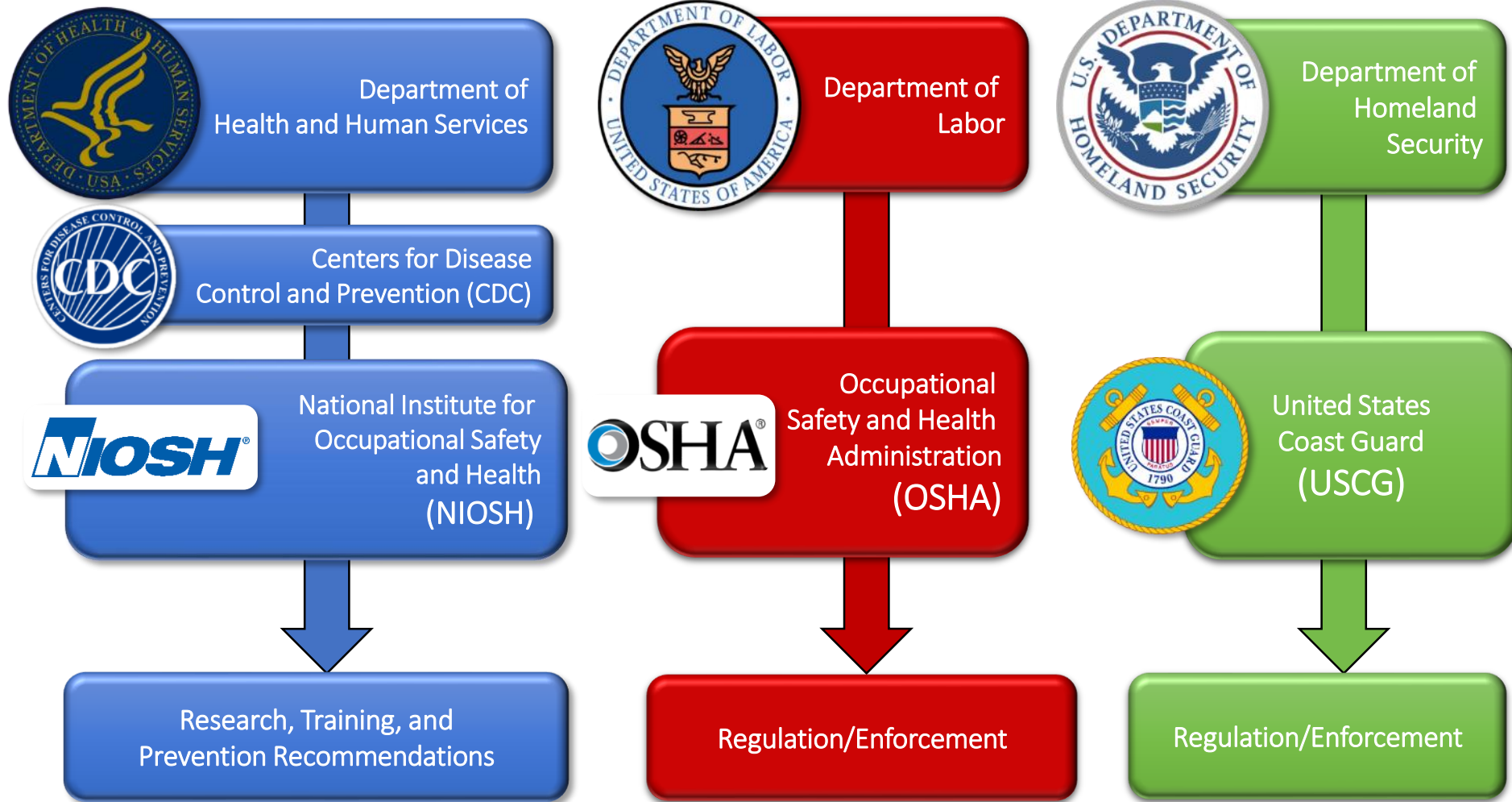


# **NIOSH Update: Safety and Health in Alaska's Commercial Fishing and Seafood Processing Industries**

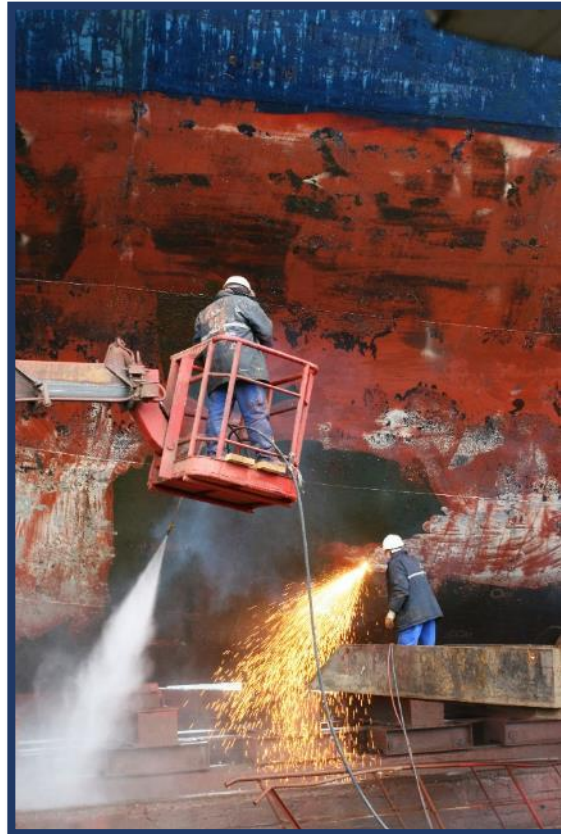
**Presented to the  
North Pacific Fishery Management Council  
April 4, 2018**

