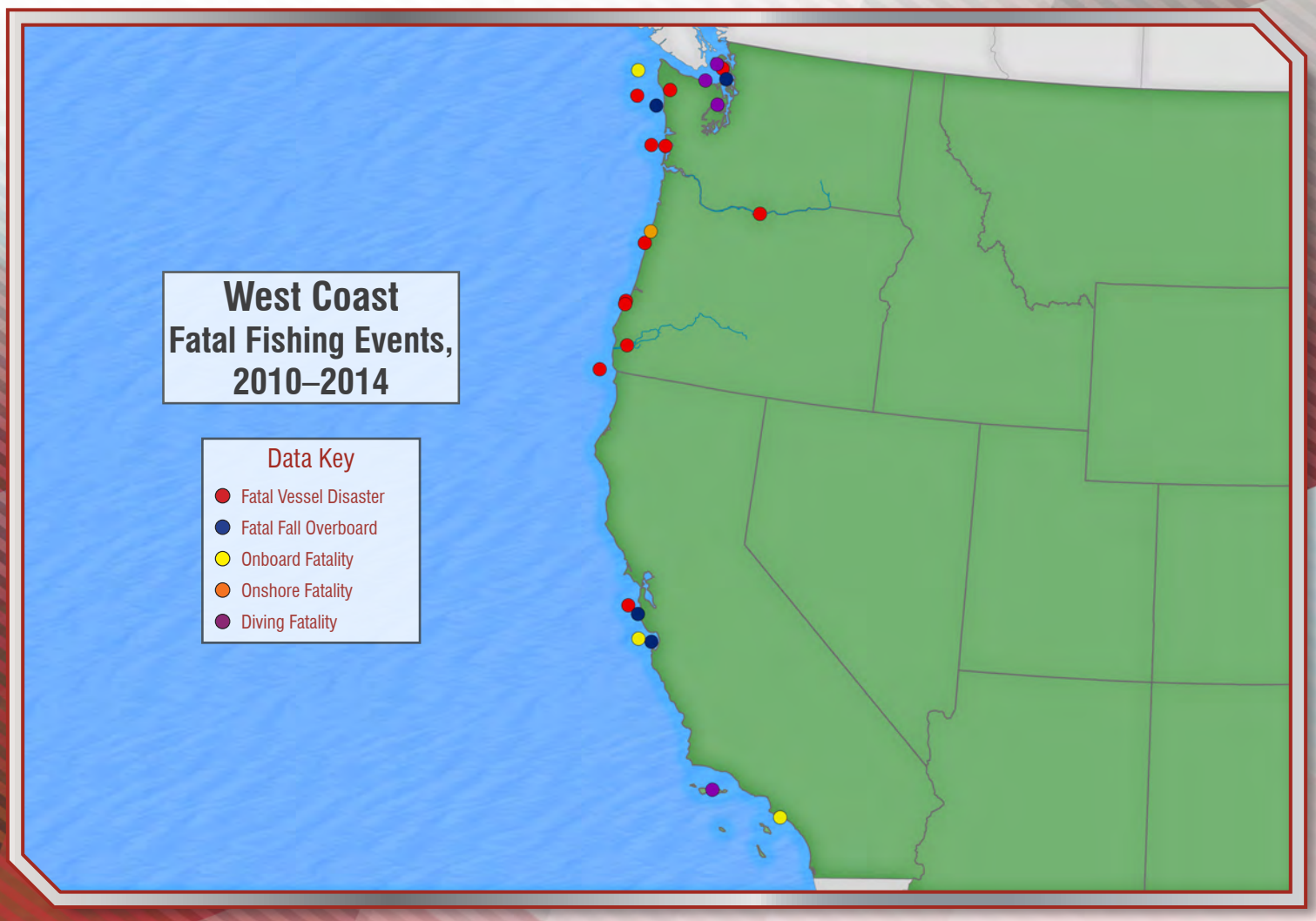
Commercial Fishing Fatality Summary

West Coast Region



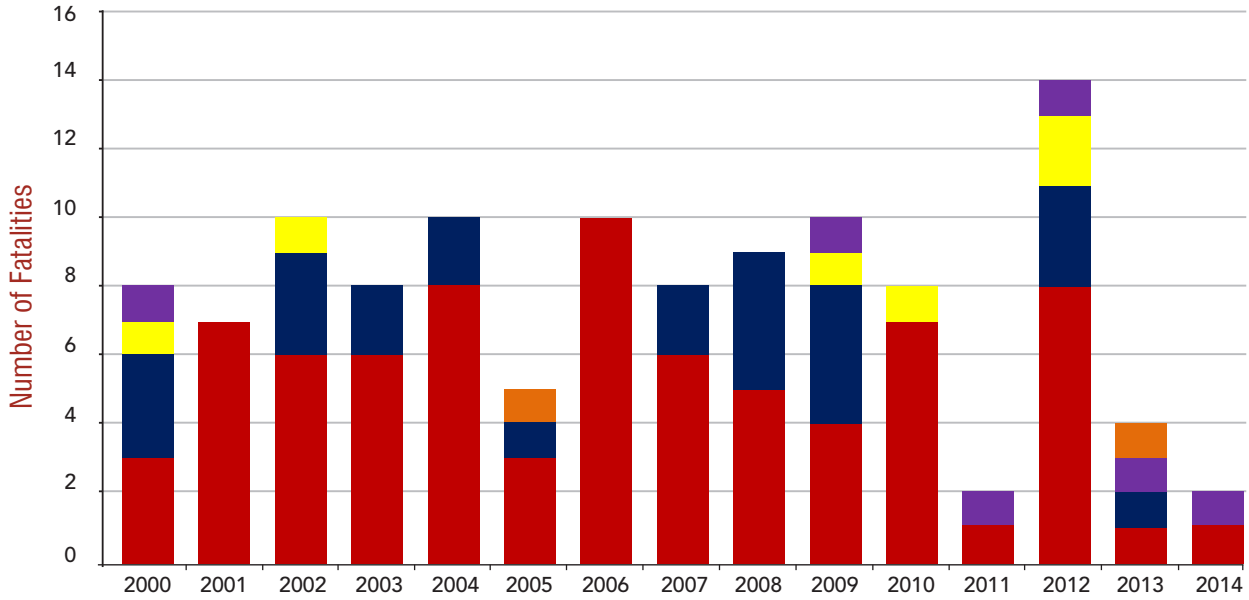
DEPARTMENT OF HEALTH AND HUMAN SERVICES · USA
CDC Workplace Safety and Health
National Institute for Occupational Safety and Health
NIOSH

About this Report

The National Institute for Occupational Safety and Health (NIOSH) is the federal government agency responsible for conducting research and making recommendations for the prevention of work-related injury and illness. In 2010, NIOSH published an in-depth study of commercial fishing fatalities due to traumatic injury that occurred in the United States during 2000–2009. NIOSH recently completed a five-year update (2010–2014) to the previous study in order to identify current hazards among fisheries in different regions of the country: Alaska, West Coast, East Coast, and the Gulf of Mexico. This document is one in a set of four reports summarizing the most recent fatality and vessel disaster data for US fishing regions.

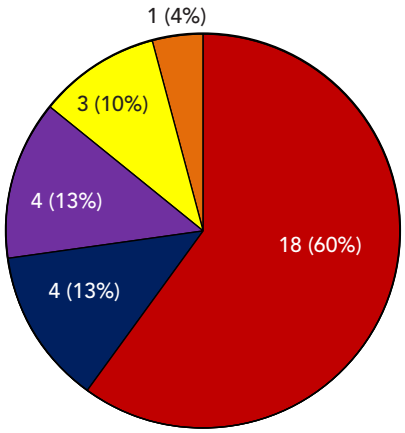
Data Key
- Fatal Vessel Disaster
- Fatal Fall Overboard
- Onboard Fatality
- Onshore Fatality
- Diving Fatality

Figure 1 Commercial Fishing Fatalities by Year and Incident Type, West Coast, 2000–2014 (115 Total)



During the 15-year period 2000–2014, 115 deaths occurred in West Coast fisheries, averaging almost eight fatalities annually (Figure 1). During the first decade (2000–2009), 85 fatalities occurred, for an average of nearly nine deaths per year. For the most recent five-year period (2010–2014), 30 commercial fishing fatalities were recorded, averaging six fatalities annually. This recent period experienced both the lowest (two deaths) and the highest (14 deaths) numbers of annual fatalities that occurred during the entire 15-year period. Four fatal vessel disasters, which resulted in eight crewmember deaths, contributed to the highest number of fatalities during 2012. Compared to the preceding 10-year period (2000–2009) during which there were 21 fatal falls overboard, this recent five-year period has shown a decrease in the number of fatal falls overboard, with four fatalities. In contrast, this recent five-year period has shown an increased number of dive-related fatalities with four divers' deaths, compared to previous 10-year period during which there were two diving fatalities on the West Coast.

