Appendix A, as amended), Part 61 (NESHAP, Appendix B), and Part 51 (Requirements for Preparation, Adoption, and Submittal of Implementation Plans, Appendix M); and the MDEQ Rules Part 10 Intermittent Testing and Sampling. Any variations in the sampling or analytical



# Dates, Dates, Dates

Test Proposal cont.

- ✓ Date(s) of testing
- ✓ Cite permit that the limits come from
- ✓ Facility person's phone/email
- ✓ Test person's phone/email
- ✓ Location of sampling on source
- ✓ Location of sample points within source

**ANY DEVIATIONS FROM THE  
METHODS/REGULATIONS**

# Dates, Dates, Dates

- Test Approval Letter  
arrives 10 - 20 days prior  
to test



**(you need this to test!)**

- Being proactive and checking in with DEQ a day or two before the test is a good idea.

# Dates, Dates, Dates

## Test Date

- Usually included in the proposal
- Required to notify AQD 7 days prior

**THINGS HAPPEN!**

So let us know as they happen



# Test happens! (hold that thought for now)



# Dates, Dates, Dates

## Test Report Submittal

- Within 60 days after the test is completed
- Copies to local district office and TPU
  - \* (check approval letter)
- Include everything from proposal, plus
  - Values for emissions
  - Data from testers and process/control readings
  - **Any aborted, failed or repeated runs**

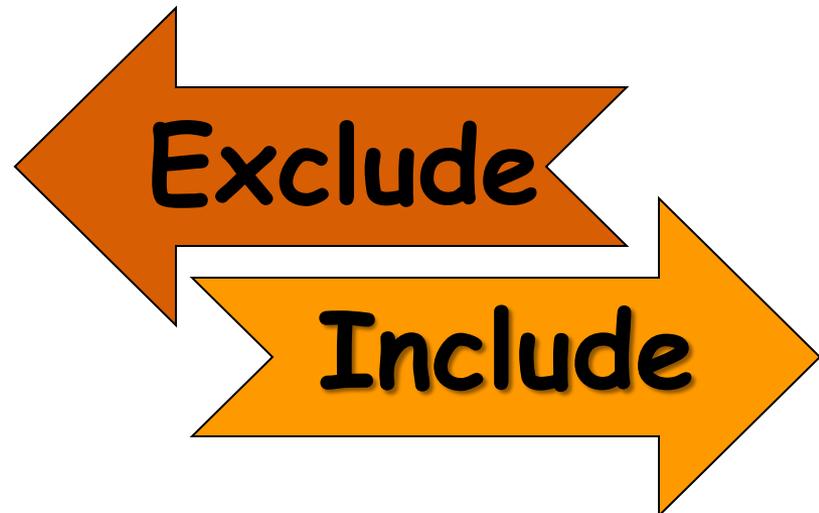
# The Report

- Testers generate report
  - Based on data collected
  - Reported as tested
  - **Cover Letter to discuss anomalies**
- Send report to company
  - Review it!
- Company sends the report to AQD



# The Report

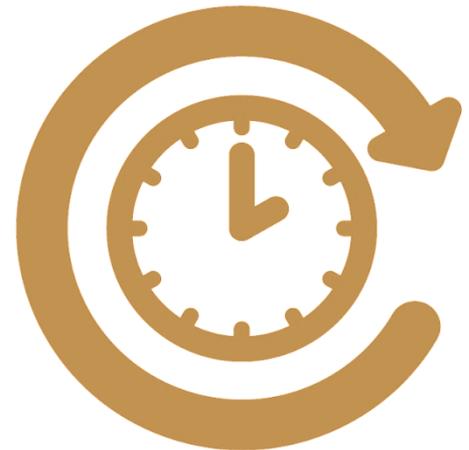
- Did you include:
  - **all runs including aborted, failed and repeated?**
  - emissions in the same units and decimal places as the limit?
  - copies of all the raw data and field data sheets?
  - copies of the lab analysis?