**Samantha Case  
Laura Syron**





# Center for Maritime Safety and Health Studies



- Brings focus to safety and health needs for maritime workers in:
  - **Commercial fishing**
  - **Seafood processing**
  - Aquaculture
  - Marine terminals
  - Shipyards
  - Marine transportation
- Works to understand problems and how to reduce them
- Collaborates with industry and workers

# Outline

- Commercial fishing
  - Fatalities in the US and AK
  - Recent and ongoing projects
- Seafood processing
  - Offshore processing in AK
  - Onshore processing in AK
- Plans for 2018

# Commercial Fishing Safety Research and Design Program

## Epidemiology



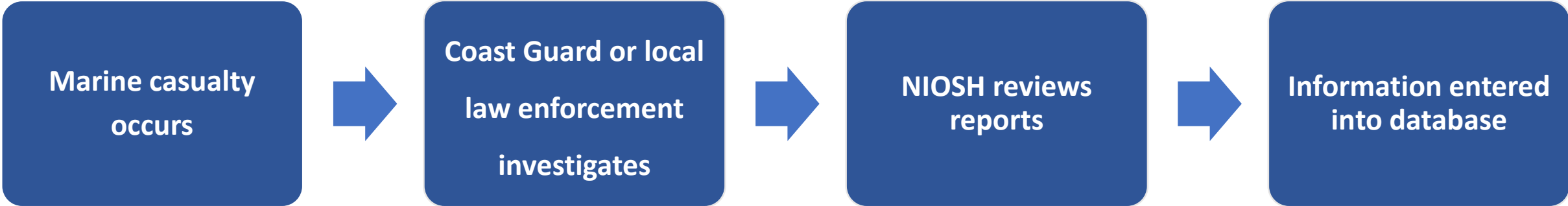
## Engineering



## Health Communication



# Collecting Data for Analysis



DEPARTMENT OF HOMELAND SECURITY  
U.S. Coast Guard

OMB No: 1625-0001  
Exp. Date: 03/31/2019

**REPORT OF MARINE CASUALTY, COMMERCIAL DIVING CASUALTY, or OCS-RELATED CASUALTY**

**Section I - Reporting Vessel/Facility Information**

1. Vessel or Facility Name		2. Vessel Official Number or IMO Number		3. Vessel Flag	
4. Vessel Length <input type="checkbox"/> Feet <input type="checkbox"/> Meters		5. Vessel Gross Tons		6. Vessel Propulsion Type	
7. Vessel or Facility Type		8. Vessel or Facility Service or Occupation			

9. **FOR TOWING ONLY**

9a. Arrangement: <input type="checkbox"/> Pushing Ahead <input type="checkbox"/> Towing Astern <input type="checkbox"/> Towing Alongside	9b. Number of Vessels Towed: Empty <input type="text"/> Loaded <input type="text"/> Total <input type="text"/>	9c. Maximum Size of Tow/Tow-Boat(s): Length <input type="text"/> feet Width <input type="text"/> feet	9d. Did one or more of the barges in the tow cause or sustain damage in the marine casualty? <input type="checkbox"/> Yes <input type="checkbox"/> No <small>(If Yes complete and attach one or more CG-2692A forms to this report)</small>
---	---	---	---

**Section II - Reason for Submitting this Report (Check all that apply)**

10. The above vessel was involved in a Marine Casualty consisting in (46 CFR 4.05-1 and 4.05-10):

- 1. Unintended grounding or an unintended strike of (allision with) a bridge
- 2. Intended grounding or intended strike of a bridge that created a hazard to navigation, the environment or the safety of the vessel, or that meets any of the criteria in 3 through 8 below
- 3. Loss of main propulsion, primary steering, or any associated component or control system that reduces the maneuverability of the vessel
- 4. Occurrence materially and adversely affected the vessel's seaworthiness or fitness for service or route
- 5. Loss of life
- 6. Injury that requires professional medical treatment (treatment beyond first aid) and, if the person is engaged or employed on board a vessel in commercial service, that renders the individual unfit to perform his or her routine duties
- 7. Occurrence causing property damage in excess of \$25,000
- 8. Occurrence involving significant harm to the environment

**Victim and Survivor Data**

Incident ID: 2013111    Last Name: \_\_\_\_\_    First Name: \_\_\_\_\_

**Demographic**

Birthdate: 10/1/1990    Intent: Unintentional - Accident  
 Gender: Male    Hispanic Origin: \_\_\_\_\_    Status: Survived  
 Race: \_\_\_\_\_    Cause of Death: Survived  
 Residence: WASHINGTON    Time in Water: \_\_\_\_\_

Position: Deckhand    Years Fishing: 0  
 Work Process: S100    Location Onboard: Deck\_unsp    Alcohol Level: \_\_\_\_\_  
 WP Confidence: Full Confidence    Alcohol: \_\_\_\_\_  
 Illegal Drugs: \_\_\_\_\_

**Classification Systems Coding**

**BLSC/OTC Codes**    **WHO ICD Codes**    **Industry/Occupation**  
 Nature of Injury: 140    ICD 10 Diagnosis: \_\_\_\_\_    NAICS: \_\_\_\_\_  
 Body Part: 322    ICD 10 External: \_\_\_\_\_    SOC: \_\_\_\_\_