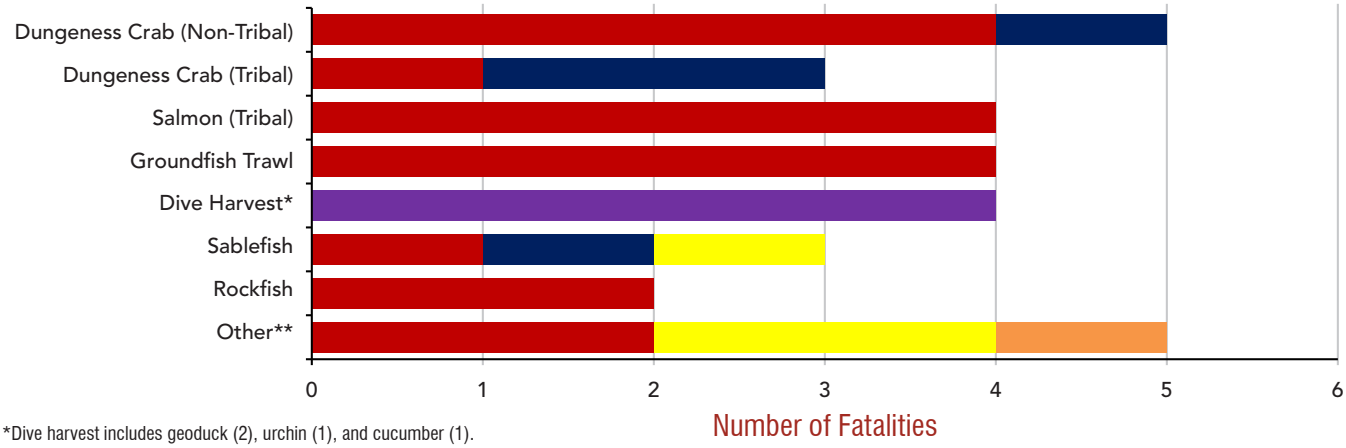
Figure 2 Commercial Fishing Fatalities by Incident Type, West Coast, 2010–2014 (30 Total)



Vessel disasters caused the majority of fatalities (18, 60%) in West Coast fisheries during 2010–2014 (Figure 2). Vessel disasters include sinkings, capsizings, groundings, fires, or other events that force crews to abandon ship. Diving incidents and falls overboard were the next most common causes of fatalities, with four deaths (13%) each. Of the four diving-related fatalities, two involved rapid ascent and two involved gear entanglement. Of the four falls overboard, the causes were known for three incidents.

Two falls overboard involved fishing gear: one fisherman was entangled in gear and another was knocked overboard by gear. The third incident involved a fisherman losing his balance and falling overboard. None of the four falls overboard victims wore a personal flotation device (PFD). The causes of the three onboard fatalities during 2010–2014 were falling from rigging, being caught in moving engine parts, and electrocution. The onshore fatality involved being caught by the tide and washed offshore.

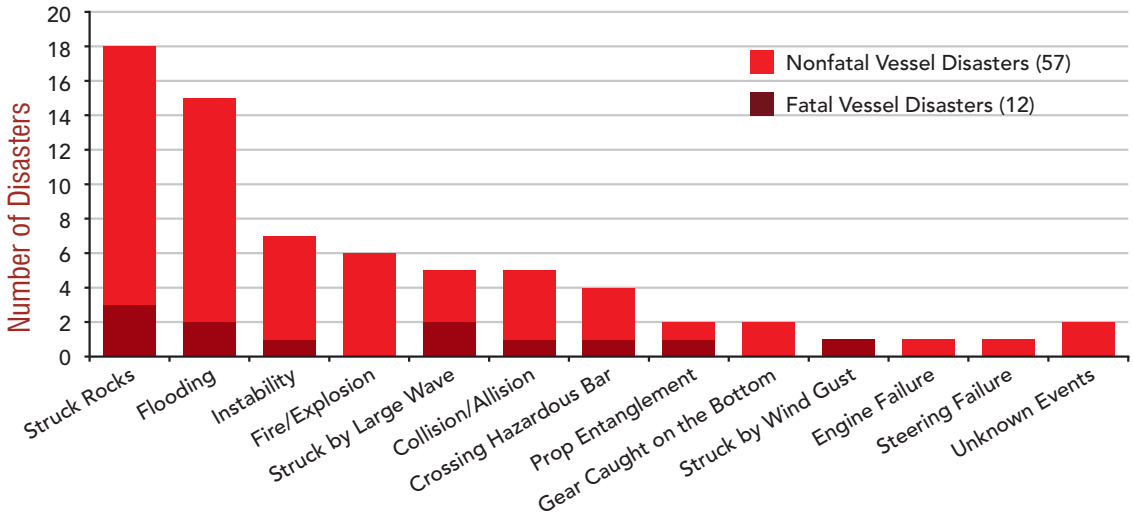
Figure 3 Commercial Fishing Fatalities by Fleet, West Coast, 2010–2014 (30 Total)



