



Texas Commission on Fire Protection

P.O. Box 2286, Austin, Texas 78701-2286

PH# 512-936-3838

Website: www.tcfp.texas.gov

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SCBA Risk Assessment Guide

Aligned with NFPA 1850 (2026 Edition)

1. Establish Scope and Objectives

1.1 Purpose

To identify hazards, evaluate risks, and implement controls to ensure:

- SCBA are appropriate for expected hazards
- Equipment remains safe and reliable
- Personnel are protected from respiratory and IDLH environments
- The organization remains compliant with NFPA 1850 and regulatory requirements

1.2 Define Scope

Identify:

- Departments / stations covered
- Types of incidents responded to
- SCBA models and cylinder types in service
- Personnel authorized to use SCBA

2. Identify Operational Hazards

Conduct a **hazard identification analysis** based on actual response data and projected risk.

2.1 Incident-Based Hazard Categories

Evaluate exposure to:

- Structural firefighting (IDLH, high heat)
- Vehicle fires



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- Industrial incidents
- Hazardous materials (toxic, corrosive, oxygen-deficient)
- Confined space operations
- Wildland-urban interface (if applicable)
- Technical rescue in contaminated environments

2.2 Environmental Factors

- Temperature extremes
- Water immersion
- Chemical exposure
- Impact / mechanical damage
- Contamination (soot, carcinogens)

2.3 Operational Stressors

- Extended duration operations
- High work rates
- Low visibility
- Rapid intervention scenarios

3. Evaluate SCBA Suitability (Selection Risk Assessment)

NFPA 1850 requires evaluation of whether SCBA are appropriate for hazards encountered.

3.1 Compliance Verification

Confirm:

- SCBA are NIOSH-approved
- Meet applicable NFPA 1981 edition
- PASS devices comply with NFPA 1982
- CBRN approval (if required by hazard profile)



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3.2 Cylinder Risk Assessment

Evaluate:

- Rated service life
- Hydrostatic test compliance
- Impact damage risk
- Carbon fiber degradation
- Cylinder pressure ratings vs operational need

3.3 Duration Analysis

Determine:

- Average air consumption rates
- Mayday air supply needs
- High-rise or large footprint building risk
- Whether 30-min vs 45-min vs 60-min cylinders are appropriate

4. Inspection and Maintenance Risk Evaluation

NFPA 1850 emphasizes inspection intervals and maintenance documentation.

4.1 Identify Failure Modes

Common SCBA risks:

- Regulator malfunction
- Facepiece seal degradation
- Cracked lenses
- Harness webbing failure
- Low-air alarm failure
- Electronics failure
- Contamination of breathing air



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4.2 Evaluate Current Inspection Program

Assess:

- Daily/shift inspection compliance
- After-use inspection procedures
- Annual flow testing and functional testing
- Advanced inspection by certified technician
- Documentation integrity

4.3 Repair Risk Controls

Ensure:

- Only manufacturer-trained technicians perform repairs
- Approved parts only
- Out-of-service tagging system
- Spare SCBA availability

5. Contamination and Decontamination Risk Assessment

Respiratory equipment contamination is a critical risk factor.

5.1 Identify Contaminants

- Combustion byproducts
- Polycyclic aromatic hydrocarbons (PAHs)
- Bloodborne pathogens
- Industrial chemicals



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5.2 Decontamination Procedures

Evaluate:

- On-scene gross decon procedures
- Facepiece cleaning protocols
- Drying and storage conditions
- Avoidance of damaging cleaning agents

5.3 Cross-Contamination Risk

Assess:

- Shared facepieces
- Improper storage
- Transport contamination

6. Air Quality Risk Assessment

Breathing air quality is a life-safety issue.

6.1 Compressor Systems

Evaluate:

- NFPA 1989 compliance (if applicable)
- Intake air location
- Maintenance intervals
- Filtration system integrity

6.2 Air Testing

Confirm:

- Quarterly or required air quality testing
- CO and moisture monitoring



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- Alarm functionality

7. Storage and Transportation Risk

7.1 Environmental Controls

Ensure SCBA are protected from:

- UV exposure
- Excess heat
- Chemical vapors
- Physical damage

7.2 Vehicle Mounting

- Secure brackets
- Protection from impact
- No deformation of harness/frame

8. Human Factors Risk Assessment

SCBA failure is often linked to training or human error.

8.1 Training Evaluation

Confirm:

- Initial training compliant with NFPA and OSHA
- Annual refresher training
- Emergency procedures (entanglement, regulator failure, low-air emergency)
- Mayday air management training

8.2 Fit Testing

- Annual quantitative or qualitative fit testing



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- Facial hair policy enforcement
- Medical clearance verification

8.3 Behavioral Risk

Assess:

- Air management discipline
- Bypassing alarms
- Improper donning/doffing
- Unauthorized modifications

9. Risk Analysis Method

Use a structured matrix:

Hazard Likelihood Severity Risk Rating Controls

9.1 Risk Rating Scale

- Likelihood: Rare / Occasional / Frequent
- Severity: Minor / Serious / Catastrophic

9.2 Prioritize:

- High probability + high severity
- Life-threatening failure modes

10. Implement Risk Controls

Use hierarchy of controls:

1. **Elimination** (Remove damaged SCBA from service)
2. **Substitution** (Upgrade older models)
3. **Engineering Controls** (Brackets, alarms, monitoring systems)



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4. **Administrative Controls** (Policies, SOPs, inspections)
5. **Training**

11. Documentation Requirements

Maintain records of:

- Serial numbers
- Purchase dates
- Inspection logs
- Flow test results
- Repairs and parts replacement
- Hydrostatic testing
- End-of-service-life documentation

Documentation must be:

- Traceable
- Secure
- Available for audit

12. Continuous Improvement

NFPA 1850 emphasizes program management.

12.1 Annual Program Review

Evaluate:

- Incident reports involving SCBA
- Near misses
- Equipment failure trends
- Manufacturer recalls



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12.2 End-of-Service-Life Evaluation

Remove SCBA when:

- It fails testing
- It reaches manufacturer service life
- Parts become obsolete
- Repair cost exceeds threshold

13. Sample SCBA Risk Assessment Checklist

- Hazard profile completed
- SCBA compliance verified
- Cylinder hydro test current
- Daily inspections documented
- Annual flow testing complete
- Air quality test within interval
- Decontamination procedure validated
- Fit testing current
- Medical evaluations current
- Training documented
- End-of-service-life policy in place

14. Deliverable: Risk Assessment Report Structure

1. Executive Summary
2. Hazard Profile
3. SCBA Inventory Summary
4. Failure Mode Analysis
5. Risk Matrix
6. Identified Gaps
7. Corrective Action Plan



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8. Timeline for Implementation
9. Approval Signatures

Key Risk Themes Under NFPA 1850 (2026)

- Lifecycle management
- Advanced inspection and documentation
- Manufacturer-authorized repairs
- Air quality assurance
- Contamination control
- Program-level accountability