

**Forest Service Handbook
National Headquarters - Washington Office
Washington, DC**

**Forest Service Handbook 6709.11 – Health and Safety Code Handbook
Chapter 70 - Personal Protective Equipment, Glossary, and Index**

Amendment: 6709.11-2018-1

Effective date: December 03, 2018

Duration: This amendment is effective until superseded or removed.

Approved by: Robert Velasco II, Acting Deputy Chief, Business Operations

Date approved: November 28, 2018

Responsible Staff:

Last Change: 6709.11-2016-1 to 6709.11_20

Superseded Document(s): Entire Handbook; 6709.11, Contents, Amendment 6709.11-99-1, December 01, 1999; 6709.11_zero_code, Amendment 6709.11-99-1, December 01, 1999; 6709.11_10, Amendment 6709.11-2015-1, December 07, 2015; 6709.11_20-24, Amendment 6709.11-2016-1, July 19, 2016; 6709.11_25-27, Amendment 6709.11-99-1, December 01, 1999; 6709.11_30, Amendment 6709.11-99-1, December 01, 1999; 6709.11_40, Amendment 6709.11-99-1, December 01, 1999; 6709.11_50, Amendment 6709.11-99-1, December 01, 1999; 6709.11_60, Amendment 6709.11-99-1, December 01, 1999; 6709.11_70, Amendment 6709.11-99-1, December 01, 1999; 6709.11, Glossary, Amendment 6709.11-99-1, December 01, 1999; 6709.11, Index, Amendment 6709.11-99-1, December 01, 1999

Digest: Following is an explanation of the changes throughout the directive by section.

6709.11: Revised Handbook in its entirety.

12 - 13: Removes codes, captions, and direction for Motorized Vehicles and Specialized Equipment and recodes direction with revisions to FSM 7130.

14: Removes codes, captions, and direction for Aviation and recodes direction with revisions to the 2016 National Aviation Safety Management System Guide.

15: Removes codes, captions, and direction for Watercraft Safety and recodes direction with revisions to FSM 7130.

22: Removes codes, captions, and direction for Resource Management.

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22.3: Removes codes, captions, and direction for Recreation and recodes direction with revisions to FSM 2300.

22.4: Removes codes, captions, and direction for Forest Management and recodes directions with revisions to FSM 2000.

22.5: Removes codes, captions, and direction for Watershed and Air Management and recodes direction with revisions to FSM 2500.

22.6: Removes codes, captions, and direction for Wildlife, Fish, and Sensitive Plant Management and recodes directions with revisions to FSM 2630.

22.62: Removes codes, captions, and direction for Diving and recodes directions with revisions to FSH 4209.11.

22.7: Removes codes, captions, and direction for Special Uses and recodes directions with revisions to FSM 2700.

22.8: Removes codes, captions, and direction for Minerals and Geology and recodes directions with revisions to FSM 2800.

23: Removes codes, captions, and direction for State and Private Forestry.

24: Removes codes, captions, and direction for Research.

25.1: Removes codes, captions, and direction and recodes directions with revisions to Interagency Standards for Fire and Fire Aviation Operations.

25.2: Removes codes, captions, and direction on Smokejumping and recodes directions with revisions to Interagency Standards for Fire and Fire Aviation Operations.

25.3: Removes codes, captions, and direction on Law Enforcement and recodes directions with revisions to FSH 5309.11.

26: Removes codes, captions, and direction on Management Services.

27: Removes codes, captions, and direction on Engineering and recodes directions with revisions to FSM 7000 Series Publications.

36: Removes codes, captions, and direction for Electrical Standards and recodes direction with revisions to FSM 7600.

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37: Removes codes, captions, and direction for Occupational Health and Environmental Controls and recodes directions with revisions to FSM 7400.

38: Removes codes, captions, and direction for General Environmental Controls and recodes direction with revisions to FSM 7400.

44: Removes codes, captions, and direction for Heavy Equipment and recodes direction with revisions to EM 7130-2.

45: Removes codes, captions, and direction for Equipment Development and recodes direction with revisions to FSM 7120.

70: Changes chapter caption from “Job Hazard Analysis (Form FS-6700-7) and Personal Protective Equipment” to “Personal Protective Equipment, Glossary, and Index” and revises chapter in its entirety.