# Preparing for The Test

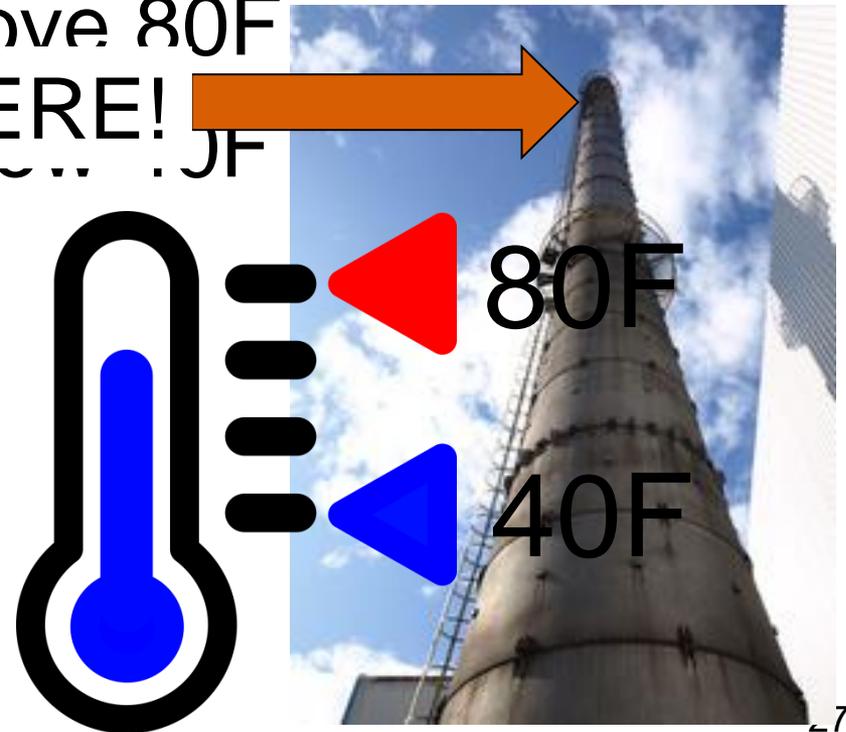
# How long does it take on test day?

- Three 60min/30dscf runs?
  - Typically 4-6 hours (not counting setup or tear down)
- Three 120min/60dscf runs?
  - Typically 8-10 hours (not counting setup or tear down)



# Times could be longer...

- Facility goes down
- Challenging sampling location
- Air temp is above 80F
- **Air SAMPLE HERE!**
- Air temp is below 40F



# Process Operations

- How should I run the source and control equipment on test day?
  - **Usually, it is up to the company.**
  - However, the company will usually be limited to the production on test day.
  - Production should be at a similar level throughout the three runs and should be representative of routine.
  - **MUST BE WORKED OUT AHEAD OF TIME WITH LOCAL DISTRICT OFFICE.**
  - **HAVE EXTRA PRODUCTION AVAILABLE AS A CUSHION.**

# What do the testers need on test day?

- Access to sampling location.
- Correctly positioned and sized
- Access to lots of power.
- Someplace to park their truck
- Someway to contact the facility.



# DEQ and Test Day

## Two DEQ staff

- Someone from the local district office.
  - See the process and records.
  - Know/meet whoever is the lead for the facility.
- Someone from Technical Programs Unit.
  - See the testers and sampling location(s).
  - Know/meet whoever is the lead for the testers.



# Things to think about...

# Getting Started

- When do I want to test by?
- How many days do I need for testing?
- Will we have enough production?
- Who do I want to hire for testing?
  - Tester
  - Consultant



# Process Data

- When was the last time our scales/meters were calibrated?
- Can you read the screens/gauges?



# Test Day Contacts

- Who should be the test day facility contact person?
- Do you have a way to get a hold of:
  - The testers
  - The process operators
  - DEQ



