# Safety After The Storm

## Personal Protective Equipment (PPE)

Any emergency responder, recovery worker or volunteer needs proper PPE when aiding in disaster situations. For this type of response, equipment such as hard hats, safety glasses, waterproof gloves, watertight boots (steel toe preferred), rain gear and hearing protection are recommended. In some cases, respirators may be required.

Not wearing proper PPE can lead to infection, concussions, blindness, punctures/fractures, trench foot or worse. Bacteria are one of the main risks, with symptoms of infection ranging from stomachache to fever to vomiting and diarrhea.

### PPE for the Head

Workers should wear head protection any time:

- Objects might fall on their heads
- They might bump their heads against fixed objects
- They work near exposed electrical conductors

#### Types of Head Protection

- Class G (General) helmets (formerly Class A helmets)
  - General service
  - Good impact protection
  - Limited voltage protection
- Class E (Electrical) helmets (formerly Class B helmets)
  - Electrical work
  - Protect against falling objects and high-voltage shock and burns
- Class C (Conductive) helmets
  - Lightweight and designed for comfort
  - Offer limited protection
  - Protect from bumps against fixed objects
  - Don't protect against falling objects or electric shock

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**Inspection and Maintenance**

- Paints/thinners may reduce physical protection or electrical resistance.
- Clean shells with detergent, and rinse with clear, hot water.
- Do NOT store hard hats in direct sunlight.
- Replace damaged helmets!

### PPE for the Eyes and Face

Wear eye protection anytime you may be exposed to the hazards that typically cause eye and face injuries. Examples of these hazards include:

- Splashes of toxic or corrosive chemicals
- Hot liquids and molten metal
- Flying objects
- Fumes
- Gases and mists of toxic or corrosive chemicals
- Aerosols of biological substances such as blood
- Intense light
- Optical radiation

Eye and face protection may include:

- Safety glasses
- Impact-resistant glasses
- Side shields
- Laser glasses or goggles
- Face shields
- Eyeglasses
- Welding shields
- Goggles

Choose the appropriate PPE for any given set of hazards, keeping in mind that different types of PPE offer different

amounts of coverage for your eyes and face. Inspect eye and face protection before use, and keep it clean and disinfected regularly with soap and water.

### PPE for the Hands and Arms

Wear hand and arm protection anytime you may be exposed to the hazards that typically cause hand and arm injuries. Examples of such hazards include:

- Objects with sharp edges and pinch points
- Objects that can cause puncture wounds
- Objects that can strike your hands and arms and break or fracture the bones
- Corrosive or toxic chemicals
- Electrical sources
- Extremely cold or hot objects that can irritate or burn your arms or hands

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## Personal Protective Equipment (PPE)

Glove and sleeve materials may include:

- Metal mesh
- Insulating rubber
- Chemical-resistant material
- Liquid-resistant material
- Coated fabric
- Canvas
- Fabric
- Leather

Choose gloves and sleeves made of the appropriate material. Inspect and maintain hand and arm protection before using it. Always replace gloves and sleeves that are worn or torn. Remember to store PPE in a clean and dry location.

### PPE for the Body

Require your workers to wear body PPE anytime they may be exposed to the hazards that typically cause body injuries. These hazards may include:

- Intense heat
- Splashes of hot metals and other hot liquids
- Impacts or cuts from tools, machinery and materials
- Hazardous chemicals
- Blood and other potentially infectious materials
- Radiation

Your workers should wear body PPE that covers the body part at risk. Examples of PPE for the body include:

- Vests
- Jackets
- Full-body suits
- Coveralls
- Aprons

Body PPE may be made of the following materials:

- Paper-like fiber
- Treated wool and cotton
- Cotton duck
- Rubberized fabric
- Rubber
- Plastics
- Neoprene
- Leather

Choose body PPE made of material that is appropriate for each hazard. Before your workers wear any kind of body protection, they should check it for signs of wear such as rips, tears, scuffs or loss of elasticity. If the body protection is damaged, do not allow your workers to use it. Provide training on how to clean and disinfect your body protection to prolong its life. Require your workers to store their body PPE in a clean and dry location.