*Dive harvest includes geoduck (2), urchin (1), and cucumber (1).
** Other fleets are those that experienced a single fatality during 2010–2014: halibut, non-tribal salmon, shrimp, slime eel, and squid.

Fatalities occurred in 12 fleets along the West Coast during 2010–2014, with seven fleets experiencing two or more fatalities (Figure 3). The Dungeness crab fishery experienced the highest number of fatalities in the region, with eight crewmember deaths. In the non-tribal Dungeness crab fleet, four fatalities occurred during separate vessel disasters and one fatality as the result of a fall overboard. In the tribal Dungeness crab fleet, two fatalities were due to falls overboard and one to a vessel disaster. In the tribal salmon fishery, one vessel disaster involving a set net skiff resulted in three crewmember deaths, and another vessel disaster resulted in one death. In the groundfish trawl fleet (the rock cod fishery, specifically), a single vessel disaster resulted in the deaths of all four crewmembers onboard. The four fatalities in the dive harvest fleet occurred during four separate incidents, with two incidents involving rapid ascent and two gear entanglement.

Figure 4 Causes of Vessel Disasters, West Coast, 2010–2014 (69 Total)



To help prevent vessel disasters, maintain proper watch and ensure watertight integrity of the vessel

Vessel disasters resulted in the most fatalities during 2010–2014. A total of 69 vessel disasters occurred on the West Coast during this time period (Figure 4), placing 190 crewmembers at risk of immersion and death. While 91% of crewmembers involved in vessel disasters survived, 12 disasters resulted in 18 fatalities. Poor weather was reported to have contributed to five (38%) of the 12 fatal vessel disasters and six (11%) of the 57 nonfatal disasters. The leading causes of fatal vessel disasters were striking rocks, flooding, and being struck by large waves. Likewise, the leading causes of nonfatal vessel disasters were striking rocks and flooding. Of the 18 vessel disasters caused by striking rocks, 56% involved fatigue or a crewmember being asleep at the helm. Of the 15 vessel disasters initiated by flooding, the cause of flooding was known for only seven, with four hull breaches, an open sea valve, water entry over the gunnels, and swamping of an open skiff. Of the seven vessel disasters caused by instability, almost all were due to overloading, with only one due to turning at a high speed. The Dungeness crab fishery experienced roughly one-third of all vessel disasters (24, 35%), five of which were fatal and 19 nonfatal. The salmon fishery experienced almost a quarter of all vessel disasters (16, 23%), three of which were fatal and 13 nonfatal.

Conclusions

Preventing vessel disasters should be a priority for all fleets in this region, as they contributed to 60% of all fatalities during 2010–2014. The most frequent causes of vessel disasters included striking rocks, flooding, and being struck by large waves. To prevent striking rocks, crews should create policies to manage fatigue and use watch alarms to avoid falling asleep at the helm.

Drownings due to falls overboard and diving injuries were the next leading causes of fatalities, after vessel disasters. Fishermen should wear PFDs while working on deck to stay afloat if a fall overboard occurs. All crewmembers should be trained in proper man-overboard recovery procedures by participating in monthly drills. Use of man-overboard alarms and effective recovery devices may improve chances of successfully locating a man-overboard and bringing the crewmember back onboard the vessel. When fishermen choose to fish alone, they should ensure ways to re-board their vessels without assistance, in case a fall overboard occurs.

Divers and tenders should be trained in proper operational and emergency procedures in order to prevent injury or death from rapid ascents, gear entanglements, and other circumstances. Crewmembers should be alert while the diver is in the water and prepared to administer first aid in case of an emergency.