## Checklist!

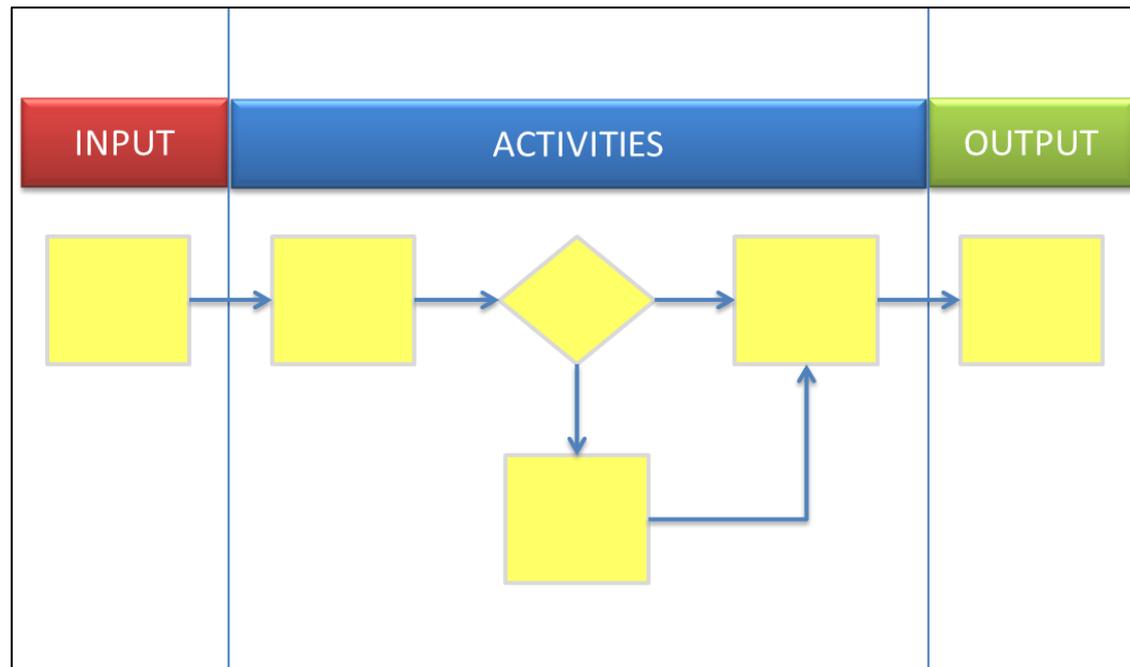
# Ports

- Are ports accessible?
- Are the ports big enough?
- Can the ports be opened?
- Should a p
- What safet



# Process Operations

- At what level do I need to operate?
- What materials should I use?
- When should I start my process?



# Recording

- What process parameters need to be recorded and how often?
- Are we recording the process at the interval in the proposal?



# Sampling

- How long do we need to sample for?
- Do I need audit samples?



# Sampling

- Where are the testers recovering the sample?
- Do I need to collect a sample of fuels/coatings?
- Do the samples of fuels/coatings need to be sent off for analysis?



# Production Issues

- If production testing

- Re

- re

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- Be

- tir

pause and resume collecting sample.

**DON'T PANIC!!**

e

itch  
aints

down  
en to

# Production Issues

- What about scheduled pauses in production?
- Who has the decision making authority to start/pause/stop testing on test day?



# Production/Testing Issues

- Something happens that jeopardizes a run (you think or know). Now what?

**DO ANOTHER RUN!!!**



# Test Failure



- Contact your inspector ASAP.
- The AQD inspector will make the compliance determination.

# Test Failure

- Failures result in re-testing to show compliance.
- There has to be a reason why you failed so vet this before retesting.



# Resources

# Resources

## State Guidance

Google Search

## **MDEQ FORMAT FOR SUBMITTAL**

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY  
AIR QUALITY DIVISION  
FORMAT FOR SUBMITTAL OF SOURCE EMISSION TEST PLANS AND REPORTS  
December 2013

### INTRODUCTION

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While the specific items in the test plan will vary depending on the source and pollutants of interest, the following format should be utilized:

- 1) Identification and a brief description of the source to be tested. The description should include:
  - a) Names, addresses, and contact information for the facility and consultant/personnel who will be performing the test. Expected test date(s).
  - b) Type of industrial process or combustion facility.
  - c) Type and quantity of raw and finished materials used in the process.
  - d) Description of any cyclical or batch operations, which would tend to produce variable emissions with time.
  - e) Basic operating parameters used to regulate the process.
  - f) Rated capacity of the process. Process capacity can be demonstrated by calculating an average and maximum production rate using facility records. Based on these figures the facility shall include a production rate to be maintained during emission testing.

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# Resources

## Federal Guidance

Google Search

## NATIONAL STACK TESTING GUIDANCE



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
WASHINGTON, D.C. 20460

APR 27 2009

OFFICE OF  
ENFORCEMENT AND  
COMPLIANCE ASSURANCE

### MEMORANDUM

SUBJECT: Issuance of the Clean Air Act National Stack Testing Guidance

FROM: Lisa C. Lund *Lisa C. Lund*  
Director  
Office of Compliance

TO: Regional Compliance/Enforcement Division Directors

Attached is a copy of the revised Clean Air Act National Stack Testing Guidance. Final guidance was initially issued on September 30, 2005. At the time of issuance, the Agency indicated that notice and comment rulemaking would be conducted regarding the appropriate circumstances in which an extension of performance test deadlines may be allowed by regulation. This document incorporates the ensuing regulatory revisions which allow source owners or operators to petition for an extension to the test deadlines as a result of a force majeure event. It also includes other minor clarifications and revisions based on feedback we have received since issuance of the 2005 guidance. This revised guidance supersedes the 2005 guidance.

We appreciate the feedback that we have received from each of your offices as well as from state/local agencies. If you or your staff has any questions concerning the guidance, please contact Mamie Miller at (202) 431-7011, or Robert Lischinsky at (202) 564-2628.

