

Selecting The Right Monitoring Equipment For OSHA Compliance

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COMPLIANCE
SAFETY & SUPPLY

Topics

Respiratory Protection

- OSHA Standard
- Selecting Your Equipment

Particulate Monitoring

- OSHA Standard
- Selecting Your Equipment
- Types of Equipment

Heat Stress Monitoring

- Why its important
- Selecting Your Equipment

Sound Level & Noise Monitoring

- OSHA Standard
- Selecting your Equipment



Respiratory Protection – OSHA Standard



OSHA Respiratory Protection Standard ([29 CFR 1910.134](#))- specifies the requirement for annual respirator fit testing. This standard applies to all industries, including oil and gas, where respirators are required for worker safety due to exposure to airborne contaminants.



Annual Fit Testing ([29 CFR 1910.134\(e\)\(1\)](#))



Fit Testing Procedures ([29 CFR 1910.134\(f\)](#))



Medical Evaluation ([29 CFR 1910.134\(e\)\(1\)\(ii\)](#))



Respirator Maintenance and Training ([29 CFR 1910.134\(k\)](#))



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Respiratory Protection – Selecting Your Equipment

Qualitative

- Qualitative fit testing is a pass/fail method based on the worker's subjective response to a test agent (such as a bitter or sweet taste or a mild irritant).
- Common equipment: Bitrex and Saccharin solution, fit test hoods, nebulizer, airflow meter



Quantitative

- Quantitative fit testing provides a numerical measurement of how well the respirator fits the user, measuring the concentration of particles or gases inside and outside the respirator.
- Common equipment: TSI PortaCount, OHD AeroFit, OHD Quantifit, AccuTec AccuFIT



Particulate Monitoring – OSHA Standard

General Air Contaminant Standards (29 CFR 1910.1000): Applies to all industries, including oil & gas, and sets Permissible Exposure Limits (PELs) for airborne contaminants, including particulate matter.

Common types of particulates in upstream oil and gas operations:

- **Silica Dust** (e.g., from hydraulic fracturing operations)
- **Total Dust** (e.g., from drilling activities)
- **Respirable Dust** (fine dust that can reach the lungs)
- **Diesel Exhaust Particulate Matter (DPM)** (from equipment)

Common types of particulates in midstream oil and gas operations:

- **Diesel Particulate Matter (DPM)** (from diesel-powered trucks, pumps, and compressors)
- **General Dust** (from transportation, material handling, and maintenance)
- **Fugitive Dust** (from loading/unloading at storage terminals)

Common types of particulates in downstream oil and gas operations:

- **Fumes and Particulates** (from welding, cutting, and chemical processes)
- **General Dust** (from material handling, storage, and maintenance work)
- **Diesel Particulate Matter (DPM)** (from diesel-powered equipment, trucks, and generators)
- **Coal Dust or Soot** (if coal is used in some refinery operations)

Particulate Monitoring – Types of Equipment



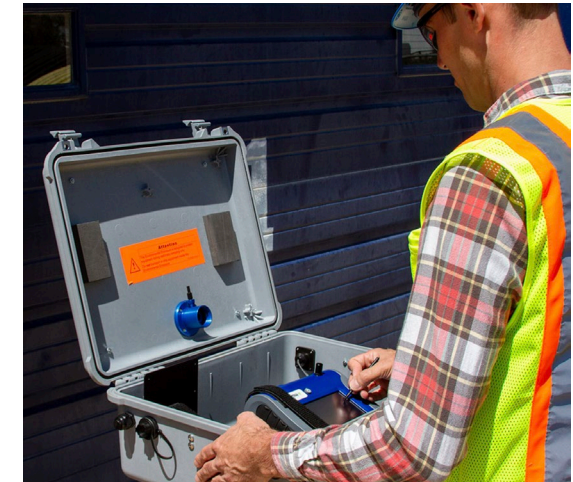
Personal Air Sampling Pump

- Used with air sampling media that gets sent to a lab for analysis
- Determine 8-Hour TWA
- Can be used as area monitor



Real-Time Particulate Monitor

- Measure multiple PM Size Fractions
- Can be used with sampling media for lab analysis
- Run for long durations
- Can use indoors or outdoors
- Area or handheld options available



Particulate Monitor Accessories

- Use environmental enclosure for perimeter/fence line & fugitive emissions
- Use Aethair Thiamis for remote data collection
- Different mounting and power options per your needs

Particulate Monitoring – Selecting Your Equipment

For Respirable Dust (e.g., silica): Use cyclone-based personal air samplers or real-time monitors like TSI DustTrak, Aeroqual, or Casella Apex.