**CFID Coding**  
 CFID Source: 2112    CFID Event: 6329

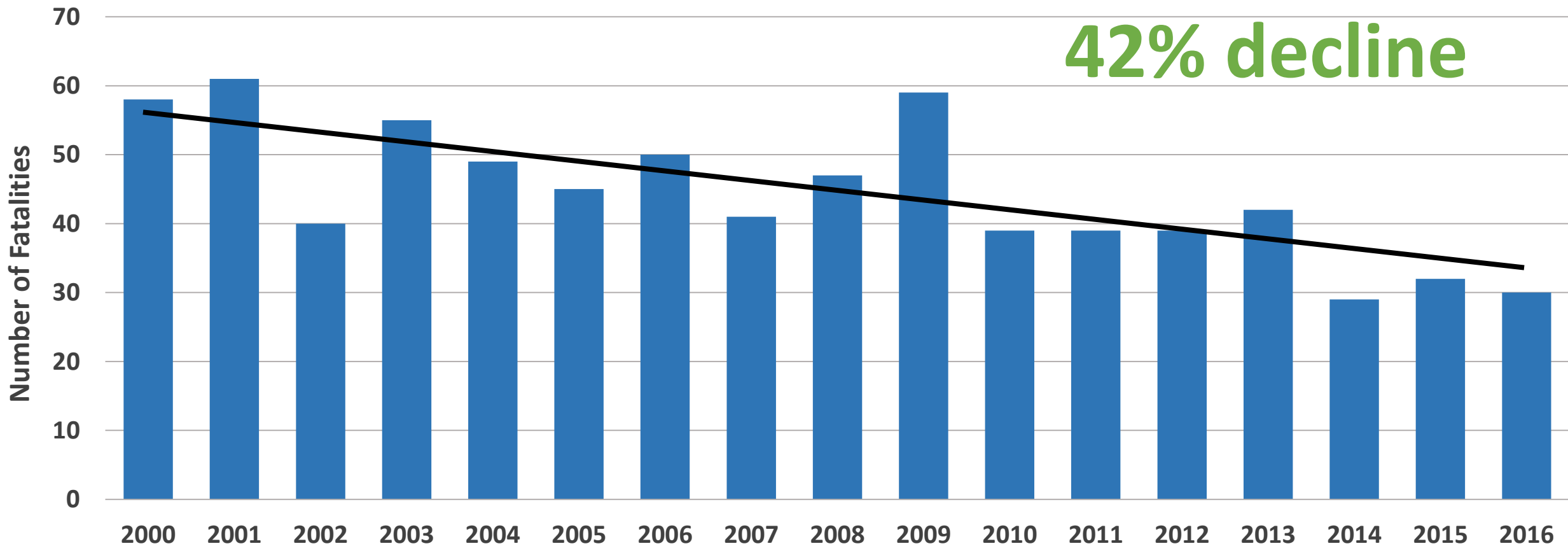
**Injury Coding**  
 Injury Agent: Mechanical Energy  
 Injury Severity: Severe    Confidence: \_\_\_\_\_  
 Injury Response: USCG Helo Medevac  
 Injury Treatment 1: \_\_\_\_\_  
 Injury Treatment 2: \_\_\_\_\_  
 Injury Treatment 3: \_\_\_\_\_

**Survival Equipment**

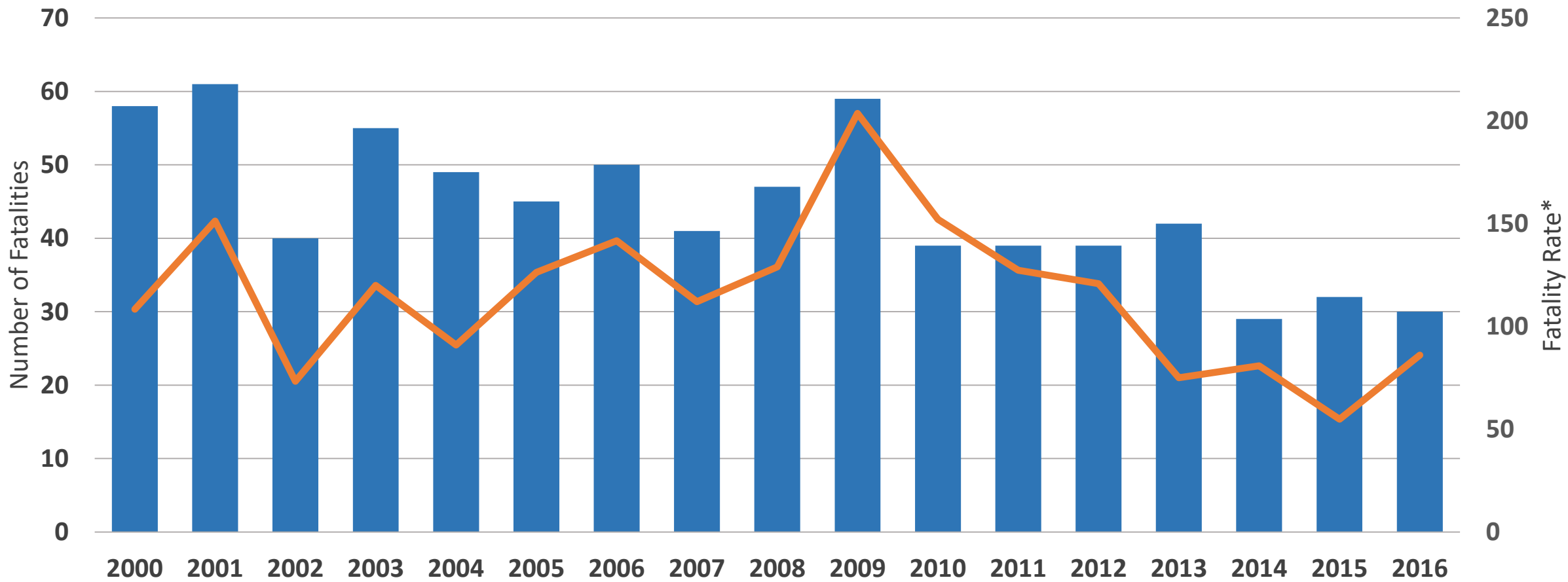
PFID Worn: \_\_\_\_\_  
 PFID Type: \_\_\_\_\_  
 Worn Properly: \_\_\_\_\_  
 Wear Error: \_\_\_\_\_  
 Location Donned: \_\_\_\_\_  
 Abandon To: \_\_\_\_\_  
 Why Water: \_\_\_\_\_  
 Other Equipment: \_\_\_\_\_

