#### Rule 1466 PM10 Dust Monitoring Compliance Webinar

Upcoming changes to the South Coast Air Quality Management District rule you should know about!

> Join our experts on June 23, 2021, at 11am



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consulting for the built environment

Southern California leader in environmental, health and safety





TSI Incorporated

#### RULE 1466 PM10 DUST MONITORING COMPLIANCE WEBINAR

Presented by

CITADEL EHS & TSI

# AGENDA

- Introduction
- Background of South Coast AQMD's Rule 1466
- Upcoming Amendments to the Rule
- Rule 1466 Air Monitoring Device Requirements
- Pre-Approved Air Monitors from TSI
- We will cover as much ground as we can in 45 minutes
- Presentation slides and responses to questions will be made available for download from the Citadel EHS website
- Q&A We will address questions received in Questions following the presentation



CITADEL EHS

Webinar is being recorded. Use Questions Feature to submit questions.



## SPEAKERS

#### Please meet our discussion leaders for today:



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# WHO IS CITADEL?

#### What do we do?

Citadel EHS provides solutions for our clients and a meaningful and caring place for our staff to work.

We do that by providing comprehensive environmental, health, and safety consulting solutions for the life cycle of real estate and business in an environment that cares.

Our Mission and Our Tagline Assess our clients' needs Resolve their issues Strengthen their reputation and position

#### **Our History**

1993 - Citadel Environmental Services, Inc. was founded
2003 - We became a 30% Employee-owned (ESOP)
2007 - First Exxon Gold Star safety award (multiple year winner)
LA Business Journal Best Company (multiple year winner)
2010 LEED Platinum HQ opens
2011 Cal EPA Climate Leader Award
2015 We became 100% Employee-owned
GSA and FEMA certified
2019 - Citadel does business as Citadel EHS to reflect our growing stature in the EH&S industry

#### www.CitadelEHS.com

#### **Our Services**

EG	Engineering & Environmental Sciences (EES)			
RM	Environmentally Regulated Materials Management			
м	Water Intrusion & Microbial			
ін	Industrial Hygiene			
ST	Safety & Training			
EC	Environmental Compliance			
ESG	Sustainability			



#### assess resolve strengthen

# WHO IS TSIS

Accelerate the actualization of our customers' goals by empowering an unprecedented level of understanding.

- We do not just observe and react to measurement trends. We set them.
- Founded in 1961 by particle research engineers from University of Minnesota
- Expertise is in aerosol research and precision measurement instruments
- Partnered with research institutions to develop 200 instruments
  - Resulting in 25 technology licenses and 50 patents
- 750 employees
- Global customer base











## SOUTH COAST AQMD RULE 1466

#### **Background and Applicability**

- Adopted on July 7, 2017 and amended on December 1, 2017, to expand the list of toxic air contaminants (TACs)
- Applies to earth-moving activities of soil containing applicable TACs designated by either:
  - U.S. EPA, DTSC, State or Regional Water Board;
  - A county, local, or state regulatory agency; or
  - Executive Officer can identify a site based on established criteria
- Establishes requirements to minimize offsite fugitive dust emissions that contain certain toxic air contaminants during earth-moving activities
- Rule 1466 does not apply to soil moving activities that are < 50 cubic yards or soil sampling







## OVERVIEW OF CURRENT REQUIREMENTS



#### PM10 Monitoring

Using two monitors, log real-time measurements for PM10, wind speed and wind direction. Monitors must be positioned in opposite corners of the site near the property line, one upwind and one downwind.



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## OVERVIEW OF CURRENT REQUIREMENTS



#### **Dust Control**

Minimize fugitive dust emissions with proper controls. Use dust suppressants such as wetting and install fencing that is at least 6' tall. Clean the soil from all vehicles leaving the site; do not allow track-out to extend beyond 25' of the property line.