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71 - Personal Protective Equipment (PPE)

This section provides guidance and recommendations related to personal protective equipment (PPE) for various job tasks and activities. Detailed requirements related to PPE may be found in the Federal Occupational Safety and Health Administration (OSHA) Standard, 29 CFR 1910 Subpart I, sections 132 through 140.

Supervisors are required to complete a risk assessment (RA) for the work employees perform where there is a risk of serious injury or significant property damage, and where applicable, to identify the appropriate PPE needed to better protect employees from injuries or illnesses associated with the work.

In general, most employees are required to wear long pants and long-sleeved shirts or jackets while working in field conditions. This requirement is intended to protect employees from bug bites and stings, minor cuts and scrapes, toxic plants, and so on. When additional clothing requirements exist, such as for flame-resistant garments related to firefighting and aviation; chemical protective garments (aprons); and clothing to protect from environmental conditions experienced during activities such as mountaineering, snowmobile operations, and snow surveys, the Supervisor shall clearly document those items and brief employees exposed to those work conditions.

71.01 - Authority

Title 29, Code of Federal Regulations (29 CFR), sections 1910.132 through 1910.140.

71.06 - References

Title 29 CFR 1910 Subpart I, sections 132 through 140.

71.07 - Procedures

The following are basic requirements related to PPE, as outlined in the Federal OSHA Standard:

PPE must be provided, used, and maintained in a sanitary and reliable condition. Where employees provide their own PPE, Supervisors are responsible to assure its adequacy, including proper maintenance and sanitation of such equipment. Supervisors will assess the workplace to determine if hazards are present or are likely to be present that necessitate PPE use. When such hazards are present or likely to be present, Supervisors must proceed as follows:

1. Select and direct affected employees to use the PPE types that will protect them from the hazards identified in the hazard assessment.
2. Communicate selection decisions to each affected employee.
3. Select PPE that properly fits each affected employee.

Supervisors must verify that the required workplace hazard assessment has been performed through a written certification that identifies the workplace evaluated; the person certifying that the evaluation has been performed; the hazard assessment date(s); and identification of the document as a hazard assessment certification.

4. Defective and damaged equipment. Defective or damaged PPE must not be used.
5. Training.
 - a. Employees will be properly trained concerning the following:
 - (1) When PPE must be worn.
 - (2) Specific PPE required.
 - (3) Properly adjusting, donning, wearing, and removing PPE.
 - (4) PPE limitations.
 - (5) PPE proper care, maintenance, useful life, and disposal.
6. Personal protective equipment payment.
 - a. The Forest Service must provide PPE at no cost to employees. However, the Forest Service is not required to pay for non-specialty safety-toe protective footwear (including steel-toe boots or shoes) and non-specialty prescription safety eyewear, provided the Forest Service permits such items to be worn off the job-site.
 - b. The Forest Service is not required to pay for logging boots required by 29 CFR 1910.266(d)(1)(v); everyday clothing, such as long-sleeve shirts, long pants, street shoes, and normal work boots; ordinary clothing; skin creams; or other items used solely for protection from weather, such as gloves, hats, jackets, parkas, raincoats, winter coats, rubber boots, ordinary sunglasses, and sunscreen.
 - c. The Forest Service must pay for replacement PPE except when the employee has lost or intentionally damaged the PPE.

Where an employee provides adequate PPE he or she owns pursuant to paragraphs 6(a) through 6(b) of this section, the Forest Service may allow the employee to use such PPE and is not required to reimburse the employee for that equipment. The Forest Service must not require an employee to provide or pay for his or her own PPE unless the PPE is excepted by paragraphs 6(a) through 6(b) of this section.

The tables below provides PPE recommendations for various job activities and projects that agency employees perform. As stated above, Supervisors shall document PPE requirements for each job task whenever PPE is prescribed to protect employees.

71.10 - Eye and Face Protection

Supervisors must ensure that employees use appropriate eye or face protection when exposed to acids or caustic liquids, chemical gases or vapors, flying particles, liquid chemicals molten metal, or potentially injurious light radiation (71.10, ex. 01). Supervisors must ensure employees use side protection when hazards exist from flying objects. Detachable side protectors (for example, clip-on or slide-on side shields) that meet this section's pertinent requirements are acceptable. Ref: 29 CFR 1910.133(a)(1) & (2).

