ASIA-PACIFIC DECENT WORK DECADE 2006 2015

International Labour Organization

Safety and health training manual for the commercial fishing industry in Thailand

Tripartite Action to Protect Migrant Workers within and from the Greater Mekong Subregion from Labour Exploitation (GMS TRIANGLE project)

ILO Regional Office for Asia and the Pacific

Australian Aid

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Safety and health training manual for the commercial fishing industry in Thailand / Tripartite Action to Protect Migrant Workers within and from the Greater Mekong Subregion from Labour Exploitation (GMS TRIANGLE project) ; ILO Regional Office for Asia and the Pacific ; and the National Fisheries Association of Thailand. - Bangkok: ILO, 2014
vii, 54 p.

ISBN: 9789221284697; 9789221284703 (web pdf)

ILO Regional Office for Asia and the Pacific; Tripartite Action to Protect Migrant Workers within and from the Greater Mekong Subregion from Labour Exploitation (GMS TRIANGLE project); National Fisheries Association of Thailand

fishing / safety training / fishery worker / occupational safety / occupational health / working conditions / good practices / Thailand

07.02.5

ILO Cataloguing in Publication Data

Printed in Thailand

Preface

The International Labour Organization (ILO), through its unique tripartite structure, works to address a range of workplace issues by bringing together governments, employers and workers to set labour standards, develop policies and devise programmes. The Work in Fishing Convention, 2007 (No. 188), sets out standards to ensure that seafarers have decent living and working conditions on board, including occupational safety and health protection. The Preamble to the Convention notes that the "ILO considers fishing as a hazardous occupation when compared to other occupations". The ILO's Tripartite Action to Protect Migrant Workers within and from the Greater Mekong Sub-region from Labour Exploitation (the GMS TRIANGLE project) aims to strengthen the development and implementation of recruitment and labour protection policies and practices. The project is operational in Cambodia, Lao People's Democratic Republic, Malaysia, Myanmar, Thailand and Viet Nam. The GMS TRIANGLE project is collaborating with tripartite constituents and other stakeholders[1] on a variety of interventions to improve conditions for migrant workers in the Thai fishing sector.

The National Fisheries Association of Thailand (NFAT) is the main umbrella organization for the Thai fishing industry. Established in 1964, NFAT consists of members from 48 organizations comprising fisheries associations, fisheries cooperative associations and fisheries groups.[1] Its membership base covers fishing operators from 22 provinces along the coast of Thailand. NFAT's objectives are to cooperate with the Royal Thai Government in the promotion of the fishing sector, and support good cooperation amongst member associations across the country. NFAT develops, disseminates and exchanges information relevant to the industry, and cooperates with the Government and other partners to improve conditions for fishers.

The GMS TRIANGLE project and NFAT are working together to strengthen protection for fishers in a number of areas, and have identified occupational safety and health as a particular concern. There is broad recognition that work in fishing can be hazardous. In an ILO study on *Employment practices and working conditions in Thailand's fishing sector*, 21 per cent of respondents indicated that they had suffered accidents on board that had caused them to stop work and seek medical attention from a clinic or hospital. OSH training and the risk assessment approach is included under the Operational Principles of the NFAT Code of Conduct; however, specific training materials do not exist.

The Manual first outlines the various hazards and risks in fishing, and then presents modules for addressing these – based on the participatory risk assessment approach. The training is targeted at skippers, crew supervisors and vessel owners – as well as members of fisheries associations at national and provincial levels, and is designed primarily for purse seine boats and trawlers. The training can be delivered through multiple partners and platforms, including with the support of NFAT as well as the Department of Labour Protection and Welfare and the Department of Fisheries.

This Manual has been developed in consultation with ILO, NFAT, and the OSH Bureau in the Department of Labour Protection and Welfare, Ministry of Labour. Inputs were also provided by the Department of

[1] There are five types of membership: 1) a national and regional level membership, which includes organizations such as the Thailand Overseas Fisheries Association (TOFA) and the Thai Frozen Food Association (TFFA); 2) a provincial level membership for fisheries associations, including the Rayong Fisheries Association and the Samut Sakon Fisheries Association; 3) a district and sub-district level membership; 4) a cooperative membership and; 5) a fishery group level membership. From 48 different member associations, approximately 6,000 individual vessel owners with 10,000 boats have joined NFAT. Furthermore there are five partner agencies to the NFAT. These include the Marine Diesel Oil Company, the Tripartite Phuket Company, the Andaman Fisheries Supply Company, the Green Diesel Service Company and the Green Tanker Service Company.