### Attachment

cc: Regional Air Compliance/Enforcement Branch Chiefs  
Pamela Mazakas, Acting Director, Air Enforcement Division,  
Office of Civil Enforcement  
Peter Tsirigotis, Director, Sector Policies and Programs Division,  
Office of Air Quality Planning and Standards (OAQPS)  
Richard Wayland, Director, Air Quality Assessment Division, OAQPS  
Compliance and Enforcement Committee Co-Chairs,  
The National Association of Clean Air Agencies (NACAA)

# Resources

## State Methods

Google Search

### **PART 10 INTERMITTENT TESTING AND SAMPLING**

DEPARTMENT OF ENVIRONMENTAL QUALITY

AIR QUALITY DIVISION

AIR POLLUTION CONTROL

(By authority conferred on the director of the department of environmental quality by sections 5503 and 5512 of 1994 PA 451, MCL 324.5503 and 324.5512, and Executive Reorganization Order No. 1995-18, MCL 324.99903)

**PART 10. INTERMITTENT TESTING AND SAMPLING**

**R 336.2001 Performance tests by owner.**

Rule 1001. (1) The department may require the owner or operator of any source of air contaminant to conduct acceptable performance tests, at the owner's or operator's expense, in accordance with R 336.2003 under any 1 of the following conditions:

- (a) Prior to issuance of a permit to operate.
  - (b) The source is determined to be in violation of R 336.1301 and the potential emissions exceed 100 tons per year.
  - (c) The owner or operator of the source has not submitted an acceptable performance test, in accordance with R 336.2003, that demonstrates that the source is in compliance with the department's rules and with the conditions specified in the permit to install.
  - (d) The source of air contaminant is located in an area designated as nonattainment for 1 or more air pollutants, and more than 12 months have expired since the date of the last performance test for such designated nonattainment pollutants.
  - (e) The source of air contaminant has potential emissions in excess of 100 tons per year, is located in an area designated as attainment for 1 or more air pollutants, and more than 36 months have expired since the date of the last performance test for such designated attainment pollutants.
  - (f) After completion of a compliance program.
- (2) Performance tests required by subrule (1) of this rule shall be conducted within 60 days following receipt of written notification from the department, unless otherwise authorized by the department.
- (3) For a performance test required by subrule (1) of this rule, the owner or operator shall submit a site-specific test plan not less than 30 days before a performance test for approval of the department. The plan will include test program summary, test schedule, and the quality assurance measures to be applied.
- (4) Not less than 7 days before performance tests are conducted, the owner of a source of air contaminant, or his or her authorized agent, shall notify the department, in writing, of the time and place of the performance tests and who shall conduct them. A representative of the department shall have the opportunity to witness these tests.

# Resources

Federal  
Methods

Google Search

**EPA EMC**

The screenshot shows the EPA website's Emission Measurement Center (EMC) page. At the top, the EPA logo and navigation menu are visible. The main content area features a sidebar with a list of links: EMC Home, Frequent Questions, Methods, Monitoring, Technical Support, Audit Programs QA/QC, Related Web Sites, Instructional Material, Upcoming Events, Who is EMC?, EMC Contacts, and Recent Additions. The main heading is "Emissions Measurement Center". Below this, a paragraph explains the EMC's purpose: providing information on test methods for measuring pollutants from smokestacks and other industrial sources. To the right, there is a "Recent Additions" section with an image of an industrial facility. Below the text, there are two dropdown menus for "Promulgated Methods" (showing "1 - Traverse Points") and "Promulgated Performance Specifications" (showing "PS 1 Opacity"), each with a "GO" button. The footer contains links for EPA Home, Privacy and Security Notice, Contact Us, and social media icons for News by E-mail, EPA Mobile, Widgets, News Feeds, and Podcasts.



# Resources

Location	Name	Email	Phone
Lansing	<b>Karen Kajiya-Mills</b>	kajiya-millsk@michigan.gov	517-284-6780
Detroit	<b>Tom Maza</b>	mazat@michigan.gov	313-456-4709
Warren	<b>Mark Dziadosz</b>	dziadoszm@michigan.gov	586-753-3745
Lansing	<b>Tom Gasloli</b>	gaslolit@michigan.gov	517-284-6778
Lansing	<b>David Patterson</b>	pattersond2@michigan.gov	517-284-6782
Cadillac	<b>Jeremy Howe</b>	howej1@michigan.gov	231-876-4416
Cadillac	<b>Rob Dickman</b>	dickmanr@michigan.gov	231-876-4412

**QUESTIONS???**

# What's Coming Up?

## **Air Monitoring: History and Rationale**

Wednesday, March 16, 2016 10:00AM

## **Dust: Fugitive Dust Regulations and Fugitive Dust Plans**

April 13, 2016 at 10:00AM

**Please join us!**

# Wrap Up



- Recording
- Materials
- Continuing Education
- Evaluation

# Michigan Department of Environmental Quality

800-662-9278

[www.michigan.gov/deq](http://www.michigan.gov/deq)



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