71.10 - Exhibit 01

Personal Protective Equipment (PPE) - Eye and Face Protection

Air Operations – Rotary Wing and Ground Operations (with side protection)
Blasting (with side protection)
Bridge Inspection
Brushing and Brush Piling
Caving
Chain Saw/Crosscut Saw Operations (with side protection)
Clearing Operations (roadside and land)
Concrete/Masonry (with side protection)
Demolition (with side protection)
Drill Rig Operations (with side protection)
Fencing Operations (with side protection)
Firefighting (per Redbook PPE requirements)
Grinding (with side protection)
Ground Maintenance Operations (with side protection)
Heavy Equipment Operations (that is, excavator, backhoe)
Mill Studies
Mine and Mineral Surveys
Mountaineering
Painting (required when chipping, sanding, or scraping old paint)
Pole Climbing
Pesticide Application
Gravel Pit and Quarry Operations
Road Maintenance
Sand Blasting (with side protection)
Scaling
Sign Installation
Specialized Equipment, such as ATVs, UTVs, Dirt Bikes, and Snowmobiles (safety goggles)
Surveying
Thinning and Girdling
Timber Marking
Trail Maintenance
Tree Climbing
Tree Planting
Tree Pruning
Water Surveys (polarized lenses)
Welding (welder's face shield or goggles)

71.11 - Foot Protection

Supervisors must ensure that employees use protective footwear (71.11, ex. 01) when working in areas where there is a danger of foot injuries due to falling or rolling objects, objects piercing the sole, or when the use of protective footwear will protect the affected employee from an electrical hazard, such as a static-discharge or electric-shock hazard, that remains after the Supervisor takes other necessary protective measures. Ref: 29 CFR 1910.136(a).

71.11 - Exhibit 01

Personal Protective Equipment (PPE) - Foot Protection

Blasting
Bridge Inspection
Brushing and Brush Piling (non-skid with ankle support)
Caving
Chain Saw/Crosscut Saw Operations (non-skid safety-toed footwear)
Clearing Operations (Road and Land) (non-skid safety-toed footwear)
Concrete/Masonry (non-skid safety-toed footwear)
Demolition (safety-toed footwear)
Drill Rig Operations (non-skid safety-toed footwear)
Fencing Operations (non-skid safety-toed footwear)
Firefighting (per Redbook PPE requirements)
Ground Maintenance Operations
Heavy Equipment Operations (excavator, backhoe) (safety-toed boots)
Mill Studies (non-skid footwear)
Mine and Mineral Surveys (non-skid safety-toed footwear)
Mountaineering
Pole Climbing
Gravel Pit and Quarry Operations (safety-toed boots)
Road Maintenance
Sand Blasting
Scaling (safety-toed footwear)
Specialized Equipment, such as ATVs, UTVs, Dirt Bikes, Snowmobiles
Thinning and Girdling (non-skid footwear with ankle support)
Timber Marking (non-skid footwear with ankle support)
Trail Maintenance (non-skid footwear with ankle support)
Tree Climbing
Tree Planting (non-skid boots and consider foot guards)
Tree Pruning
Water Surveys (traction footwear/hip boots/belted waders)
Warehouse Work
Welding (safety-toed footwear)

71.12 - Head Protection

Supervisors must ensure that employees wear a protective hardhat or helmet (71.12, ex. 01) when working in areas where there is a potential for injury to the head from falling objects, such as from overhead canopy when working within forested areas. Ref: 29 CFR 1910.135(a)(1).

71.12 - Exhibit 01

Personal Protective Equipment (PPE) - Head Protection

Air Operations – Rotary Wing (hardhat/helmet with chinstrap)
Blasting
Bridge Inspection
Bicycle Riding
Brushing and Brush Piling
Caving (climbing helmet)
Chain Saw/Crosscut Saw Operations
Clearing Operations (roadside and land)
Concrete/Masonry
Demolition
Drill Rig Operations
Fencing Operations
Firefighting (per Redbook PPE requirements)
Gravel Pit and Quarry Operations
Ground Maintenance Operations
Heavy Equipment Operations (that is, excavator)
Mill Studies
Mine and Mineral Surveys
Mountaineering (climbing helmet)
Pesticide Application
Pole Climbing (high-voltage hardhat)
Portable Power Tools (that generate flying debris)
Road Maintenance
Sand Blasting
Scaling
Sign Installation
Specialized Equipment, such as ATVs, UTVs, Dirt Bikes, Snowmobiles (Department of Transportation-approved helmet)
Thinning and Girdling
Timber Marking
Trail Maintenance
Tree Climbing (climbing helmet)
Tree Planting (when using motorized equipment)
Tree Pruning
Water Surveys