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### OVERVIEW OF CURRENT REQUIREMENTS



### OVERVIEW OF UPCOMING AMENDMENTS









Clarifications to monitoring, fencing, and stockpiling requirements Enhanced Dust Control Measures for schooladjacent Sites

Enhanced monitoring requirements Alternative Provisions



# MONITORING REQUIREMENTS

- Subdivision (d)
- Installation of PM10 Monitors
- Conducting PM10 Monitoring
- Calculating PM10

Concentration





# INSTALLING PM10 MONITORS

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- Subparagraph (d)(3)(B)
- Removed designation of monitors as "upwind" or "downwind"
- Monitors shall be placed in an upwind and downwind location based on seasonal prevailing wind direction



# CONDUCTING PM10 MONITORING



- Use PM10 monitors that are identical in make and model, settings, and configuration [(d)(3)(C)]
- → To avoid contradictory results in calibration, correction, and correlation factors for each monitor
- Collect ambient PM10 data with a data acquisition system (DAS) capable of logging PM10 concentrations every 1 minute or less [(d)(5)]
- → Existing data logging requirements are every 10 minutes or less, to continue until December 31, 2021 [(d)(4)]
- Requirement for operating monitors with heated sampler inlet on at all times [(d)(6)]
- $\rightarrow$  To ensure no humidity interference



## CALCULATING PM10 CONCENTRATION



- Updated PM10 concentration calculation from 2-hour average to a 120-minute rolling average [(d)(9)]
- ➔ To reflect current DAS capabilities, starts when earthmoving activities commence vs. at the top of each hour
  - Removed "absolute difference", instead calculated by subtracting the results of the upwind monitor(s) from the downwind monitor(s) [(d)(9)(D)]
- → To ensure appropriate enforcement of PM10 limit when there are dust emissions from upwind sources



## CALCULATING PM10 CONCENTRATION



- Re-designate upwind and downwind monitors if the seasonal wind direction changes by more than ±90° [[(d)(9)(D)(i) & (ii)]
- In the event of data logging or PM10 calculation failure, due to technical issue beyond the reasonable control of an owner/operator (internet connection disruptions and computer malfunctions):
  - i. Restore DAS as soon as possible, but no later than the end of the next working day; and
  - Manually record or calculate PM10 concentration every 10 minutes or less until DAS is restored.



#### REQUIREMENTS TO MINIMIZE FUGITIVE DUST EMISSIONS

- Subdivision (e)
- Fencing Windscreen
- Stockpiles
- Sites Adjacent to School-Related Properties





# FENCING WINDSCREEN



- Required fencing min. of 6 feet tall and at least as tall as the height of the tallest stockpile [(e)(1)(A) & (B)]
- → Added exclusion if physical barrier (e.g., wall, metal or fiberglass panels, storage or transport container) is present; or
- → No earth-moving or vehicular movement within 300 feet from site perimeter.
- Windscreen specifications to include mesh windscreen with shade value or opacity of 85 ± 5 % [(e)(2)]



# STOCKPILE MEASURES



- Removed stockpile height requirement [(e)(5)]
- → No longer needed as there is an existing height requirement for fencing
- Revised provision for stabilizing and/or covering stockpile to at all times when earth-moving activities and PM10 monitoring are not occurring [(e)(5)(F)]
- → Minimizes exposure to surrounding community during nonworking hours
- → Does not apply to period of no activity but ambient monitoring is still occurring, e.g., lunch breaks



# STOCKPILE INSPECTIONS



- Clarified that daily inspection of stockpiles shall include non-working days as well [(e)(12)]
- Clarified that daily inspection also includes inspecting labelling on stockpiles and stabilized or covered stockpiles [(e)(12)]
- Potential sources of fugitive dust must be stabilized (using either a chemical stabilizer or cover) when:
- → removed timeframe of 3 consecutive days of no earth-moving activities;

#### to

→ at all times when earth-moving activities and PM10 monitoring are not occurring [(e)(11)]



# SITES ADJACENT TO SCHOOLS

- Extended dust control measures to include sites adjoining a school, joint use agreement property, or adjacent athletic area [(e)(15)]
- → Previously only included earth-moving activities at these type of sites





# NOTIFICATION REQUIREMENTS

- Subdivision (f)
- Added initial notification provision for sites that become applicable to Rule 1466 after the project exceeds the 50 yd<sup>3</sup> threshold [(f)(1)(A)]
- Added project completion date
   notification requirement [(f)(2)(D)]
- Added requirement to include wind direction and speed data for exceedance notifications [(f)(3)(E)]

AQMD				
	Rule 1466 Emergency Notification			
Submital Information				
Rule 1466 Notice Number	Date Stored		Time Stored	
Submitter Information				
Submitter Hame*				
Submitter Email Address*				
Submitter Phone Nbr*				
Owner or Operator Information				
Name of Owner or Operator *		-		
Address*				
City*		State*	Zip Code*	
Email Address*				
Phone Hbr*				



