Respiratory Protection
Field Reference Tool

Does the work area contain, or have the potential to contain, a hazardous atmosphere?

No → **No Respiratory Protection Required**

Yes ↓

Is there open process piping or equipment greater than 2" in diameter (e.g. open thief hatches, valves, vents, ect.)?

No → Use a 4-gas monitor and appropriate equipment to evaluate the breathing zone during regular operations (such as changing a sight glass or working with instrument tubing) involving small diameter piping when the atmosphere is unknown and supplied air is not utilized.

Yes ↓

Is the atmosphere known?

No → **Supplied Air Respiratory Protection Required**

Yes ↓

Is the atmosphere within the acceptable limits for ANY of the contaminants below?

- Oxygen (O2) - >19.5 to <23 — No
- Carbon Monoxide (CO) - <25 ppm — No
- Lower Explosive Limit (LEL) - <10% — No
- Benzene (Bz) - <0.5 ppm — No
- Respirable Crystalline Silica <0.025 mg/m3 — No

Yes ↓

***No Respiratory Protection Required**

All "No" answers → **Respiratory Protection Required**

Refer to the Respiratory Protection Selection Guide on pg. 3

Respiratory Protection NOT Required

*Refer to the *Marathon Occupational Exposure Limits and Respiratory Selection Guide* for a more comprehensive list of contaminants.

Breathing Air Requirements on Top of Production Tanks

Bakken (North Dakota)	Eagle Ford (S. Texas)	ORB (Oklahoma)	Permian (New Mexico & W. Texas)
• H2S (≥ 10 ppm) • High Rate (≥ 1,000 BOPD) *Signage is placed on tank batteries where breathing air is required.*	Breathing air required when accessing catwalk or tank top.	• H2S (≥ 10 ppm) • High Rate (≥ 1,000 BOPD) *Note – Contractors not allowed on top of catwalks to gauge tanks*	• H2S (≥ 10 ppm) • High Rate (≥ 1,000 BOPD) *Signage is placed on tank batteries where breathing air is required.*

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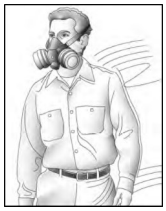
Types of Respiratory Protection

Air Purifying Respirator (APR)
Respirator with cartridges.

Assigned Protection Factor (APF)

Workplace level of respiratory protection that a respirator or class of respirators is expected to provide to user when used correctly.



Half Face APR (10 APF)

Full Face APR (50 APF)

Self Contained Breathing Apparatus **(SCBA)** (10,000 APF)

Supplied Air respirator **(SAR)** with an auxiliary escape bottle **(FF-PD) (**1,000 APF)

Elevated LEL Atmospheres

Breathing air is required once the **LEL is at 10% or higher**. Personnel are ***not*** allowed to enter or continuously perform work in an elevated LEL (Lower Explosive Limit) atmosphere containing **greater than 20% LEL** unless:

1. A Project Risk Assessment is completed **AND**
2. Mitigations are in place to address the risk of fire or explosion

Immediately Dangerous to Life or Health (IDLH) Atmospheres

Refer to the chart on the back of this tool for specific IDLH values for the common contaminants. An atmosphere is also considered IDLH when it is unknown.

Required Equipment

SCBA

SAR

At least one standby person is located outside the IDLH atmosphere and:

- In visual or voice contact with the respirator wearer(s)
- Informed on the site specific methods to provide rescue
- Trained in First Aid and Cardiopulmonary Resuscitation (CPR)
- A respirator user in compliance with this Procedure
- Informed of notifying the PIC or HES before entering the IDLH atmosphere to provide emergency rescue
- Equipped with the appropriate respiratory protection (including a separate air supply from those located in the IDLH atmosphere) and retrieval equipment or other means for rescue as determined during pre-job planning

Respirator Usage, Inspection, and Maintenance

- Users must be **medically qualified** by a Licensed Health Care Professional prior to conducting a fit test.
- An **annual fit test** for the specific type and manufacturer of respirator being used and be is required prior to use.
- Be **clean shaven.**
- Inspect the respirator prior to use. Perform user seal check each time a tight fitting respirator is worn.
    - Check respirator function, tightness or connections, and condition of the various parts (e.g. facepiece, head strap, valves, cartridges, etc.) Also check expandable parts for pliability and signs of deterioration.