Main Safety Training: \_\_\_\_\_  
 Train Year: \_\_\_\_\_

# US Commercial Fishing Fatalities, 2000-2016 (755 Total)



# US Commercial Fishing Fatalities, 2000-2016 (755 Total)



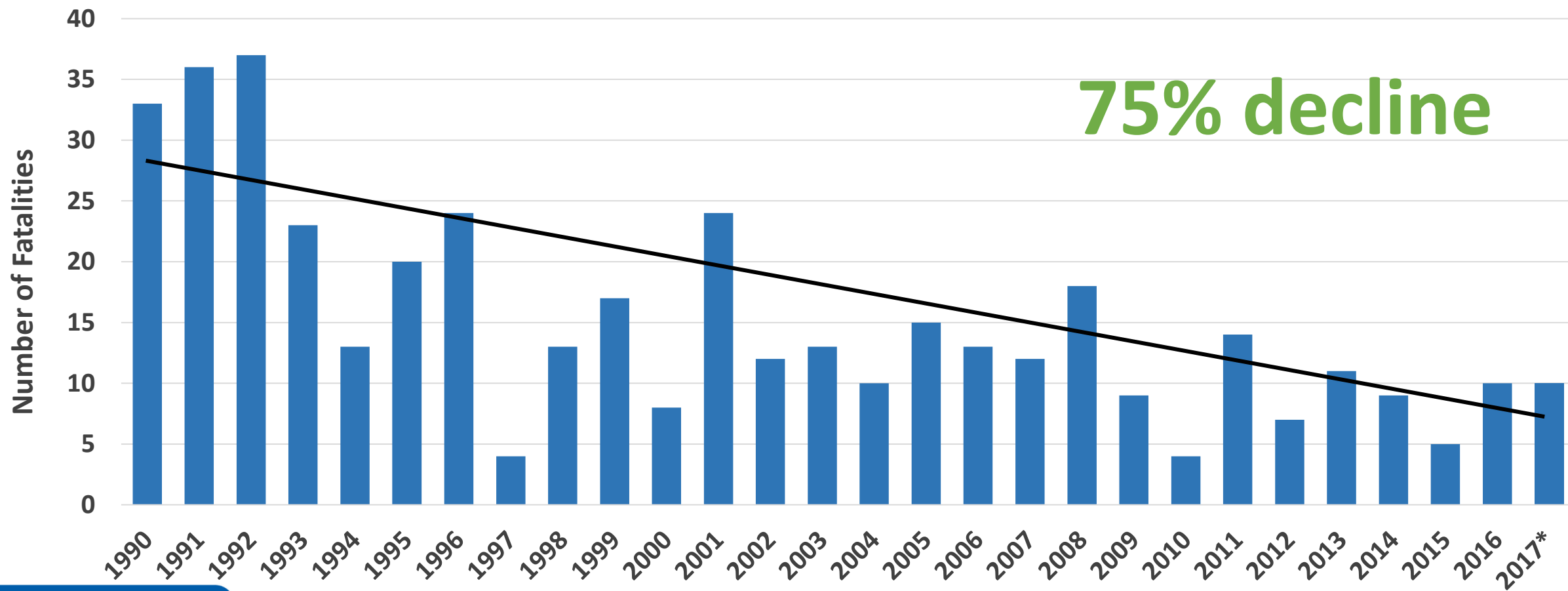
■ Number    — Rate



\*2000-2005: per 100,000 workers; 2006-2016: per 100,000 FTEs



# Alaska Commercial Fishing Fatalities, 1990–2017 (424 Total)



\*preliminary

IRR=0.95  
p < 0.001

# Updated Regional Summaries

## Commercial Fishing Fatality Summary ■ Alaska Region ■



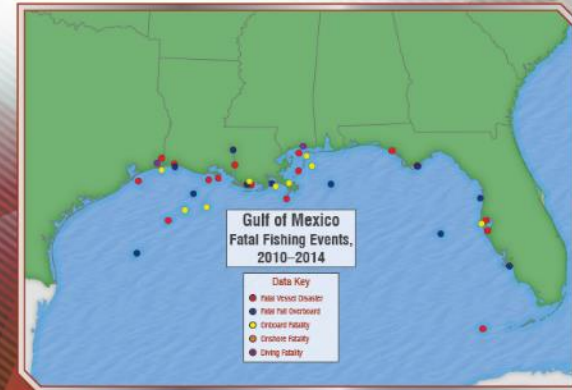
## Commercial Fishing Fatality Summary ■ West Coast Region ■



## Commercial Fishing Fatality Summary ■ East Coast Region ■



## Commercial Fishing Fatality Summary ■ Gulf of Mexico Region ■



# Surviving Fishing Vessel Sinkings



During 2000-2014:

- **187** fishing vessels sank or capsized in AK
- **617** total crewmembers were at risk

# Surviving Fishing Vessel Sinkings

- **Prevent the sinking**

- Avoid severe weather
- Ensure watertight integrity
- Maintain vessel's stability