Fisheries, the Marine Department, the Southeast Asian Fisheries Development Centre (SEAFDEC), and the Foundation for AIDS Rights (FAR). International standards and comparative experience were considered in the drafting of these materials, as well as the context in Thailand's fishing sector, through inputs from OSH specialists, broad-based national consultations, and focus group discussions and interviews with vessel owners, skippers and crews in Samut Sakhon, Trat, Rayong and Nakhon Srithammarat. These partners will also be involved in the delivery of these training materials, and will continue to cooperate to prevent and reduce fatalities, injuries and ill health in the fishing sector in Thailand.

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Acknowledgements

This Manual was compiled through the significant support and input of the National Fisheries Association of Thailand, and its members. The main author is Peter Hurst, who received support from Sudthida Krungkraiwong and Sara Aporn, Ph.D.

The Manual received considerable inputs from staff of the International Labour Organization, in particular, Max Tunon, GMS TRIANGLE Project Senior Programme Officer/Project Coordinator; Kuanruthai Siripatthanakosol, GMS TRIANGLE Project National Coordinator for Thailand; Eliza Marks, consultant with GMS TRIANGLE project; Ingrid Christensen, Senior Specialist on Occupational Health and Safety; Tuomo Poutiainen, Chief Technical Advisor for the Combating the Worst Forms of Child Labour in the Shrimp and Seafood Processing Areas in Thailand project; and Brandt Wagner, Maritime and Fisheries Specialist in the Sectoral Activites Department in Geneva.

Significant contributions were also provided by the Department of Labour Protection and Welfare, the Ministry of Labour, Department of Fisheries, the Ministry of Agriculture and Cooperatives, and the Marine Department; as well as the Food and Agriculture Organization, Regional Office for Asia and the Pacific, and the Training Department of the Southeast Asian Fisheries Development Center (SEAFDEC).

Abbreviations

DLPW	Department of Labour Protection and Welfare, Ministry of Labour
DMCR	Department of Marine and Coastal Resources, Ministry of Transportation
DOF	Department of Fisheries, Ministry of Agriculture and Cooperatives
DSI	Department of Special Investigation
FAO	Food and Agriculture Organization of the United Nations
FAR	Foundation for AIDS Rights
GMS TRIANGLE	Tripartite Action to Protect the Rights of Migrant Workers within and from the Greater Mekong Subregion from Labour Exploitation
ILO	International Labour Organization (United Nations)
IOM	International Organization for Migration
ITF	International Transport Workers Federation
LPN	Labour Rights Promotion Network
MECC	Thai Maritime Enforcement Coordination Center
NFAT	National Fisheries Association of Thailand
NGO	non-governmental Organization
OSH	occupational safety and health
PFAT	Provincial Fisheries Associations of Thailand
PPE	personal protective equipment
SEAFDEC	Southeast Asian Fisheries Development Center
TOFA	Thailand Overseas Fisheries Association
UN	United Nations

About the training manual

Target groups

This training material is primarily designed for:

- skippers;
- crew supervisors (often an experienced migrant worker that speaks Thai and is responsible for communication between the skipper and the crew);
- vessel owners; and
- representatives from national and provincial fisheries associations.

Other groups who can benefit from knowledge of, and training in, safety and health in the commercial fishing industry include:

- government officials with responsibilities in fishing, particularly from the OSH Bureau, Department of Labour Protection and Welfare, and the Department of Fisheries;
- trade unions;
- non-governmental organizations; and
- regional, intergovernmental fishing organizations.

Aims of the training manual

- to train skippers (captains), crew supervisors, vessel owners, and representatives from national and provincial fisheries associations on improving safety and health conditions on board Thai coastal and overseas fishing vessels in order to prevent fatalities, and reduce injuries and ill health;
- to help skippers, vessel owners, and representatives from national and provincial fisheries associations to involve and train crews – especially migrant labour crews – on improving safety and health conditions on board Thai fishing vessels, using the risk assessment approach (see below); and
- to provide guidance on good practices – that is, on safety and health solutions – which can be introduced to improve safety and health working and living conditions on board Thai fishing vessels.

Outline of the training manual

The Training Manual has been structured to facilitate use in training. The Training Manual is divided in three parts:

- Part 1: Setting the scene on the commercial fishing industry in Thailand, including identifying the principal stakeholders involved.
- Part 2: Safety and health in the Thai commercial fishing industry. Looking in more detail at the hazards and risks in fishing, and illustrating with examples from Thailand, where possible.
- Part 3: Training modules on improving safety and health for fishers based on good practices used and promoted by fishing industry associations around the world, and international standards in the global fishing industry.

