

Risk Assessment Form

Compliant to NFPA 1851 (2014 edition)

NFPA 1250, Recommended Practice in Fire and Emergency Service Organization Risk Management for Fire Departments, advises in Chapters 4 and 5 that Fire Departments have a risk management plan. As part of the fire department's risk management plan, appropriate persons should conduct a risk assessment related to workplace safety.

NFPA 1851 Chapter 5, states that prior to starting the selection process of structural firefighting ensembles and ensemble elements and proximity firefighting ensemble and ensemble elements, the organization shall perform a risk assessment. The NFPA 1851 risk assessment for structural firefighting PPE should be part of the overall risk management plan of the fire department, and therefore approved by the fire department through a formal, documented approval process. The 1851 risk assessment should be conducted by appropriately trained persons, for example the safety officer and safety committee, or other appropriate personnel.

In determining risk, the organization should consider the frequency or likelihood of exposure to the hazard along with its potential severity (consequence) if exposure occurs.

In performing the risk assessment, the organization should consider all of its responsibilities. In some departments there might be different stations or units that require different types of ensembles

This form provides the required NFPA 1851 categories of information to be assessed as part of performing the risk assessment.

1. Types of duties performed
2. Frequency of use of ensemble elements
3. Organization's experiences
4. Incident operations
5. Geographic location and climate
6. Specific physical area of operation
7. Likelihood of or response to CBRN terrorism incident

In addition, as suggested in NFPA 1851 A.5.1.1., this form also provides the recommended form for assessing the fire department's current specification and possible areas of improvement.

1. Fire Department Demographic Information

- a. Type of Department
 - i. ___ Volunteer
 - ii. ___ Professional
 - iii. ___ Combination Volunteer and Professional
- b. Size of Population Served _____
- c. Area of service in square miles: _____
- d. Total Number of Firefighters in Fire Departments _____
- e. Comments: _____

2. Climate. Indicate the frequency of different climates in your area of operation that could affect your selection of PPE.

Hot/Humid

1. Never
2. Rarely
3. Sometimes
4. Often
5. Always

Cold/Humid

1. Never
2. Rarely
3. Sometimes
4. Often
5. Always

Hot/Dry

1. Never
2. Rarely
3. Sometimes
4. Often
5. Always

Cold/Dry

1. Never
2. Rarely
3. Sometimes
4. Often
5. Always

Moderate Temperatures Humid

1. Never
2. Rarely
3. Sometimes
4. Often
5. Always

High Winds

1. Never
2. Rarely
3. Sometimes
4. Often
5. Always

Moderate Temperatures Dry

1. Never
2. Rarely
3. Sometimes
4. Often
5. Always

Other _____

6. Never
7. Rarely
8. Sometimes
9. Often
10. Always

Based on the above, what are the primary climate factors that impact PPE selection?

3. Geography. Indicate the different types of Geographic Areas in your Departments response area:

- | | |
|----------------------------|------------------------|
| 1. Mountains/Steep Terrain | 4. Suburban |
| 2. Grasslands/Farmland | 5. Forests |
| 3. Urban | 6. Water and Shoreline |

How do the unique features of your area's geography affect PPE selection: (example: mountain terrain creates exposure to high angle rescue)

4. Engineered Features. Indicate the type of structures located in your fire department's response area

- | | |
|---|---|
| 1. ___ Highways | 7. ___ Dam and reservoirs |
| 2. ___ Bridges | 8. ___ Industrial/Large Warehouse |
| 3. ___ Airport | 9. ___ Commercial/retail |
| 4. ___ Railroad | 10. ___ Petrochemical |
| 5. ___ Multi-story High-rise buildings | 11. ___ Port |
| 6. ___ Single family Residential and Low rise buildings | 12. Military or government installation |

How do the engineered features in your area affect PPE selection: (Example: multi-story high rise leads to high risk of emergency escape situations)

5. Type of Duties and Incident Operations. Check all of the types of duties that apply to your fire department:

- | | |
|---|---|
| <input type="radio"/> Maintain Equipment | <input type="radio"/> Attack and suppress Passenger Vehicle Fire |
| <input type="radio"/> Layout hoses | <input type="radio"/> Place/Climb Ladders |
| <input type="radio"/> Technical Search/Rescue | <input type="radio"/> Hazardous Materials Response |
| <input type="radio"/> Direct Traffic and Place barriers | <input type="radio"/> Water Rescue |
| <input type="radio"/> Clean and Repair Ensembles | <input type="radio"/> Recordkeeping Reporting |
| <input type="radio"/> Operate equipment | <input type="radio"/> Perform Horizontal Ventilation on Structure |
| <input type="radio"/> Vehicle Extrication and Operating power tools | <input type="radio"/> Wildland firefighting |
| <input type="radio"/> Forcible Entry into a Structure/Remove barriers using power tools | <input type="radio"/> High Angle Rescue |
| <input type="radio"/> Airport Rescue Firefighting | <input type="radio"/> Salvage Overhaul |
| <input type="radio"/> Monitor Calls | <input type="radio"/> CBRN Response |
| <input type="radio"/> Attack and suppress interior structure fire | <input type="radio"/> Confined Space/Trench Rescue |
| <input type="radio"/> Emergency Medical Services | <input type="radio"/> Search and Rescue in a structure |
| <input type="radio"/> Industrial Fire Response | <input type="radio"/> Exterior Fire Attack and suppression |
| <input type="radio"/> Housekeeping | |