- **Maintain lifesaving equipment**

- Immersion suit
- Life raft
- VHF radio/EPIRB

- **Train and drill**

- Take a marine safety training class
- Conduct monthly drills

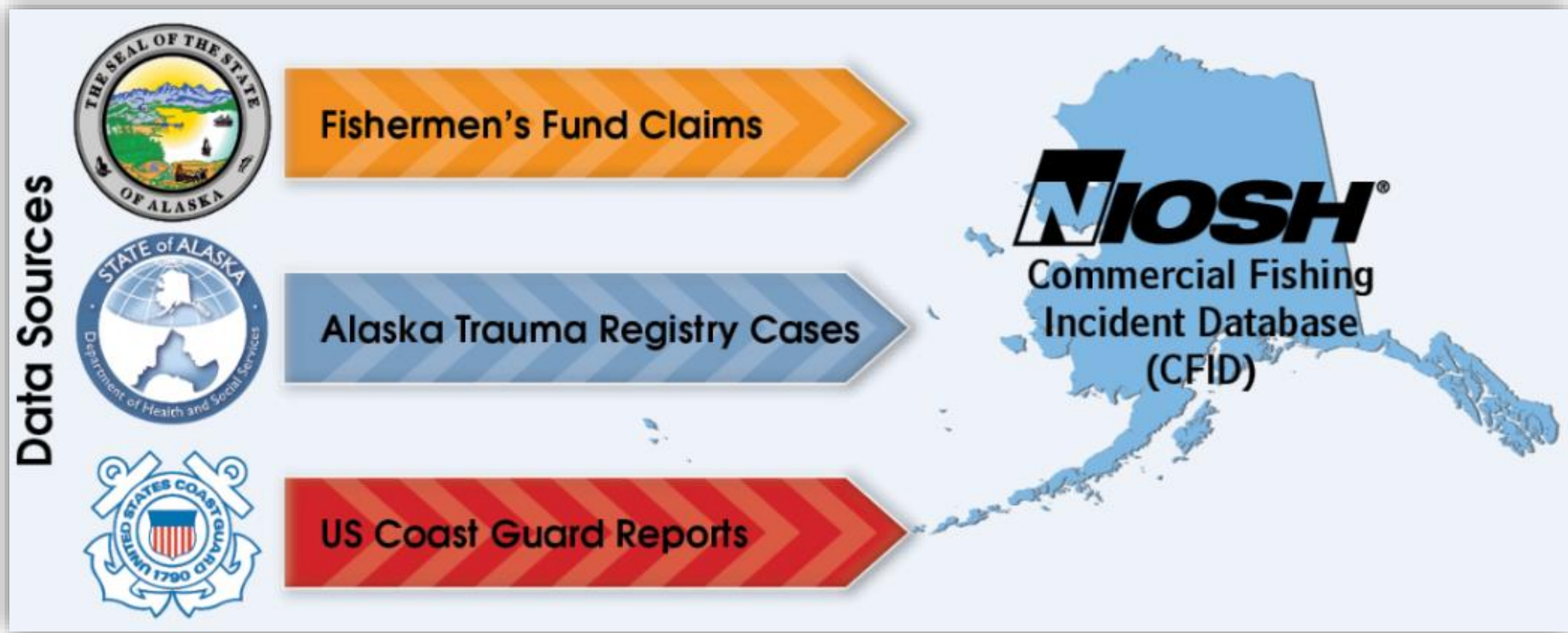


# New Study to Increase E-Stop Adoption

- Capstan winch can cause fractures, amputations, even death
- Emergency stop device licensed for commercial use in 2007
- Available as retrofit and with new hydraulic winches
- Only ~2% of the Pacific Northwest seine fleet has an e-stop – *why?*



# New Study to Investigate Nonfatal Injuries and Illnesses



# Alaska's seafood processing industry



# Outline

- Why research this industry?
- Study #1: Offshore processors
- Study #2: Onshore plant workers
- General conclusions



# Why research Alaska's seafood processing industry?

# High-hazard industry

## Offshore regulators



The image shows two logos side-by-side. On the left is the OSHA logo, which includes the text 'OSHA' in a large, bold font, followed by 'Federal Occupational Safety & Health Administration' in a smaller font. On the right is the United States Coast Guard logo, which is a circular seal featuring an anchor, a shield with a star, and the text 'UNITED STATES COAST GUARD' and '1790'. Both logos are set against a light blue background with rounded corners.

- All 3 regulators have:
  - Classified the seafood processing industry as high-hazard
  - Local emphasis programs

## Onshore regulator



The image shows two logos. On the left is the Seal of the State of Alaska, which is a circular emblem with a landscape scene and the text 'THE SEAL OF THE STATE OF ALASKA'. On the right is the CDC/NIOSH logo, which includes the text 'CDC' and 'NIOSH' in a bold, sans-serif font. Both logos are set against a light orange background with rounded corners.

# High-risk for injuries & illnesses

## Fatalities in 2016

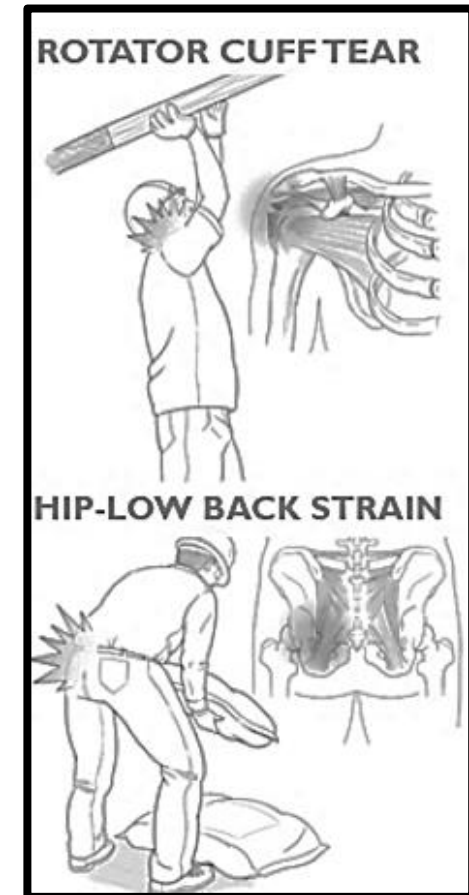
- NIOSH: Alaska Occupational Injury Surveillance System
  - **No** fatalities among offshore processors
  - **5** fatalities in onshore plants