Delivery of the training manual

The Training Manual uses a participatory training methodology (see below) that can be delivered in modules by the industry association, the OSH Bureau, other government departments, NGOs, trade unions and migrant associations.

Methodology: What is risk assessment?[2]

The workplace safety and health risk assessment carried out by the employer (vessel owner and/or skipper) in cooperation with the workers, is a key methodology for identifying where and how hazardous work is carried out, who is at risk, and what safety and health solutions can be put in place.

Risk assessment is a participatory tool that allows employers and their workers to take action themselves to identify and remedy safety and health problems and come up with practical solutions. The aim is to prevent and reduce fatal accidents, injuries and ill health at work. Using risk assessment to tackle their daily safety and health problems allows employers, especially small and medium-sized enterprises, to avoid (over) reliance on external experts, consultants or officials to make their workplaces safer and healthier. Commercially, risk assessment is also increasingly a factor required by buyers in determining market access.

A safety and health risk assessment is essentially a careful examination by an employer (vessel owner and/or skipper), in cooperation with workers, of any aspect of the business that could cause harm to people. A careful evaluation of the extent of the risks involved then follows, taking into account existing safety and health measures that are already in place, and deciding what more needs to be done to protect those at risk.

Risk assessment: A five-step process

Step 1. Identify the hazards, who is at risk, and how

Step 2. Evaluate the degree of risk, and prioritize risks requiring action

Step 3. Identify and decide on the safety and health risk controls in the following order:

- Risk Control 1. Elimination or substitution of hazards
- Risk Control 2. Tools, equipment, technology and engineering
- Risk Control 3. Safe work methods and practices, information and training
- Risk Control 4. Hygiene and welfare
- Risk Control 5. Health/medical surveillance
- Risk Control 6. Personal protective equipment

Step 4. Take action: implement the safety and health risk controls following the order in the list in Step 3

Step 5. Record your findings, monitor and review your risk assessment, and update when necessary

[2] Source: ILO: *Training package on workplace risk assessment and risk management for small and medium-sized enterprises* (Geneva, 2013).

Part 1
Setting the scene on the commercial fishing industry in Thailand

Introduction

Marine fisheries are a very important industry for the Thai economy and a main source of the world's food fish supply. Fishing has a long history in Thailand and it is especially important for the inhabitants of coastal provinces who fish to feed their families and supply fish food to domestic and foreign markets. Marine fisheries production comes from coastal aquaculture and marine capture fisheries both within the Economic Exclusion Zone of Thailand and beyond. Many Thai fishing operators have entered into joint venture fishing agreements with Bangladesh and India to fish in Myanmar waters, and also with other countries such as Indonesia, Malaysia, Myanmar, Somalia and Madagascar with the arrangement to share local crew onboard as well as landings in their respective coastal states. This has led to exchanges in access to fisheries resources and has enhanced the capacity of fishing vessel crews.

The Thai fishing industry relies heavily on use of migrant labour. Given the irregular status of the vast majority of migrants in the Thai fishing sector, and the number of fishing vessels that are not registered, is it difficult to estimate the numbers working in the sector. An NFAT survey in 2012 estimated that their members employed 142,845 fishers, which reflects both registered and unregistered migrant workers and provides a working estimate of the base population, although it should be noted that not all vessel owners are registered with the fisheries associations.[3] A survey by the Southeast Asian Fisheries Development Center (SEAFDEC) on safety at sea found that the highest percentage of crew working onboard Thai fishing boats were Myanmar nationals (50.95 per cent) followed by Thais (24.58 per cent) and Cambodians (24.47 per cent). The survey found no Cambodian crew onboard fishing boats in the Andaman Sea and less than 0.5 per cent Myanmar crew in the eastern part of the Gulf of Thailand.[4]

'Commercial fisheries' refers to fishing activities using boats of over 10 gross tonnes.[5] Commercial fishing utilises highly efficient fishing techniques and gear, including the use of light luring techniques, fish aggregating devices, sonar and echo sounders. The main types of fishing boats are (1) purse seine, encircling gillnets and large driftnet boats which fish in coastal waters; and (2) medium- to large-sized trawlers, which fish in deeper, often overseas waters.[6]

1. The main type of coastal fishing boat is the purse seine net fishing boats. This type of boat has an average length overall of 18 metres to 22 metres. The boats fish at night, typically leaving port in late afternoon and returning around dawn. In the season, fishing is a continuous daily activity

[3] ILO: *Employment practices and working conditions in Thailand's fishing sector* (Bangkok, 2013).