### PPE for the Feet and Legs

Require your workers to wear foot and leg PPE anytime they may be exposed to the hazards that typically cause foot or leg injuries. These hazards may include:

- Sharp objects
- Heavy objects
- Electricity
- Extreme heat
- Extreme moisture
- Slippery surfaces
- Liquids such as acids, caustics and molten metal

Types of foot and leg PPE may include:

- Leggings
- Metatarsal guards

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# Safety After The Storm

## Personal Protective Equipment (PPE)

- Safety shoes
- Toe guards
- Combination foot-and-shin guards
- Electrically conductive shoes
- Electrical hazard/safety-toe shoes
- Foundry shoes

Choose the appropriate foot protection for the hazards present in your employees' work environment. Before your workers put on any foot protection, be sure they check it for signs of wear. Replace damaged PPE. Train your workers to clean PPE according to the manufacturer's instructions and to store it in a clean and dry location.

### Hearing Conservation Awareness

Any kind of loud noise is potentially hazardous.

- **Continuous noise** occurs when the interval between occurrences of the maximum noise level is one second or less.
- All noise that is not continuous is defined as **impact noise**.

Require your workers to wear hearing protection if they are exposed to noises of 85 decibels or higher for eight hours per day.

Hearing protection may include:

- Earplugs
- Earmuffs
- Preformed or molded earplugs

Help your employees choose the appropriate hearing protection for the noise hazards present in their work environment, and train them to inspect hearing protection before wearing it.

Non-disposable ear protection should be cleaned with soap and water. Disposable and damaged ear protection should be discarded. When your workers are not using ear PPE, they should store it in a clean, cool, dry place.

### Respiratory Protection

Workers should wear respiratory protection anytime they may be exposed to hazards that may damage their respiratory systems or anytime they may be exposed to hazardous or toxic chemicals. Always inform your workers about areas where these hazards may be present.

Workers must go through fit testing, medical clearance and special training before using a respirator. They should inspect their respirator before using it and have it repaired or replaced if they find anything wrong with it. After using a respirator, workers should clean and disinfect it. They need to store respirators in a sealable bag away from:

- Dust
- Sunlight
- Damaging chemicals
- Extreme cold
- Moisture
- Heat

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# Safety After The Storm

## Personal Protective Equipment (PPE)

### Electrical Protective Devices

Workers should always follow proper safety precautions and work only on de-energized equipment and circuits that are equipped with lock-out/tag-out devices. Permit only trained, qualified and authorized employees to work on electrical equipment and circuits.

OSHA Standard 1910.137 covers electrical protective devices and requirements. Electrical protective devices may include:

- Insulating blankets
- Matting
- Covers
- Line hose
- Gloves and sleeves made of rubber

The type and class of each electrical protective device will indicate the device's limitations in terms of voltage protection and ozone resistance. Wearing the right protective equipment can mean the difference between life and death. Workers need to make sure electrical protective equipment is clean, safe and in reliable condition. Repair or replace any equipment that is not safe to use. Workers should store electrical PPE away from light, temperature extremes, excessive humidity, ozone and other potentially damaging substances and conditions.

### Levels of Protection and Protective Gear

When you select PPE, consider the:

- Hazards or suspected hazards that will be present
- Potential routes of exposure
  - Inhalation
  - Skin absorption
  - Ingestion
  - Eye or skin contact
- Performance of the PPE materials (and seams) in providing a barrier to hazards
  - Material-specific limitations
  - Breakthrough time
  - Durability
  - Work conditions, such as heat stress, that may affect the performance of the PPE

Choose the correct level of protection:

- **Level A** is appropriate when the greatest level of skin, respiratory and eye protection is required.
- **Level B** is appropriate when the highest level of respiratory protection is necessary, but a lesser level of skin protection is needed.
- **Level C** is appropriate when the concentration and type of airborne substances are known and the criteria for using air-purifying respirators are met.
- **Level D** is a work uniform affording minimal protection and should be used only for nuisance contamination.

### Safety Precautions to Be Considered

- Use double gloving with waterproof gloves under work gloves.
- Boots and rain gear can be used to lower skin exposures.
- Be aware of site-specific information for the work environment.
- Avoid working alone.
- Do not stay in wet clothing or PPE for extended periods due to risk of dermal irritation.

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## Personal Protective Equipment (PPE)

- Hands and exposed areas should be cleaned regularly.
- Respiratory protection could be needed as conditions dry out.

### Resources

http://www.cdc.gov/niosh/topics/emres/flood.html

http://www.cdc.gov/niosh/topics/emres/pre-workers.html#1

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