## Nonfatal injuries & illnesses in 2016

- BLS & State of Alaska: Survey of Occupational Injuries and Illnesses
  - All-industry rate: **39 per 1,000 FTEs**
  - Broad “food manufacturing” industry rate: **88 per 1,000 FTEs**
    - Seafood processing: > 90% of all food manufacturing workers

# Importance of prevention

- Nonfatal conditions can be severe and result in:
  - Medical costs
  - Lowered productivity
  - Lost worktime and wages
  - Lowered quality of life
  - Disability



# Study # 1

# Traumatic injuries among offshore processors, 2010 – 2015:

## Analysis of US Coast Guard Reports



# Results

- During 2010 – 2015:
  - One fatality
  - 304 nonfatal injuries
    - Average of 51 nonfatal injuries reported per year
- Unable to calculate injury rates for processors
  - Lack of workforce data by occupation

## Nonfatal injury severity (n=296)

**Serious**  
22 (8%)

Professional medical treatment required.  
Ex: Hand amputation; de-gloving; serious burns; broken ribs

**Moderate**  
116 (39%)

Professional medical treatment may be required.  
Ex: Amputated finger; dislocated joint; severe sprain/strain

**Minor**  
158 (53%)

No professional medical treatment required.  
Ex: Cuts; bruises; sprain/strain

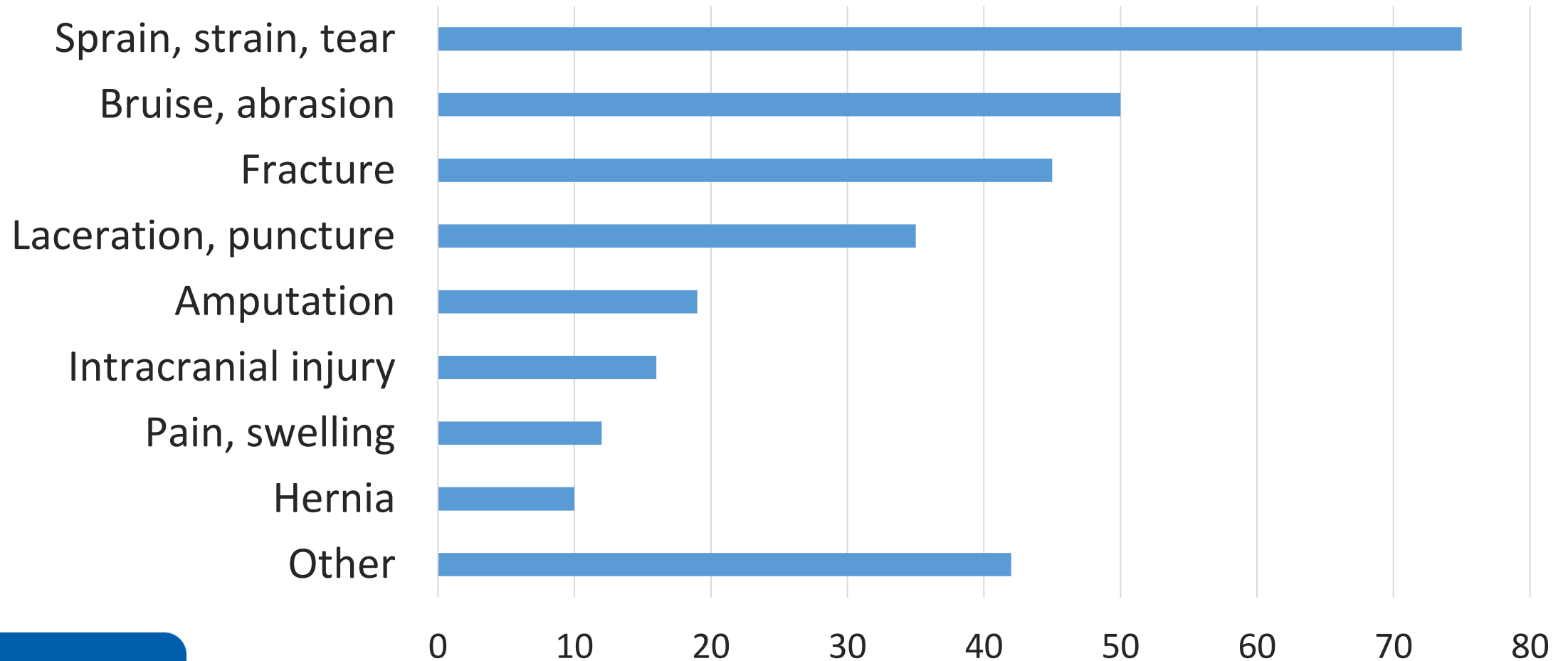


# Injury response (n=181)

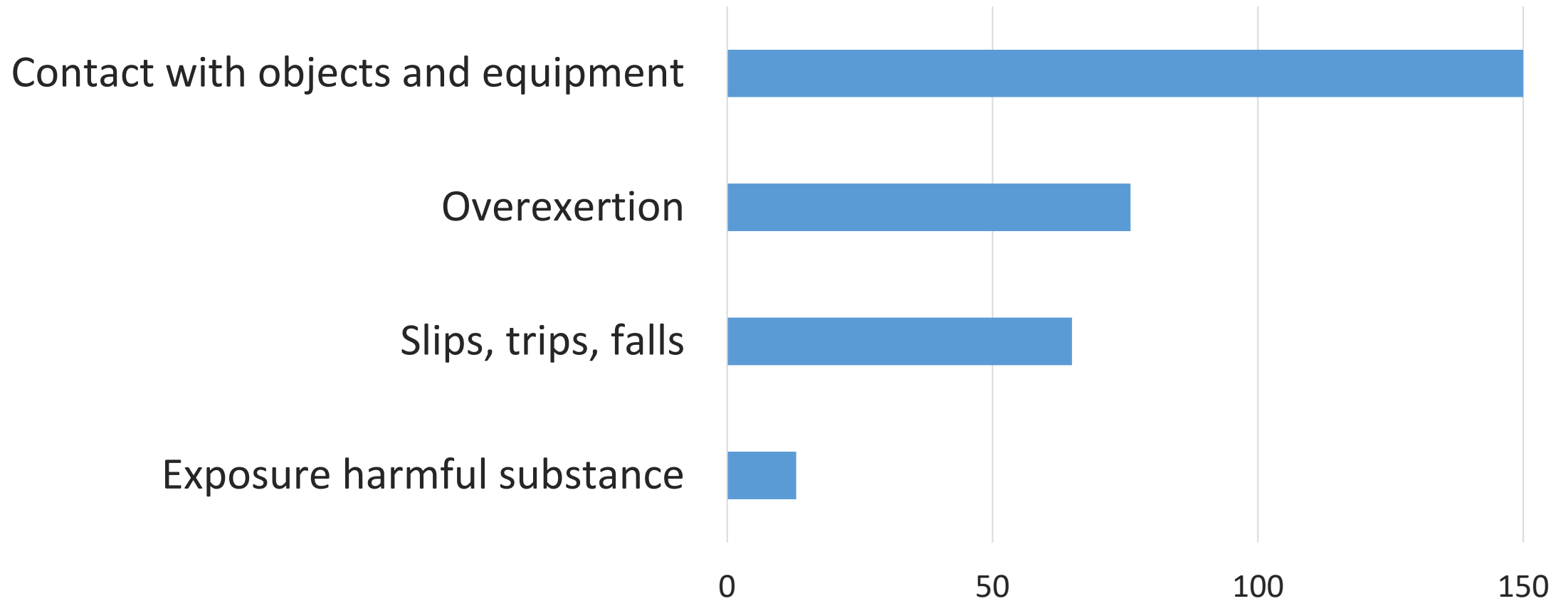
- Coast Guard medical evacuation (8)
- Vessel returned to shore immediately (16)
- Vessel moored, to clinic immediately (21)
- Initial treatment on vessel, followed by:
  - Clinical treatment (68)
  - Continuing work (59)
  - Returning home (9)



# Nature of injury (n=304)



# Event/exposure resulting in injury (n=304)



# Body part affected (n=304)

Shoulder, Arm, Hand  
**122 (40%)**

Head, Face, Neck  
**37 (12%)**

Back, Chest, Abdomen  
**75 (25%)**

Multiple Parts  
**11 (3%)**

Leg, Foot  
**54 (18%)**

Body Systems  
**3 (1%)**



# Study # 2

# Injuries and illnesses among onshore workers, 2014 - 2015:

## Analysis of workers' compensation claims

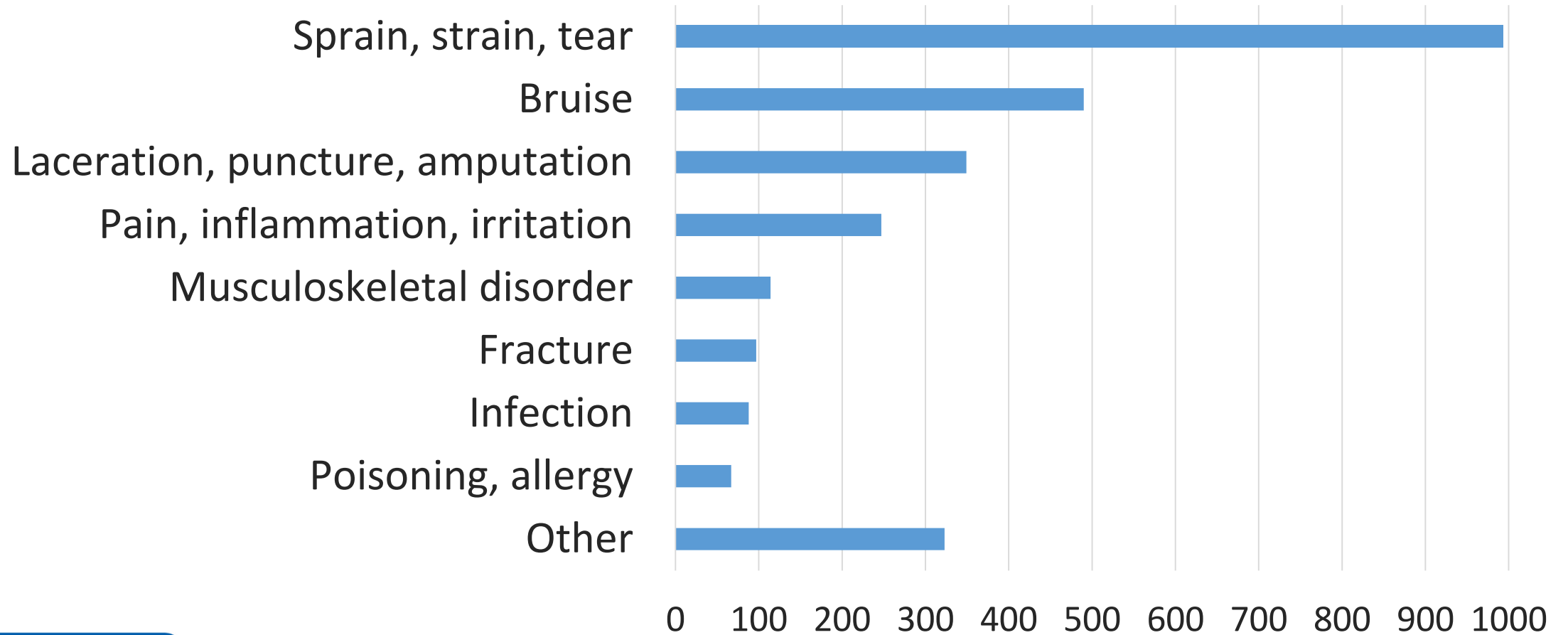


## Workers' compensation claims: Nonfatal injuries/illnesses in Alaska, 2014 and 2015

	# Claims	Average annual claim rate per 1,000 workers
All industries	37,240	44
Onshore seafood processing	2,889	63

Rate Ratio: 1.42 (95% CI: 1.37 – 1.48)