[4] Chokesanguan, B. 2011. *Impact of fisheries management in improving safety at sea measures: A case Study in Thailand*, paper presented at the ASEAN-SEAFDEC Conference on Sustainable Fisheries for Food Security: Fish for the People 2020: Adaptation to a Changing Environment, Bangkok, 13-17 June.

[5] Thailand has some 2, 800 traditional craft boats without engines; some 36, 000 longtail boats, usually 5 to 8 metres in length, with outboard motors; and about 15, 000 mechanised boats, most of them between 15 and 25 metres long, with inboard engines. These figures date from a 1995 census, and are hence 11 years old. There are very few fibre-reinforced plastic boats, with most Thai fishing vessels being built of wood. However new boat hulls are usually made of steel. Erlingsson, A. 2006. *Safety of small fishing vessels in India, Maldives, Sri Lanka and Thailand*, paper presented at the IFISH-3 Conference, Mahabalipuram, Chennai, 1-7 Feb.

[6] Thai Department of Fisheries data: Fishing boats 'less than 5 GT' category decreased from 3,257 units in 1999 to 2,160 in 2003. 'More than 5 GT' category increased from 13,664 in 1999 to 13,823 units in 2003 but started to decrease to 11,824 in 2005. Chokesanguan, B. 2011. *Impact of fisheries management in improving safety at sea measures: A case Study in Thailand*, paper presented at the ASEAN-SEAFDEC Conference on Sustainable Fisheries for Food Security: Fish for the People 2020: Adaptation to a Changing Environment, Bangkok, 13-17 June.

interrupted only by the full moon. The boats are wooden or metal hulled, and comprise basically of a main deck with bridge and superstructure. Crews typically average at least 30, with migrant labour crews dominating. For purse seine fisheries, the profit is usually calculated and shared each moon cycle. Accommodation is usually basic, and there are often no toilets or washing facilities on board.

2. Overseas (deep sea) trawlers are often much larger, metal hulled boats which stretch over 24 metres in length, and are multiple decked. Gross tonnage can reach up to 650 tonnes. They operate in deeper waters, in overseas fishing grounds. Crew size ranges from 8-17 on an overseas trawler. Trawlers stay at sea for long periods. For example, trawlers operating from Samut Sakhon port operate for periods of eight months at a time. A percentage of profit is shared after a period of six months, one year or longer.[7]. Fish are stored in large holds, and ice production is an important part of trawler operation. To allow continuous operation, the trawlers are serviced by mother ships that bring fresh supplies and water, and take away the frozen catch in metal containers.

It is important to note that these are generalizations. Purse seine net boats also fish in deeper waters, and the vessels in overseas waters also include vessels of 18-22 meters.

Commercial boat owners sometimes play the role of middle-men and investors. Middle-men buy fish directly from fishing operators at the landing site then sell it to fish markets or other buyers at a higher price. Some middle-men also give loans to small fishing operators who own only one boat or have a small amount of liquid capital, and then buy back catch from these fishers at a controlled price. Catches are sold to the port owner, investor, and middle-men or by auction at landing sites, which are private or semi-government fishing ports.[8]

[7] S. Panjarat: Sustainable fisheries in the Andaman Sea coast of Thailand. The United Nations-Nippon Foundation Fellowship Programme, Division for Ocean Affairs and the Law of the Sea, (New York, United Nations, 2008), pp. 37-38.

[8] *Ibid*.

Key stakeholders involved in improving conditions in the commercial fishing industry in Thailand

Fishing industry:

- National Fisheries Association of Thailand (NFAT)
- Thailand Overseas Fisheries Association (TOFA)
- Provincial Fisheries Associations (PFAT)
- Vessel owners
- Skippers
- Crews - especially migrant labour, and crew supervisors

Government agencies with responsibilities for the fishing sector:

- Ministry of Transportation, Marine Department: responsible for registering vessels, collecting data on the category, size and weight of vessels, and inspecting vessel safety.
- Ministry of Agriculture and Cooperatives, Department of Fisheries: responsible for inspecting fishing vessels that fish in unauthorised fishing areas or use illegal fishing practices.
- Ministry of Labour, Department of Labour Protection and Welfare: responsible for protecting the labour rights of both Thai and migrant workers in the country, including labour and OSH inspections.
- Ministry of Labour, Department of Employment: responsible for the admission of migrant workers and the registration of irregular migrant workers, and the lead agency in the Labour Coordination Centres for the Fishing Industry.
- Ministry of Defence, Royal Thai Navy: responsible for the suppression of illegal acts at sea and for inspecting vessels that may be transporting illegal goods or trafficked workers.
- Royal Thai Police, Marine Police: responsible for keeping the peace and for the prevention of criminal acts in Thai waters and in Thai ports, including export processing zones.
- Ministry of Foreign Affairs, Department of Consular Affairs: responsible for Thai citizens in difficultly abroad.