# RECORDKEEPING REQUIREMENTS

- Subdivision (h)
- Added recordkeeping provision for: inspections of stabilized stockpiles, re-stabilization, cover repair, and label maintenance [(h)(1)]



Clarified types of data needed to ensure enforceability of new and existing rule provisions [(h)(2-(8)]: for e.g., ambient PM10 data, rolling average PM10 concentrations, wind data, movement of monitoring instruments corresponding to wind direction changes; manual zero or auto-check results, weekly calibration records and intra-instrument precision test data, all instrument logs, all instrument maintenance activities, documentation of all DAS system failures, and a copy of all submitted notifications for the project.



## ALTERNATIVE PROVISIONS

- Subdivision (j)
- Removed provision that allowed operators to request alternative provisions for PM10 limit, PM10 monitoring method, direct loading exemption, PM10 calculations, or dust control measures [(j)(1)]
- Only alternative provision for signage remains [(j)(1)]





# ON-SITE DUST CONTROL SUPERVISOR

- Subdivision (e)(10)
- Requirement for on-site dust control supervisor to be present during on-site earth-moving activities remains
- Must have completed South Coast AQMD Fugitive Dust Control Class with Certificate of Completion
- Hold any other applicable credentials if applicable, for e.g., AHERA course if TAC is asbestos





# OVERVIEW PM10 MONITORING

- Appendix 1
- Calibration and QA/QC
- Appendix 2
- Rule 1466 Pre-Approved Instruments
- How to Choose the Right Monitor
- ♦ Netronix<sup>™</sup> Cloud Data Management System



### APPENDIX 1 – RULE 1466 APPROVED PM10 MONITORS

#### Appendix 1 – Executive Officer Rule 1466 Approved PM10 Monitors

The Executive Officer may approve  $PM_{10}$  monitors that meet the following <u>physical and</u> <u>performance</u> requirements.

- 1. Physical Requirements
  - 1.1. PM<sub>10</sub> monitors <u>must shall</u> be continuous direct-reading near-real time monitors and shall monitor particulate matter less than 10 microns.
  - 1.2. PM<sub>10</sub> monitors must shall be equipped with:
    - 1.2.a. Omni-directional heated sampler inlet;
    - 1.2.b. Sample pump with active flow control mechanism;
    - c. Volumetric flow controller;
    - 1.2.dc. Enclosure; and
    - <u>1.2.ed</u>. Data logger capable of logging each data point with average concentration, time/date, and data point number; and
    - 1.2.e. Conductive tubing that minimizes particle loss for any external tubing used to carry sampled air prior to measurement.

Specified requirement for sample pump with active flow control mechanism

 Moved added flow control accuracy standard to Performance Requirements (Appendix 1 – 2)



### APPENDIX 1 – RULE 1466 APPROVED PM10 MONITORS

#### Performance Requirements

- 2.13. PM10 monitors must shall have the following minimum performance standards:
  - <u>2.1.</u>a. Range: 0 <mark>10,000 μg/m<sup>3</sup></mark>;
  - 2.1.b. Accuracy, determined through factory testing against a U.S. EPA Federal Reference Method or Federal Equivalent Method, for a minimum of 30 measurements each averaged over 24 hours, to show: 2.1.b.i. ± 5% of reading ± precision; or
    - 2.1.b.ii. Coefficient of determination (R<sup>2</sup>) of ≥ 0.95 through simple linear regression;
  - 2.1.c. Resolution: 1.0 µg/m<sup>3</sup>;
  - 2.1.d. Flow control accuracy of ± 5% of factory setpoint; and
  - 2.1.de. Measurement Cycle: User selectable (30 minute and 2 hour).
- 2.2 Monitors that have a valid Monitoring Certification Scheme certification meeting the latest version of the Monitoring Certification Scheme (MCERTS): Performance Standard for Indicative Ambient Particulate Monitors may be exempt from meeting the performance requirements listed above, but shall meet all stated physical requirements.