6. Organization’s Experiences and the Frequency of use of Ensemble Elements

Using Fire Department Records, indicate the frequency of responses to these leading types of incidents and the types of ensembles used during those incidents.

Use the following types of ensembles to enter in column 3 below: 1. Turnout Gear Ensemble; 2. Proximity Ensemble; 3. Hazmat ensemble; 4. EMS Ensemble; 5. CBRN Ensemble; 6. Wildlands Ensemble; 7. Tech rescue/Extrication ensemble

| | Total Number of Incidents | Percent of Total | Type of Ensemble Elements Used (Use numbers from list) |
|--------------------------------|----------------------------------|-------------------------|---|
| 1. Carbon Monoxide Incident | | | |
| 2. Structural Fire | | | |
| 3. Gas Leak | | | |
| 4. Haz Mat | | | |
| 5. Water Rescue | | | |
| 6. Medical | | | |
| 7. Non-Emergency | | | |
| 8. High Angle Rescue | | | |
| 9. Vehicle Fire | | | |
| 10. Vehicle Incident | | | |
| 11. Water problem | | | |
| 12. Wires Down | | | |
| 13. Proximity Industrial Fires | | | |
| 14. Proximity Aviation Fires | | | |
| 15. Wildlands/brush fires | | | |
| TOTALS | | | |

From the above data, calculate the frequency of use of Protective Ensembles by adding up the total number of incidents using each type of protective ensemble:

| Type of Gear | Frequency of Use (Add up the # of Incidents) |
|-------------------------------------|---|
| 1. Turnout Gear Ensemble | |
| 2. Proximity Ensemble | |
| 3. Hazmat ensemble | |
| 4. EMS Ensemble | |
| 5. CBRN Ensemble | |
| 6. Wildlands Ensemble | |
| 7. Tech Rescue/Extrication ensemble | |

Comments on Current availability of appropriate PPE

7. Types of Injuries by Nature of Injury

Using the fire department’s data, indicate the top areas of injury to firefighters in the past year.

| Type of Injury | Frequency |
|--|-----------|
| 1. Strain/Sprain | |
| 2. Wound/cut/bleeding/bruises | |
| 3. Dislocation, Fracture | |
| 4. Smoke, Gas inhalation or respiratory distress | |
| 5. Burns from fire or chemicals | |
| 6. Heart Attack, Stroke | |
| 7. Thermal Stress | |

Comments regarding adequacy of PPE or areas of need based on injury pattern:

8. Likelihood and Severity of possible CBRN terrorism incident. Use the matrix below to create an estimate of likelihood and severity to produce a risk rating by multiplying the values together.

| Likelihood (Points) | Severity (points) |
|--------------------------|-----------------------|
| 1. ___ Not at all likely | ___ Low (1 point) |
| 2. ___ Slightly likely | ___ Medium (5 points) |
| 3. ___ Moderately likely | ___ High (7 points) |
| 4. ___ Very likely | |
| 5. ___ Completely likely | |

CBRN Risk Rating Score = Likelihood x Severity= _____

< 15 is low risk

9. **Hazard Risk Matrix for Firefighter PPE Evaluation.** Use this table to identify key hazards in firefighting arising from the operations, environment and duties identified in the previous sections.

Severity Rating: Negligible-2; Minor-4; Serious-6; Critical-8; Extreme-10;

Probability Rating: Improbable-2; Slightly probable-4 moderately probable-6; very probable-8; Completely probable-10

| Anticipated Hazards | Severity (rate 2-10) | Probability (rate 2-10) | Risk Factor (Severity x Probability) |
|----------------------------------|-----------------------------|--------------------------------|---|
| Radiant Heat | | | |
| Convective Heat | | | |
| Compression against Hot surfaces | | | |
| Direct Flame Exposure | | | |
| Flashover/Explosion | | | |
| Steam | | | |
| Heat Stress | | | |
| Cold Stress | | | |
| Molten Metals | | | |
| Slips and Fall Hazards | | | |
| Hot liquids | | | |
| Struck by falling objects | | | |
| Cuts | | | |
| Penetration | | | |
| Abrasion/rough surfaces | | | |
| Falls from high elevations | | | |