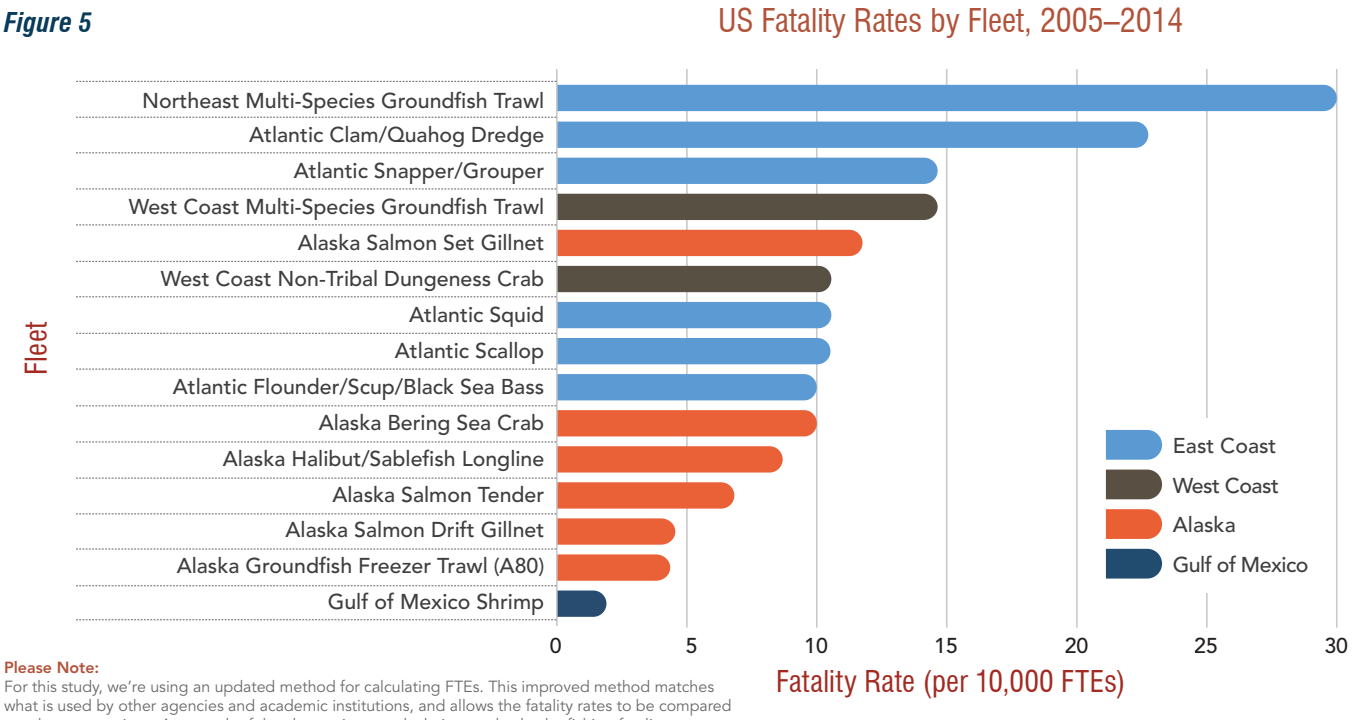
Safety training for fishermen is available, affordable, and saves lives

Photo Credit - NIOSH

Comparing risk between fleets

Commercial fishing fleets have different numbers of vessels, fishermen, and season lengths. Because of these operating differences, we cannot simply use the number of fatalities in each fleet to compare their risk for fatalities. Instead, we calculate fatality rates to measure risk. Risk is the probability of a fatality occurring.

Figure 5



Please Note:
For this study, we're using an updated method for calculating FTEs. This improved method matches what is used by other agencies and academic institutions, and allows the fatality rates to be compared to other occupations. As a result of the change in our calculation methods, the fishing fatality rates published in this report cannot be compared to rates published in previous NIOSH studies.

Fatality rates were calculated for fleets that experienced five or more fatalities during a 10-year period (2005–2014) and where workforce estimates were available (Figure 5). Along the West Coast, workforce estimates were available to calculate fatality rates for two fleets: multi-species groundfish trawl and non-tribal Dungeness crab. During 2005–2014, the non-tribal Dungeness crab fleet experienced a significant decrease in both the number and rate of crewmember fatalities.

