

## PPE Considerations for Working Near Water

Personal Protective Equipment (PPE) should be selected based primarily on the hazards identified during an assessment. Some factors which should be considered when selecting protective wear are:

- **Proper Fit:** Does the garment allow the wearer to perform the job function without difficulty?
- **Flexibility and Weight:** Is the garment affecting the wearer's range of motion or contributing to job fatigue?
- **Comfort and Heat Stress:** Does the garment allow enough air flow to prevent heat stress?
- **Proper Garment Design:** Is the protective equipment made from the proper material to ensure the wearer is receiving the proper protection?



### Working near non-moving water (ponds/lakes):

A USCG Type III or IV PFD is required for employees/contractors working within 6 feet of an edge where there is potential to fall into water. The PFD should be the outermost garment and must be properly worn and fastened and be appropriately sized. Inflatable Type I or V vests or "float coats" may be worn under this category.

### Working near moving water (streams/<1 knot rivers and tides):

The guidelines above apply. Additionally, a river safety helmet should be worn. A river safety helmet is designed for multiple impacts and has a chin strap. Inflatable Type I or V vests or "float coats" should not be used in moving water.

### Working near swiftwater with entrapment/downstream hazards (>1 knot and >2 feet deep):

The guidelines above apply. Additionally, downstream safety should be established. Downstream safety could be a shore-based team with throwbags or a rescue boat with a qualified captain and rescue swimmer on board. If water temperature is <70 degrees F or the combined air and water temperature <100 degrees F, personnel should consider thermal protection, such as drysuit or wetsuit. If unavailable or unrealistic for work being conducted, then rescue boat/downstream safety should have this gear and a rewarming station should be established in close proximity. Lastly, an upstream spotter with communications should be sent far enough upstream to notify team of any hazards floating into the worksite. Inflatable Type III vests or "float coats" should not be used in moving water.

### Working in cold weather near water / ice:

All of the above guidelines, except hot weather apply. Additional actions include establishing a rewarming station in close proximity to work site. Rewarming station should be a heated space with an abundance of simple carbohydrate snacks and water. Additional supplies should include a full set of warm, dry clothing. Buddy system should be established to watch for signs of hypothermia developing. At early signs, remove worker from cold environment and initiate rewarming. The most productive rewarming technique is to use the exercise metabolism of affected individual and to provide simple carbohydrates (sugars).

## PPE Considerations for Working Near Water (Continued)

For work on ice, ice thickness and integrity should be assessed first. Use gold's law,  $P=50 \times (T \times T)$ , where P is the weight bearing capacity of Clear Lake Ice per square foot, and T is ice thickness. Considerations should include:

- The quality of the ice,
- River or lake,
- Salt water, fresh water or brackish
- Snow on ice
- Past weather patterns
- Thermal features or springs
- Waterfowl or vegetation on/in the ice

Primary safety should be established that aims to prevent workers from falling through ice. This may include belay lines or using plywood or planks to disperse load. Back-up safety should be established to rescue workers who do fall through the ice. This requires a team of individuals trained in ice rescue with the proper equipment to enter the water. This may not be an option if there is moving water below the ice.

### Working in hot weather near water:

All above guidelines, except working in cold weather apply. Use heat index to guide additional action once heat index is >80 degrees F.

#### Likelihood of Heat Disorders with Prolonged Exposure or Strenuous Activity

- Caution
- Extreme Caution
- Danger
- Extreme Danger

#### NOAA's National Weather Service Heat Index

		Temperature (°F)																
		80	82	84	86	88	90	92	94	96	98	100	102	104	106	108	110	
Relative Humidity (%)	40	80	81	83	85	88	91	94	97	101	105	109	114	119	124	130	136	
	45	80	82	84	87	89	93	96	100	104	109	114	119	124	130	137		
	50	81	83	85	88	91	95	99	103	108	113	118	124	131	137			
	55	81	84	86	89	93	97	101	106	112	117	124	130	137				
	60	82	84	88	91	95	100	105	110	116	123	129	137					
	65	82	85	89	93	96	103	108	114	121	126	130						
	70	83	86	90	95	100	105	112	119	126	134							
	75	84	88	92	97	103	109	116	124	132								
	80	84	89	94	100	106	113	121	129									
	85	85	90	96	102	110	117	126	135									
	90	86	91	98	105	113	122	131										
95	86	93	100	108	117	127												
100	87	95	103	112	121	132												

Plan Element	Lower (Caution)	Moderate	High	Very High/ Extreme
Supplies (ensuring adequate water, provisions for rest areas, and other supplies)	✓	✓	✓	✓
Emergency planning and response (preparing supervisors and crews for emergencies)	✓	✓	✓	✓
Worker acclimatization (gradually increasing workloads; allowing more frequent breaks as workers adapt to the heat)	✓	✓	✓	✓
Modified work schedules (establishing systems to enable adjustments to work schedules)		✓	✓	✓
Training (preparing workers to recognize heat-related illness and preventive measures)	✓	✓	✓	✓
Physiological, visual, and verbal monitoring (using direct observation and physiological monitoring to check for signs of heat-related illness)		✓	✓	✓