# Nature of injury or illness (n=2,768)





# Event/exposure resulting in injury or illness (n=2,738)

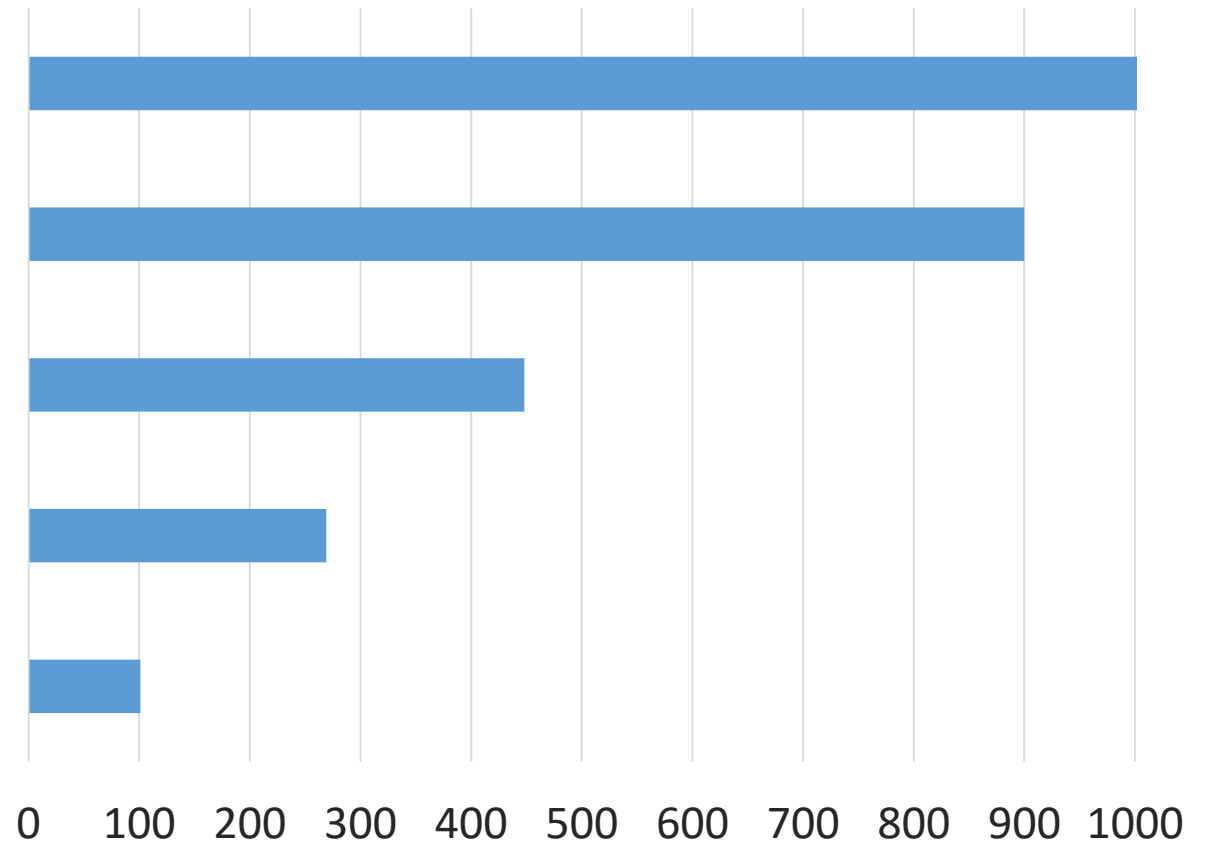
Contact with objects and equipment

Overexertion, repetitive motion

Slips, trips, falls

Exposure harmful substance

Other



# Body part affected (n=2,829)

Shoulder, Arm, Hand  
**1,212 (43%)**

Head, Face, Neck  
**355 (13%)**

Back, Chest, Abdomen  
**578 (20%)**

Multiple Parts  
**108 (4%)**

Leg, Foot  
**511 (18%)**

Body Systems  
**65 (2%)**



# General Conclusions

# Hazards to target for injury & illness prevention

- Vessels

1. Overexertion from lifting and lowering
2. Struck by: Equipment and falling boxes
3. Slips, trips, and falls
4. Caught in machinery

- Onshore plants

1. Overexertion from lifting, lowering, pushing, and pulling
2. Struck by: Trays, fish (fresh/frozen), and boxes/bags
3. Slips, trips, and falls
4. Exposure to harmful substances
5. Repetitive motion

- Preventing musculoskeletal injuries to workers' upper extremities (e.g., sprains, strains, tears, MSDs) is paramount
- Ergonomic solutions could be developed, implemented, and evaluated



# Plans for 2018

- Develop products
- Expand partnerships
- Promote safety solutions

**FISHING**

**AQUACULTURE**

**SEAFOOD PROCESSING**

**IFISH 5**  
International Fishing Industry  
Safety & Health Conference  
St. John's NL, Canada | June 10-13, 2018

[ifishconference.ca](http://ifishconference.ca)

MEMORIAL UNIVERSITY  
SafetyNet  
National Institute for Occupational Safety and Health  
NIOSH

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