Respirator Cartridge Change-out Schedule (Full-Face and Half-Face)

- Change chemical cartridges each shift (e.g. organic vapor, acid gas.)
- Respirator cartridges can be used until resistance to breathing is noted, the cartridge becomes wet or damaged, the wearer detects an odor or taste while wearing the respirator, or when visually noted by the end of service indicator.

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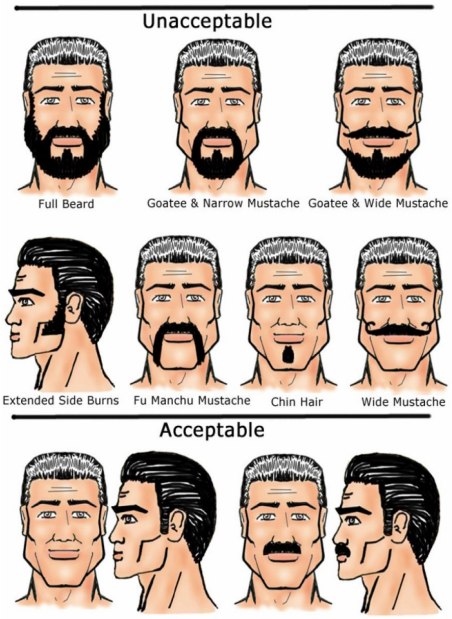
Respiratory Protection Selection Guide

	Contaminant Levels that do NOT Require Respiratory Protection	P100 Particulate Cartridge Half Face APR	Organic Vapor (OV) Cartridge Half Face APR	Organic Vapor (OV) / Acid Gas (AG) combo Half Face APR	Full Face APR	Supplied Air Respirator or SCBA	Immediately Dangerous to Life or Health (IDLH)	Detection Method
Oxygen (O2)	>19.5 to <23.5	Do not Use	Do not Use	Do not Use	Do not Use	≤19.5 or ≥23.5%	≤19.5 or ≥23.5%	
Carbon Monoxide (CO)	< 25 ppm	Do not Use	Do not Use	Do not Use	Do not Use	≥ 25 ppm	≥ 1,200 ppm	
Hydrogen Sulfide (H2S)	< 10 ppm	Do not Use	Do not Use	Do not Use	Do not Use	≥ 10 ppm	≥ 100 ppm	
Lower Explosive Limit (LEL)	< 10%	Do not Use	Respiratory protection is required if greater than any contaminant OEL			≥ 10%	≥ 10%	
Benzene (Bz)	< 0.5 ppm	Do not Use	0.5 - 10 ppm	0.5 - 10 ppm	0.5 - < 50 ppm	≥ 50 ppm	≥ 500 ppm	
Respirable Crystalline Silica	<0.025 mg/m^3	0.025 - 0.5 mg/m^3	Do not Use	Do not Use	0.025 - <2.5 mg/m^3	≥ 2.5 mg/m^3	≥ 50 mg/m^3	No instant testing. Requires external lab testing.

Note: This is not an all inclusive list of all contaminants that could be encountered in the work place. Please refer to the *Marathon Occupational Exposure Limits and Respiratory Selection Guide* for a more comprehensive list of contaminants.

		
4-Gas Pump Monitor Typical sensors (CO, H2S O2, LEL) Additional sensors available (i.e SO2)	**Colorimetric Tubes** Available for several contaminants	**Photoionization Detector** Measures hydrocarbons and Benzene when using a Bz gas detection tube.



Perform a User Seal Test After Donning Respiratory Equipment

Positive Pressure Fit Test

Cover exhalation valve and try to exhale

Negative Pressure Fit Test

Cover inlets and try to inhale

Note: A successful positive seal check is when the face piece is slightly pressurized before increased pressure causes outward leakage. A successful negative seal check is when the face piece collapses slightly under the negative pressure that is created with this procedure.