Adjusted minimum PM<sub>10</sub> measurement range to match BAM 1020 instrument measurement range (U.S. EPA Federal Equivalent Method)

- Clarified accuracy as against a Federal Reference/Equivalent Method
- Added option for determining accuracy using linear regression

Moved flow control accuracy standard for sample pump physical requirement to Performance Requirements



PAR 1466 - 27

#### APPENDIX 1 – RULE 1466 APPROVED PM10 MONITORS

#### 3. Quality Assurance/Quality Control Requirements

4. In order to ensure the validity of the PM<sub>10</sub> measurements performed, there must shall be appropriate Quality Assurance/Quality Control (QA/QC). It is the responsibility of the owner or operator to adequately supplement QA/QC Plans to include the following critical features: instrument calibration, instrument maintenance, operator training, and daily instrument performance (span) checks.

 Recordkeeping Requirements (subdivision (h)) now includes data from QA/QC requirements

- Removed "span" to avoid confusion
  - Span checks typically for gas/vapor direct-reading instruments



## CALIBRATION AND QA/QC RECORDS

- (2) Results of wind and PM<sub>10</sub> monitoring, including: <u>ambient PM<sub>10</sub> data; rolling average PM<sub>10</sub> concentrations and calculations; wind direction and speed corresponding to the rolling average PM<sub>10</sub> concentrations; instrument make and model; settings; <u>proof of valid calibration in accordance with manufacturer's recommended schedule</u>; configuration; calibration, correction, and correlation factors; maintenance; operator training; <del>and daily instrument performance check records and zero calibration and manual zero test results; intra-instrument precision test data and calculation results; and all instrument logs for all monitoring instruments;</u></del>
- (3) All instrument maintenance activities, including: zero calibration, cleaning, filter replacement, and performance checks, including dates and times of the specific procedures;

- Added additional recordkeeping of:
  - Proof of valid calibration for monitors
  - Data from zero calibrations, manual zero tests, and intra-instrument precision tests



## ADDITIONAL QA/QC PROCEDURES

Proposed Amended Rule 1466 (cont.)

(Amended December 1, 2017)

- (6) On and after January 1, 2022, the owner or operator shall operate PM<sub>10</sub> monitors with the heated sampler inlet on.
- (7) On and after January 1, 2022, prior to conducting any on-site earth-moving activities, and weekly thereafter, the owner operator shall conduct intra-instrument precision tests with the PM<sub>10</sub> monitors in accordance with Appendix 2 – Procedures to Demonstrate Intra-Instrument Precision, or make available documentation and supporting data certifying that such intra-instrument precision tests were run by an equipment rental company or other third party, that demonstrate an intra-instrument precision of:
  - (A) <u>No more than 25 percent as calculated pursuant to Step 7a in Appendix 2</u> when ambient PM<sub>10</sub> concentrations are equal to or greater than 15 <u>micrograms per cubic meter; or</u>
  - (B) No more than 5 micrograms per cubic meter as calculated pursuant to Step 7b in Appendix 2 when ambient PM<sub>10</sub> concentrations are less than 15 micrograms per cubic meter.
- (8) On and after January 1, 2022, each day prior to conducting on-site earth-moving activities, the owner or operator shall conduct a passing zero check on each PM<sub>10</sub> monitor in accordance with:
  - (A) <u>Steps 4 and 5 of Appendix 2 that demonstrates an average PM<sub>10</sub></u> <u>concentration of 0 ± 3 micrograms per cubic meter; or</u>
  - (B) <u>Manufacturer's instructions if a monitor is operated using an auto-zero</u> check procedure that directs filtered particle-free air into the measurement chamber.

#### • Zero Check Procedure

- Auto-Zero option is acceptable
- Data from zero calibrations, manual zero tests, and intra-instrument precision tests must be recorded



## APPENDIX 2

#### Appendix 2 – Procedures to Demonstrate Intra-Instrument Precision

An owner or operator shall perform the following procedures to demonstrate the intra-instrument precision of all  $PM_{10}$  monitors as required in paragraph (d)(7).