71.13 - Hand Protection

Supervisors shall select and require employees to use appropriate hand protection (71.13, ex. 01) when employees' hands are exposed to hazards, such as those from skin absorption of harmful substances; severe cuts or lacerations; severe abrasions; punctures; chemical burns; thermal burns; and harmful temperature extremes. Ref: 29 CFR 1910.138(a)

71.13 - Exhibit 01

Personal Protective Equipment (PPE) - Hand Protection

Air Operations
Blasting
Bridge Inspections
Brushing and Brush Piling (heavy duty cut-resistant leather)
Caving
Chain Saw/Crosscut Saw Operations (heavy duty cut-resistant leather)
Clearing (road and land) (heavy duty cut-resistant leather)
Concrete/Masonry
Demolition
Drill Rig Operations (leather)
Electrofishing (rubber insulated)
Electrical Work (rubber insulated)
Fencing Operations (heavy duty cut-resistant gauntlet-type)
Fire Fighting (per Redbook PPE requirements)
Grinding
Ground Maintenance Operations
Heavy Equipment Operations (that is, excavator)
Mill Studies
Pesticide Application (chemical-resistant)
Pole Climbing
Quarry Operations
Sand Blasting
Sign Installation
Snow Cat Operations
Specialized Equipment, such as ATVs, UTVs, Dirt Bikes, Snowmobiles
Thinning and Girdling
Timber Marking (may require chemical-protective gloves when handling solvents)
Trail Maintenance
Tree Climbing
Tree Planting (when using motorized equipment)
Tree Pruning
Welding (flameproof gauntlet-type)

71.14 - Hearing Protection

Hearing Protection is required (71.14, ex. 01) when noise exposure could exceed 85dB and above. Ref: 29 CFR 1910.95(c)(1).

71.14 - Exhibit 01

Personal Protective Equipment (PPE) - Hearing Protection

Air Operations
Blasting
Brushing and Brush Piling
Chain Saw Operations
Drill Rig Operations
Fire Fighting (per Redbook PPE requirements)
Grinding
Ground Maintenance Operations
Heavy Equipment Operations (that is, excavator)
Mill Studies
Pesticide Application
Quarry Operations
Road Maintenance
Sand Blasting
Snow Cat Operations
Thinning and Girdling
Trail Maintenance
Tree Planting (when using motorized equipment)
Welding

71.15 - Respirators

To prevent occupational diseases caused by breathing air contaminated with harmful dusts, fogs, fumes, gases, mists, smokes, sprays, or vapors, where engineering controls are not feasible, appropriate respirators must be used (71.15, ex. 01). Supervisors must provide a respirator to each employee when such equipment is necessary to protect that employee's health.

Ref: 29 CFR 1910.134(a)(1)&(2). Where employees are required to wear respirators for the work they perform, the local unit must develop and maintain a written Respiratory Protection Program.

71.15 - Exhibit 01

Personal Protective Equipment (PPE) - Respirators

Bridge Inspections (dust mask or respirator)
Concrete / Masonry (respirator for harmful dust exposure)
Drill Rig Operations (dust mask or respirator)
Grounds Maintenance (dust mask)
Painting (respirator when required by the Safety Data Sheet)
Pesticide Application (respirator when required by the Safety Data Sheet)
Road Maintenance (dust mask)
Surveying
Timber Marking (only when required by the Safety Data Sheet)

71.16 - Reflective Vests

There are several job tasks within the Forest Service where the use of reflective vests (71.16, ex. 01) are required or strongly recommended. The following table is not an all-inclusive list.
Ref: 29 CFR 1910.132(a).

71.16 - Exhibit 01

Personal Protective Equipment (PPE) - Reflective Vests

Blasting (reflective or cruiser vest)
Bridge Inspections
Clearing (road and land) (heavy-duty cut-resistant leather)
Drill Rig Operations (leather)
Heavy Equipment Operations (that is, excavator)
Mill Studies
Road Maintenance Operations
Scaling
Sign Installation
Surveying
Timber Marking (cruiser vest)
Traffic Control

72 - Glossary

Aerosol Defensive Spray (ADS). A spray that deters threatening behavior from human beings or wild and domestic animals that have the potential to cause physical harm or personal injury.

Alternative Fuels. Any type of fuel other than gasoline and diesel (methanol, ethanol, and propane are examples) that is used as engine fuel.

ANSI. American National Standards Institute.

