



**AIR HYGIENE, INC.**



**Testing Solutions  
for a Better World**

**Why Air Hygiene is the Solution for your Engine Testing!**

- Five (5) FTIR Labs for formaldehyde, VOC's, & HAPS!
- Thirty (30) test labs providing testing anytime & anywhere!
- On-site draft test reports & final report in 10 Days!
- Catalyst performance analysis (in/out CO) measurement on-site!
- Portable power by on-board generator!
- LDEQ, CARB, & SCAQMD certified!
- Portable analyzer capabilities!
- VOC's by on-site Gas Chromatograph for methane/ethane!
- Part 60 - JJJJ Testing (NOx, CO, VOC)!
- Part 63 - ZZZZ Testing (CO and HCHO)!
- 20 QSTI certified personnel!
- Tests in all 50 states, Mexico, & Canada!
- 16 years of testing in gas industry!
- On-site man lift and fuel flow meter provided!

**Corporate Headquarters:**  
1600 West Tacoma Street  
Broken Arrow, OK 74012

(918) 307-8865  
(888) 461-8778



**Remote Office Locations:**  
Las Vegas, NV  
Ft. Worth, TX  
Austin, TX  
Shreveport, LA  
Chicago, IL  
Pittsburgh, PA

[WWW.AIRHYGIENE.COM](http://WWW.AIRHYGIENE.COM)



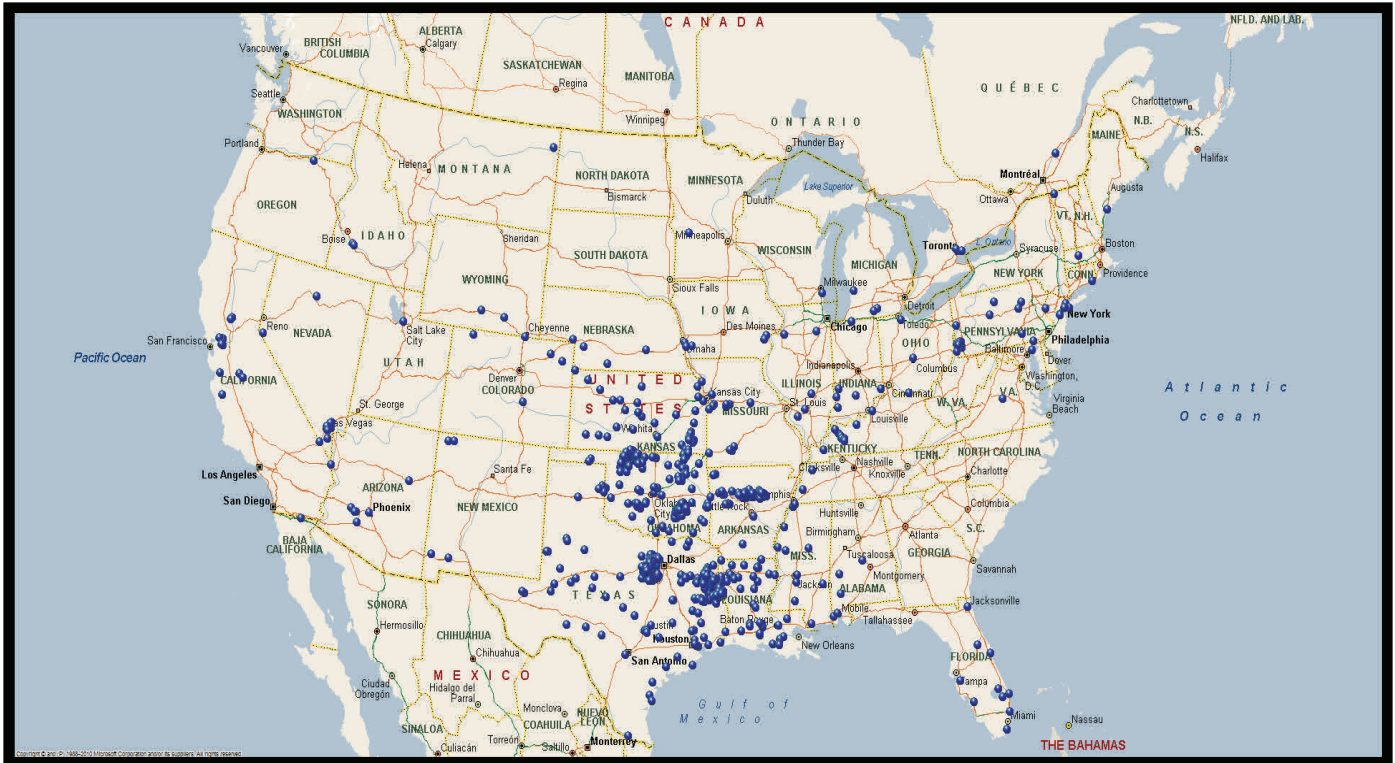
Air-Hygiene-International-Stack-Testing



@Air Hygiene

# ENGINE TESTING EXPERIENCE

Air Hygiene conducts emission testing nationwide and is familiar with all fifty (50) state agencies and EPA requirements. The map below shows our emission testing project locations across the U.S.