- 1. Ensure monitors are identical in make and model, settings, and configuration.
- Ensure monitor inlets are at the same height and located within 4 meters of each other but no less than 1 meter apart for the duration of the test.
- Power on the monitors and turn on the heated sampler inlet. Allow the monitors to warmup per manufacturer's recommendations or when readings have stabilized.
- 4. For each monitor, conduct a zero calibration in accordance with manufacturer's instructions, then conduct a manual zero check by removing any sampling inlet and installing a filter, rated by the manufacturer to achieve a 99.97 percent control efficiency for 0.3-micron particles, on the inlet of the monitor for a minimum of 10 minutes. If the monitors are operated using an auto-zero check procedure that directs filtered particle-free air into the measurement chamber, conduct the zero check in accordance with manufacturer's instructions.
- 5. Log the PM<sub>10</sub> concentration reading every minute, and calculate and record the average of the readings of the manual zero check. The average of the manual zero check readings shall be 0 ± 3 micrograms per cubic meter before proceeding to Step 6. If conducting an auto-zero check, the monitor shall pass the zero check in accordance with manufacturer's instructions before proceeding to Step 6. If any monitors fail either the manual zero check or the auto-zero check, the owner or operator shall conduct a zero calibration in accordance with manufacturer's instructions and/or correct any issue(s) causing the failure, followed by conducting a passing zero check on the PM<sub>10</sub> monitor(s) in accordance with Steps 4 and 5.
  - Remove the filter and install the monitor inlet as required. After waiting 10 minutes, operate the monitors simultaneously and log the PM<sub>10</sub> concentration reading every minute for a minimum of 60 minutes.

- DustTrak Environmental uses autozero check procedure
- References for daily zero calibration and manual zero test requirements prior to monitoring

Both monitors are run simultaneously and PM10 data logged for 60 minutes at 1 minute interval.



## APPENDIX 2



(%) when ambient PM<sub>10</sub> concentrations are greater than or equal to 15 micrograms per cubic meter:

 $P = \frac{S_t}{C_t} \times 100\%$ 

#### where,

- $\underline{P} \equiv \underline{\text{Intra-instrument precision in percent (%)}};$
- $S_t =$  Standard deviation of the averaged PM<sub>10</sub> concentration readings from all tested monitors over the time *t* of testing duration, to be calculated as:



#### where,

x<sub>i</sub> = Mean of the PM<sub>10</sub> concentration readings for a tested monitor over time t of testing duration.
 x̄ = Mean of the averaged PM<sub>10</sub> concentration readings from all tested monitors over the time t of testing duration, and
 n = Number of tested monitors; and
 C<sub>t</sub> = Mean of the averaged PM<sub>10</sub> concentration readings from all tested monitors over the time t of testing duration; or

Intra-instrument precision in absolute value (micrograms per cubic meter) when ambient PM<sub>10</sub> concentrations are less than 15 micrograms per cubic meter:

#### $P = S_t$

#### where,

- <u>P</u> = Intra-instrument precision in micrograms per cubic meter, and
- $S_{t} = Standard$  deviation of the averaged PM<sub>10</sub> concentration readings from all tested monitors over the time t of testing duration.
- 8. Record the results of the calculations.

Specified calculation of intra-instrument precision in percent when ambient PM10  $\geq$ 15 µg/m 3

Added equation to calculate standard deviation

Specified calculation of intra-instrument precision in absolute value when ambient PM10  $\geq$ 15 µg/m 3





### TSI DustTrak<sup>™</sup> Air Monitor Models Pre-Approved by SCAQMD!





### How to Choose the Right TSI Model for Your Needs



On South Coast AQMD's Pre-Approved List







## Advantages of Each Type of Setup



On South Coast AQMD's Pre-Approved List



**Dedicated Environmental** 



Flexible, Multi-Use

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## DustTrak<sup>™</sup> Family Highlights

- Higher concentration
- Higher accuracy
- Low maintenance
- Field serviceable
- Durable and reliable
- Advanced pump (DTE)
- Local service and support





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On South Coast AQMD's

**Pre-Approved List** 

### Tools to Help You Track Measurements for Rule 1466

- Free mobile app!
- Netronix<sup>™</sup> Cloud Data Management System
  - Automatically calculates the difference between upwind and downwind monitors
  - Sends alerts if the difference exceeds 25 µg/m<sup>3</sup>





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## REVIEW

### SO HOW CAN WE HELP YOU?





South Coast AQMD's Pre-Approved Air Monitor Models







# QUESTIONS?

Please submit now via questions feature!



#### References

- 1. South Coast AQMD PAR 1466, Public Workshop, March 4, 2021
- 2. South Coast AQMD PAR 1466, Instrument Sub-Committee Meeting, March 23, 2021
- 3. South Coast AQMD PAR 1466, Draft Rule Language, May 4, 2021





## THANK YOU

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