10. Needs Evaluation

Based on climate, geography, engineered structures, size and type of department, previous experience, duties and risk of CBRN incidents, identify the most important needs for your personal protective clothing:

a. NFPA 1971 Turnout Gear

| Hazard Protection/Performance Element | Departmental Need (Rate 1-5) | Rating of Current PPE (Rate 1-5) | Gap |
|--|------------------------------|----------------------------------|-----|
| Mobility features | | | |
| Fit for a range of body types | | | |
| Ease of Donning and Doffing | | | |
| Providing a wide range of motion/reach | | | |
| High Thermal Protection | | | |
| High level of Cut Resistance | | | |
| High Abrasion protection | | | |
| Steam protection/ability to allow heated moisture to ventilate out | | | |
| Hot Liquid protection when crawling and kneeling | | | |
| High levels of Reflectivity/Visibility | | | |
| High Breathability of composite | | | |
| Stress Reduction | | | |
| Durability of Fireground chemical resistance (battery acid, chlorine, AFFF, hydraulic fluid) | | | |
| CBRN protection features | | | |
| Liquid integrity- protection against hose water | | | |
| Ease of Deploying DRD | | | |
| Effectiveness of Safety harnesses, ladder belt or escape belts for emergency situations | | | |
| Effective overlap between coat and pant when reaching overhead | | | |
| Durability of Fasteners | | | |
| Seam strength and durability | | | |
| Bloodborne pathogen protection | | | |
| Resistance to compressive heat transfer in the knees and shoulders (CCHR) | | | |
| Effective Inspection, Cleaning and Repair Services to keep PPE in clean safe operating condition | | | |
| Warranty to ensure that defective gear is prevented from getting into service | | | |
| Delivery time for new and replacement gear and Dealer Services (Service Component) | | | |

b. NFPA 1971 Helmets

| Hazard Protection/Performance Element | Departmental Need (Rate 1-5) | Rating of Current PPE (Rate 1-5) | Gap |
|---|-------------------------------------|---|------------|
| Comfortable weight/avoidance of neck strain | | | |
| Fit | | | |
| Ease of Donning and Doffing | | | |
| Interface with SCBA | | | |
| Penetration resistance | | | |
| Hot Liquid protection | | | |
| Reflectivity/Visibility | | | |
| Effective Inspection, Cleaning and Repair Program | | | |
| CBRN protection | | | |
| Impact protection | | | |
| Visual acuity of Faceshield or goggles | | | |
| Performance in extreme cold conditions | | | |
| Heat resistance of materials | | | |
| Delivery Time | | | |
| Warranty | | | |
| Resistance to electrical conduction | | | |

c. NFPA 1971 Hoods

| Hazard Protection/Performance Element | Departmental Need (Rate 1-5) | Rating of Current PPE (Rate 1-5) | Gap |
|---|-------------------------------------|---|------------|
| Comfortable weight/avoidance of neck strain | | | |
| Fit | | | |
| Ease of Donning and Doffing | | | |
| Interface with SCBA facemask | | | |
| Liquid protection | | | |
| CBRN protection | | | |
| Performance in extreme cold conditions | | | |
| Heat resistance of materials | | | |
| Delivery Time | | | |
| Warranty | | | |
| Resistance to electrical conduction | | | |
| Effective Inspection, Cleaning and Repair Program | | | |

d. NFPA 1971 Gloves

| Hazard Protection/Performance Element | Departmental Need (Rate 1-5) | Rating of Current PPE (Rate 1-5) | Gap |
|---|-------------------------------------|---|------------|
| Dexterity | | | |
| Comfort | | | |
| Fit | | | |
| Range of motion | | | |
| Wrist protection | | | |
| Ease of Donning and Doffing | | | |
| Liquid absorption protection | | | |
| Breathability | | | |
| CBRN protection | | | |
| Performance in extreme cold conditions | | | |
| Heat resistance of materials | | | |
| Delivery Time | | | |
| Warranty | | | |
| Resistance to electrical conduction | | | |
| Effective Inspection, Cleaning and Repair Program | | | |

e. NFPA 1971 Structural Firefighting Footwear

| Hazard Protection/Performance Element | Departmental Need (Rate 1-5) | Rating of Current PPE (Rate 1-5) | Gap |
|---|-------------------------------------|---|------------|
| Light weight | | | |
| Comfortable fit | | | |
| Ankle support | | | |
| Abrasion protection | | | |
| Crush protection | | | |
| Penetration Protection | | | |
| Ease of Donning and Doffing | | | |
| Liquid absorption protection | | | |
| Interface with turnout gear | | | |
| Breathability | | | |
| CBRN protection | | | |
| Performance in extreme cold conditions | | | |
| Heat resistance of materials | | | |
| Delivery Time | | | |
| Warranty | | | |
| Resistance to electrical conduction | | | |
| Effective Inspection, Cleaning and Repair Program | | | |