## TESTING SUCCESS STORIES

**AIR HYGIENE** personnel have performed thousands of testing projects which have yielded significant benefits for our clients. The following project descriptions briefly discuss some of these emission testing projects.

- **Performed testing on 80 engines for EPA MACT Floor testing in Texas, Oklahoma, & Kansas including on-site data for  $NO_x$ , CO, VOCs,  $SO_2$ ,  $O_2$ , HAPS including formaldehyde, ammonia, speciated C1—C6, and Greenhouse gases ( $N_2O$ ,  $CO_2$ ,  $CH_4$ )!**
- **Currently perform periodic engine testing in 25 states for over 1,500 engines per year following EPA Methods 3a ( $O_2$  &  $CO_2$ ), 7e ( $NO_x$ ), 10 (CO), 19 (exhaust flow), 18/25a/320 (VOCs), and 320/ASTM D-6348 (formaldehyde).**
- **Natural Gas Fired Compressor Engines per RICE MACT (40 CFR Part 63 Subpart ZZZZ) for formaldehyde and/or inlet & outlet CO. Selected methods depend on state and client preference. Over 1,000 engine tests in 25+ states.**
- **Testing per 40 CFR Part 60 Subpart JJJJ for  $NO_x$  (EPA Method 7e), CO (EPA Method 10), VOCs (EPA Method 18/25a with on-site GC by VIG 210),  $O_2/CO_2$  (EPA Method 3a), and exhaust flow (EPA Method 2/4 or 19).**
- **Combustion Turbine Testing and Add-On Services that include:**
  1. Turbine emission mapping and emission performance testing
  2. R&D emission data research and turbine control optimization
  3. 40 CFR Part 60 Subpart GG – Turbine Compliance Testing
  4. 40 CFR Part 75 – Acid Rain Classified Equipment Testing
  5. RATA Testing on CEMS systems for  $NO_x$ , CO,  $SO_2$ ,  $H_2S$ ,  $O_2$ , Flow, and/or  $CO_2$

## COMPRESSOR ENGINE TESTING SERVICES

Thank you for your consideration of **Air Hygiene's** engine testing services. The following list details some of the testing services and extras **Air Hygiene** includes with each testing job.

### Types of Air Testing Services for Compressor Engines:

- Periodic monitoring for NO<sub>x</sub>, CO, VOCs, formaldehyde, HAPS.
- Engine Compliance Testing to meet state and federal requirements ZZZZ (RICE MACT), JJJJ Testing, Permit by Rule, Compliance.
- Pre and Post Catalyst testing for pollutant destruction efficiency.
- Engine performance testing to verify manufacturer's emission guarantees.
- Research and Development (R&D) emission data research and engine optimization. Initial permit compliance testing for PM, PM-10, PM-2.5, SO<sub>2</sub>, NO<sub>x</sub>, CO, exhaust flow, moisture, O<sub>2</sub>, CO<sub>2</sub>, Formaldehyde, other HAPs.

### AHI will provide the following on engine equipment tests:

- Our own power supply!
- On-site test data and report!
- Fuel F-Factor calculation data sheet!
- 20 QSTI certified personnel!
- Fuel Flow Meter and On-Site Man Lift!
- Electronic reports provided on CD upon request!
- Extensive experience with all state agencies in the U.S.!
- EPA Protocol 1 Certified Gases for precise calibration!
- Low range (0-10 ppm) equipment calibration and measurement available!
- Test protocol preparation, coordination with state agency and site personnel!
- 30 mobile testing labs, which may be used for your projects across the U.S.!
- State-of-the-art data logging technology to allow real-time examination of meaningful emission data.

### Air Hygiene specializes in 40 CFR Part 60 Subpart JJJJ (4J) Testing:

For most 4J testing the scope is 3, 1-hour test runs monitoring for NO<sub>x</sub>, CO, VOCs, and O<sub>2</sub>. The VOC analysis methodology described in Table 2 of the regulation calls for:

*"Methods 25A and 18 of 40 CFR part 60, appendix A, Method 25A with the use of a methane cutter as described in 40 CFR 1065.265, Method 18 or 40 CFR part 60, appendix A, Method 320 of 40 CFR part 63, appendix A, or ASTM D6348-03 (incorporated by reference, see §60.17)".*

**Air Hygiene** is capable of meeting this requirement with on-site, real-time data. Our primary option utilizes a VIG 210 VOC analyzer that incorporates the Method 25a and Method 18 technologies into a single analyzer with built in gas chromatograph providing simultaneous data for Methane, Ethane, VOC's, and Total Hydrocarbons. **Air Hygiene** can also provide testing by Method 25a total hydrocarbon analyzer coupled with an MKS FTIR analyzer utilizing the Method 320 test technology to determine methane & ethane and provide real-time VOC data. Utilizing either methodology, **Air Hygiene** is able to provide you with real-time VOC results on-site.