Why use a fatality rate?

To determine the risk of fatalities in different fleets, we need to consider the number of vessels in the fleet, number of fishermen, and the length of time that they spend working and exposed to potential hazards. By calculating rates, we can take into account the total number of hours worked in each fleet. The results of these rate calculations answer the question: *"How many fatalities would have occurred in these fleets if they all had 10,000 fishermen working regular 40-hour weeks throughout the year?"* Fleets with higher fatality rates are more dangerous than fleets with lower fatality rates.

How do we calculate a fatality rate?

We know how many fatalities occurred in each fleet, based on our data collection from US Coast Guard investigation reports and documents from various agencies. For many of the fleets around the US, we also know how many vessels, crewmembers, and operating days are in the fleet each year. This information is used to estimate "full-time equivalent" fishermen (FTEs).

Here's how we calculate FTEs:

$$\frac{\text{\# Vessels} \times \text{\# Crew per Vessel} \times \text{\# Operating Days} \times 24 \text{ Hours}}{\text{2,000 Hours (standard 40-hour work week for the year)}} = \text{\# of FTEs}$$

Here's how we use FTEs to calculate a fatality rate:

$$\frac{\text{\# Fatalities}}{\text{\# of FTEs}} \times 10{,}000 = \text{\# of Fatalities per 10,000 FTEs}$$

Recommendations

Vessel Disasters

- **Take a marine safety class at least every five years.** Safety training for fishermen is available, affordable, and saves lives. All fishermen should learn and know how to use basic lifesaving equipment like immersion suits, life rafts, EPIRBs, and fire extinguishers to improve their chances of survival in an emergency.
- **Conduct monthly drills for abandon ship, fire, and flooding.** The practical knowledge learned in safety training should be applied each month during drills, allowing fishermen to reinforce the skills needed in an emergency.
- **Ensure watertight integrity of the vessel.** The hull and through-hull penetrations should be regularly inspected and maintained. Doors and hatches should remain closed while underway, especially in rough seas. Maintain and test high water alarms before each trip.
- **Maintain proper watch.** Vessel owners and operators should create fatigue management policies and use watch alarms to prevent groundings and collisions.

Falls Overboard

- **Wear a PFD on deck.** Nationwide, none of the fishermen who died from falling overboard were wearing a PFD when they drowned. PFDs can keep fishermen afloat, giving the crew time for rescue.
- **Use a man-overboard alarm system.** Many falls overboard are not witnessed, delaying recovery time and reducing chances of survival. A man-overboard system will alert the crew that a fall overboard occurred, and a device with GPS capabilities can signal the fisherman's location to assist in search and recovery efforts.
- **Add effective recovery devices and re-boarding ladders.** A rescue sling or similar device is more effective than a life ring for bringing a crewmember back on the vessel. If someone fishes alone, a plan should be in place for them to re-board their vessel unassisted after a fall.
- **Conduct man-overboard drills monthly.** Recovery procedures should be practiced regularly to ensure all crewmembers are prepared to respond to a fall overboard.

Onboard Fatalities

- **Install safety devices on deck machinery.** Emergency-stop buttons have been developed specifically for deck machinery on fishing vessels and can be adapted and retrofitted onto winches or other machinery. Stationary guarding and auxiliary-stops are also being tested. More information about engineering solutions for fishing vessels can be found at: cdc.gov/niosh/topics/fishing/engineering/
- **Use safe fall protection practices.** When working above water or more than 5 feet above a solid surface, use fall protection. Use proper fall restraint or fall arrest equipment, not body belts or ropes around the waist. Use handrails, chains, and ropes to prevent falls through deck openings, edges, and stairwells. Do not use cranes to hoist workers unless the crane is specifically approved for lifting personnel.
- **Protect against electrical hazards.** De-energize electrical equipment before inspection or repair, and use a lock out/tag out program. Keep electrical tools properly maintained, and use appropriate personal protective equipment.

Diving Fatalities

- **Dive with an experienced, alert tender.** Be familiar with vessel operations, safety equipment, and procedures for both vessel and dive emergencies. Be alert and focused while the diver is in the water.
- **Be prepared for a dive emergency.** Be prepared to administer first aid, including the use of an oxygen delivery system.
- **Maintain diving equipment.** Ensure that compressors and other equipment used in diving operations are in good working condition.

National Institute for Occupational Safety and Health

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