Anti-lock Brake System (ABS). A computerized vehicle braking system designed to prevent wheel lock-up.

ASME. American Society of Mechanical Engineers.

ASTM. American Standards and Testing Methods.

ATV. All-terrain vehicle.

Aviation Operations. Any activity involving the use of aircraft.

BBP. Bloodborne pathogens.

Bonding. Metal-to-metal contact, usually by wire, between two containers to prevent generation of static electrical sparks.

Cave. Any naturally occurring void beneath the surface of the Earth or within a cliff or ledge, including natural subsurface water and drainage systems, which is large enough to allow human entrance. Any natural pit, sinkhole, or other feature that is an extension or component of a cave. Man-made excavations such as mines are not considered caves and as such, require different training and skills to enter.

Caver. A person trained and experienced in cave exploration.

CDC. Centers for Disease Control and Prevention.

CFR. Code of Federal Regulations.

Class ABC Fire Extinguisher. A multipurpose extinguisher that is capable of extinguishing fires resulting from ordinary combustibles, flammable liquids, and electrical equipment (National Fire Protection Association and Coast Guard approved).

Class B Fire Extinguisher. An extinguisher capable of extinguishing fires resulting from flammable liquids.

Climber. A metallic climbing device using a pointed gaff attached to a leg iron.

Climbing Team. Two or more certified tree climbers, each of whom is capable of performing the same assignment as the other(s).

Commercial Driver's License (CDL). A license required to drive a commercial motor vehicle with a gross vehicle weight of more than 26,001 pounds (11,794 kg), including towing units that exceed this weight when the towed unit weighs more than 10,000 pounds (4,536 kg). A CDL is also required to drive a vehicle designed to carry 15 or more passengers or any size vehicle transporting hazardous materials that require vehicle placarding under the hazardous materials regulations.

Competent Person. A person capable of identifying existing and predictable hazards in the surroundings or in the working conditions that are unsanitary, hazardous, or dangerous to employees. Having so identified the situation, this person is authorized to take prompt corrective measures to eliminate them.

Confined Space. Any space that has a limited or restricted means of egress; is large enough for an employee to enter and perform assigned work; and is not designed for continuous occupancy. Confined spaces can be further defined as permit-required or non-permit required.

Consumer Commodity. A material that is packaged and distributed in a form intended or suitable for sale through retail sales agencies for consumption by individuals for personal care or household use.

CPR. Cardiopulmonary resuscitation.

CTD. Cumulative trauma disorder.

Danger Tree. A standing tree that presents a hazard to people due to conditions such as but not limited to deterioration or physical damage to the root system, trunk, stem, or limbs and the direction and lean of the tree.

Dogs. A chainsaw accessory designed for falling and bucking. Medium-size saws generally have an inside dog while larger saws have both an inside and an outside set of dogs. Chainsaw dogs increase the sawyer's efficiency in falling and bucking operations.

DOT. US Department of Transportation.

EPA. Environmental Protection Agency.

Exploration Party. A group of three or more experienced cavers.

FAR. Federal Aviation Regulations.

FEMA. Federal Emergency Management Agency.

Firearms. Any weapon (including a starter gun) that is designed to or may readily be converted to expel a projectile by the action of an explosive; the frame or receiver of any such weapon; any firearm muffler or firearm silencer; or any destructive device.

Firefighting Missions. Aviation operations involving the use of aircraft to perform lead plane, smokejumper/para-cargo, reconnaissance, photography, or survey activities during forest fires.

First-Aid Kit. As referenced in this Handbook, a kit including bloodborne pathogen protective equipment (as a minimum, CPR clear-mouth barriers, face masks, eye protection, and rubber gloves,) in addition to standard first-aid supplies.

Flight Following Plan. A radio communications plan established by each Region requiring pilot call-in at a designated interval.

Float Following Check-in. A check-in procedure required to ensure that boaters reach their destination and/or are provided assistance if problems are encountered en route. Check-in procedures must be established before departure and should include the check-in frequency. If boaters fail to check-in as required/established, search and rescue procedures are activated 30 minutes after the last required check-in.

Forest Service-Approved. An item that meets Forest Service specifications and/or drawings or is procured under Forest Service authority.

FS. Forest Service.

FSH. Forest Service Handbook.

FSM. Forest Service Manual.

Gaff. The sharp, pointed part of the climbing iron that enters the wood.

GAWR. Gross axle weight rating.