Converting emission concentrations (e.g. ppm) to emission rates (e.g. lb/hr, g/hp\*hr, tpy) is another important 4J field testing consideration. 4J requires that stack exhaust flow be either physically measured utilizing Methods 1-4 or stoichiometrically estimated using Method 19 and a fuel flow meter. Method 19 approach when taken, provides a stoichiometric approach typically resulting in stack exhaust flow rates that are anywhere from five to ten percent lower than the manual measurement approach. This is due to both an over dependence on oxygen content for the Method 19 calculations and the human error aspect coupled with the "puffing" of the engine for the manual measurement calculations.



# Testing Solutions for a Better World

**Air Hygiene's** core philosophy of "Second-to-None (2-2-0)", demands extra mile customer service anchored on dignified character and family-oriented principles to deliver unmatched quality stack testing, worth paying for every time. We utilize revolutionary technology and **Air Hygiene University** to create the best educated work force to define the future of stack testing.

Providing air emission testing since 1997 and headquartered in Broken Arrow, Oklahoma, **Air Hygiene** provides testing services throughout the continental United States as well as internationally. Its client base includes various industries from oil and gas companies to utilities, manufacturers, and other similar industries.

**Air Hygiene** has experienced engine testing teams led by project managers with significant testing experience and a broad understanding of the federal and state regulations. **Air Hygiene** has thirty (30) combustion emission testing systems.

**Air Hygiene** prides itself on testing efficiency and has experience with complex testing. Including formaldehyde by FTIR (EPA Method 320 or ASTM D-6348) to meet RICE MACT (40 CFR Part 63 Subpart ZZZZ), non-methane/ethane VOCs on-site with field GC or FTIR for Subpart JJJJ (40 CFR Part 60), PM, PM-10, & PM-2.5 testing (EPA Methods 1-5, 201a, 202).

**Air Hygiene** can complete numerous engines in a single day and has experience with testing large engine fleets within short duration or on a repeated schedule to meet periodic monitoring requirements.

**MARKWEST**  
Energy Partners, L.P.

**NEWFIELD**

**Chesapeake**  
ENERGY

**devon**

**MAGELLAN**  
MIDSTREAM PARTNERS, L.P.

**XTO**  
ENERGY

**SWN**  
Southwestern Energy®

**dcp**  
Midstream.

**KINDER MORGAN**

**Williams**

**EXTERRAN**

**JW**

**ONEOK**

**CMS ENERGY**

**ConocoPhillips**

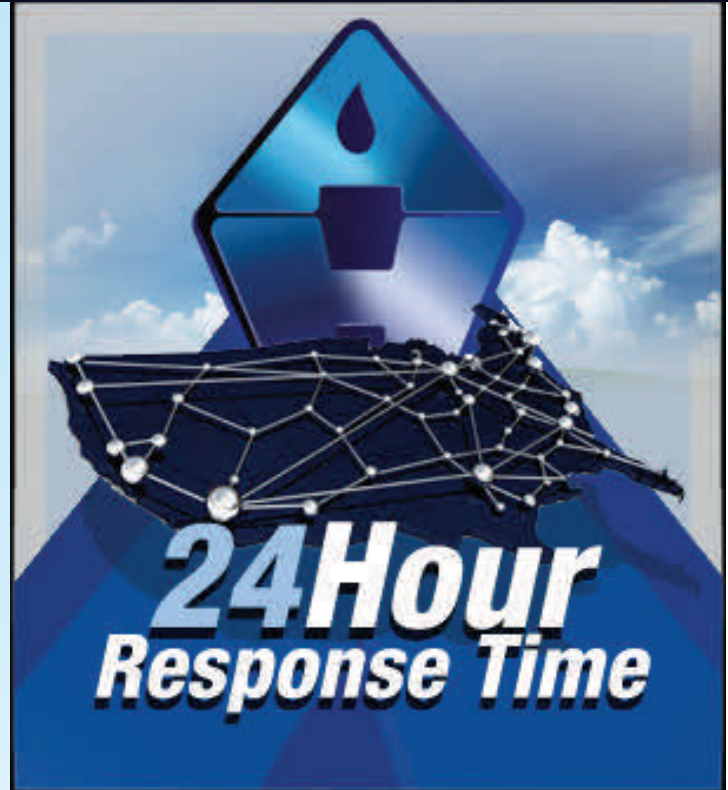
**CATERPILLAR**® **AtlasPipeline**

**CROSSTEX**

**QUICKSILVER**  
RESOURCES  
**ACCESS**  
MIDSTREAM PARTNERS

**el paso**  
**KOCH**  
INDUSTRIES INC

**ENERCON** **DU PONT**



**AIR HYGIENE, INC.**

**Corporate Headquarters:**  
1600 West Tacoma Street  
Broken Arrow, OK 74012  
(918) 307-8865  
(888) 461-8778



**Remote Office Locations:**  
Las Vegas, NV  
Ft. Worth, TX  
Austin, TX  
Shreveport, LA  
Chicago, IL  
Pittsburgh, PA  
[WWW.AIRHYGIENE.COM](http://WWW.AIRHYGIENE.COM)