For Diesel Particulate Matter (DPM): Use particle counters like the TSI P-Trak or real-time monitors such as TSI DustTrak DRX or Aeroqual.

For General Dust: Use gravimetric samplers or real-time particulate monitors like Kanomax 3500, TSI DustTrak, or Aeroqual.

For Silica Monitoring: Choose real-time silica dust monitors like TSI DustTrak, Aeroqual 200/300, or use gravimetric filters with personal air samplers like a GilAir Pump.

For Total Dust: Use real-time monitors like TSI DustTrak, Kanomax 3500, or gravimetric samplers like a GilAir pump.

For Fugitive Dust: Use real-time particulate monitors like TSI DustTrak or Aeroqual to set up perimeter monitoring on a worksite.

For Coal Dust / Soot: Use real-time particulate monitors like TSI DustTrak, or personal air samplers like a GilAir pump for respirable coal dust.

Heat Stress Monitoring – No specific OSHA standard, but still important

- 1. Prevention of Heat-Related Illnesses and Injuries:** Heat stroke, heat cramps, heat rash, etc
- 2. Worker Health and Safety:** Oil and gas operations often take place in environments with high temperatures. Prolonged exposure without appropriate rest or cooling mechanisms can cause heat-related illnesses that jeopardize health and safety.
- 3. Improved Worker Productivity and Performance:** Poor decision-making or physical exhaustion due to heat stress can result in workplace accidents, including equipment failures or safety violations.
- 4. Compliance with OSHA Regulations: OSHA General Duty Clause** (29 U.S.C. 654), require employers to provide a safe work environment, which includes mitigating heat-related risks.
- 5. Preventing Worksite Accidents and Fatalities:** Oil & gas production is known for physically demanding and hazardous work. Workers may be exposed to physical exertion, confined spaces, & heavy machinery. Heat stress can impair motor functions/reaction time, increasing the risk of accidents and injuries.
- 6. Long-Term Worker Health:** Exposure to heat can cause long-term health problems (cardiovascular strain, dehydration, & kidney issues, and many other problems).
- 7. Legal and Financial Responsibility:** workers compensation claims, OSHA fines and penalties, litigation.

Heat Stress Monitoring – Selecting Your Equipment

Monitors

- TSI QuesTEMP 34
- LSI Heat Shield
- Kestrel 5400 Heat Stress Tracker



Personal Monitors

- SlateSafety Arm Bands
- Kestrel Drop D2 Heat Stress Monitor



Sound Level & Noise Monitoring – OSHA Standard

OSHA Noise Standard (29 CFR 1910.95): sets standards for noise exposure in the workplace, including in the oil and gas industry.

- **80 dBA (decibels, A-weighted)** as an 8-hour time-weighted average (TWA) is the baseline threshold for potential hearing damage.
- **85 dBA TWA** is the action level, meaning if noise exposure reaches or exceeds this level, the employer must implement a hearing conservation program.
- **90 dBA TWA** is the permissible exposure limit (PEL), meaning workers should not be exposed to this level for more than 8 hours per day.
- **90 dBA TWA+**, employers must take steps such as reducing noise at the source, providing hearing protection, and conducting regular monitoring.

Sound Level & Noise Monitoring – Selecting Your Equipment



Noise Dosimeters

Personal monitors - Used for monitoring personal noise exposure and if a HCP is necessary

- Can be used indoor or outdoor
- Do I need intrinsically safe?



Sound Level Meters

Area monitor - Used for sound mapping and perimeter measurements

- Can be used indoor or outdoor
- Do I need a type 1 or type 2?
- Do I need octave band?



A grey AccuFITPRO fit testing device is shown on a white surface. The device has a screen displaying "HEAD UP AND DOWN" and various fields for "Exercise Name", "Fit Factor", and "Mark Sample (Q100)". A blue tube is connected to the device. In the background, a person wearing safety glasses and a high-visibility vest is visible.

Questions?

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