GCWR. Gross combined weight rating.

GFCI or GFI. Ground fault circuit interrupter.

Global Positioning System (GPS). A satellite-based radio navigation and positioning system developed by the Department of Defense (DOD). In its basic form, the satellite constellation consists of 24 satellites, four in each of six orbital planes. They are located 12,500 miles (20,116 km) above the Earth and circle the Earth once every 12 hours. Trained employees with GPS receivers can determine their positions anywhere in the world, 24 hours a day, in all weather conditions.

Grounding. Contact between a container and the ground point, usually by wire, to prevent generation of static electrical sparks.

GTW. Gross total weight.

GVW. Gross vehicle weight.

Hands-on Training. Supervised training that includes classroom instruction and practical field exercise or demonstration of proficiency.

Handyman Jack. A lifting or pulling device that lifts on the down stroke of the handle, depending on the size of the jack. It has a minimum of 30 inches continuous lift and approximately 7,000 pounds of capacity. Handyman jacks are commonly used for changing flat tires, pulling metal fence posts, and many other uses.

HBV. Hepatitis-B virus.

HIV. Human immunodeficiency virus.

Incipient Stage Fire. A fire in its initial or beginning stage that can be controlled or extinguished by portable fire extinguishers, Class II standpipe, or small hose systems without operators using protective clothing or breathing apparatus.

Itinerary. Planned travel route(s), travel date(s), destination, and estimated arrival/departure time(s).

Jackstrawed. Area where multiple trees have fallen or been blown down in crisscross fashion.

JHA. Job-hazard analysis.

Kerf. The slot that saw chain cutters make in the wood.

LCES. Lookout(s), Communication(s), Escape Route(s), and Safety Zone(s). Elements of a safety system firefighters routinely use to assess their current situation with respect to wildland firefighting hazards. LCES has a much broader application than wildfire situations and should be considered a valuable tool for all field project work and activities. Examples include chain saw operations, work in confined spaces, hazardous materials, and blasting.

Lock-out/Tag-out. The placement of a lockout device on an energy-isolating device to indicate that the device and the equipment being controlled may not be operated until the lockout device is removed. When an electrical energy source is not capable of being locked out, a prominent warning tag is fastened securely to it in accordance with established procedures (29 CFR 1910.147).

Log Slip. A method of conveying logs during the manufacturing process.

LP Gas. Liquid or liquefied petroleum gas.

NEC. National Electrical Code.

NFPA. National Fire Protection Association.

NIOSH. National Institute for Occupational Safety and Health.

Offsetting Method. A method of measuring distances in which actual points on the main line are moved a short distance perpendicularly and then measurements are recorded for reestablishment purposes.

OSHA. Occupational Safety and Health Administration.

Personal Communication Device. A system for sending and receiving messages, such as a cellular phone or two-way radio.

PEL. Permissible Exposure Limit

PFD. Personal flotation device.

Pit/Quarry Plan. A design for excavation of material that includes safety features, such as benches, berms, and reduced slope ratios.

POU. Point of use.

PPE. Personal protective equipment and clothing for eyes, head, and extremities; respiratory devices; and protective shields and barriers.

Pyrotechnic Device. A flare fired from a flare pistol, capable of setting several simultaneous fires.

RA. Risk Assessment

Safety Container. As defined by NFPA 30, an approved container of not more than a five-gallon (18.9 L) capacity, having a spring-closing lid and spout cover and designed so that it safely relieves internal pressure when subjected to fire exposure.

SDS. Safety Data Sheet. A compilation of information required under the Occupational Safety and Health Administration Hazard Communication Standard that outlines the identity of hazardous chemicals; health, physical, and fire hazards; exposure limits; and storage and handling precautions.

SHMD. Safety and Health Management Division.

SMF. Snell Memorial Foundation.

Snag. Any standing dead tree or portion thereof.

Sound. Descriptor used in tree falling, especially snags, in reference to the presence of rot in the standing tree.

TWA. Time-weighted average.

UIAA. Union Internationale des Associations D'Alpinisme.

UL. Underwriters Laboratory.

Universal Precautions. Equipment and procedures that protect a person from a patient's blood and body fluids.

USCG. US Coast Guard.

USDA. US Department of Agriculture.

VDT. Video display terminal.

VFR. Visual flight rules.

Wild or Undeveloped Cave. Any cave not developed with trails, pathways, or artificial lighting, in which the cavers are completely dependent upon their own equipment.

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