Non-governmental organizations:

- Foundation for AIDS Rights (FAR)
- Labour Rights Promotion Network (LPN)
- Stella Maris

Regional fisheries associations:

- Southeast Asian Fisheries Development Center (SEAFDEC)

UN agencies:

- Food and Agriculture Organization (FAO)
- International Labour Organization (ILO)

ILO GMS TRIANGLE project

Safety and health training manual for the commercial fishing industry in Thailand

Part 2: Safety and health in the commercial fishing industry in Thailand

Part 2

Safety and health in the commercial fishing industry in Thailand

Introduction

Fishing takes place in a natural environment that often becomes hostile to fishers and their vessels. Marine fishing operations can take place anywhere from very close to the shore in protected bays, to far out to sea. Except in very calm weather, fishing vessels are in constant motion. When the weather is particularly rough, the motion may be extreme and unpredictable. One of the distinguishing characteristics of sea fishing is that there is no clear separation between working time and personal time. Many fishers live as well as work in their vessels, in conditions that can be cramped, congested, and unsanitary. There may be long periods away from home and very long working hours because of declining fish stocks and the way pay is incentivised, leading to fatigue. Access to food, drinking water and basic hygiene can be an issue. Children (under 18 years of age) may also be working in fishing in work that may be hazardous. Globally, fishing ranks as one of the four most dangerous sectors to work in, along with agriculture, construction and mining. The ILO estimates that fishing has a worldwide fatality rate of 80 per 100,000 workers, or approximately 24,000 deaths per year, with 24 million non-fatal accidents in the sector.[9] The scale of ill health problems associated with the fishing industry has not been estimated.

An assessment of the health and safety impacts of various types of fishing should include a review of machinery and equipment; systems of work; ergonomics; personal protective equipment; drowning risks; exposures to heat, cold, chemicals and diseases; electrical and fire hazards; and psychosocial factors. No systematic assessment of all these elements and their cumulative impacts has been published in the (global) literature let alone in Thailand.

In terms of accidents, the shipping and fishing industry distinguishes between accidents at work and accidents at sea:[10]

- An accident at work is an accident involving a crew member during the normal on-board working operations, including operations such as the unloading of the catch.
- An accident at sea is an event that happens to the ship at sea, such as a collision, grounding, or sinking.

Specific data on the number of fatalities, injuries and ill health in the Thai fishing industry is lacking or is limited to anecdotal evidence as there is a no adequate system of accident and ill health reporting. In addition, given the make-up of the workforce; irregular migrant workers are less likely to report accidents; and migrant workers may not be able to report the long-term effects of working on a fishing vessel, such as the effects of noise, disease and muscular-skeletal problems (although the industry is marked by its low retention rate). However, a major case study by the Southeast Asian Fisheries Development Center (SEAFDEC)[11] on safety at sea in Thai fisheries stated that, "lack of competence of the boat crew and the poor working conditions, long period of working hours may have contributed to more than 40 per cent of fishing boats in Thailand meeting accidents at sea which is considerably high."[12]

Another study on accidents in the Thai fishing industry[13] found that:

- between 1992 and 2005, on average, 18 boats sank per year;

[9] ILO: *Safety and health in the fishing industry*, Report of the Tripartite Meeting on Safety and Health in the Fishing Industry (Geneva, 1999).

[10] European Agency for Safety and Health at Work, Facts 38, 2003, *Risk assessment for small fishing vessels.*

[11] SEAFDEC is an intergovernmental organization established in December 1967 for the purpose of promoting sustainable fisheries development in the region.

[12] B. Chokesanguan: 2011. *Impact of fisheries management in improving safety at sea measures: A case Study in Thailand*, paper presented at the ASEAN-SEAFDEC Conference on Sustainable Fisheries for Food Security: Fish for the People 2020: Adaptation to a Changing Environment, Bangkok, 13-17 June 2011, p. 8.

[13] N. Nasuchon: 2009. *Country paper on safety at sea in fisheries sector in Thailand*, paper presented at the Fourth International Fishing Industry Safety and Health Conference, Reykjavik, 11 -14 May 2009.

- crew fatalities averaged 36 per year;
- fishing vessel accidents in Thailand are rarely documented;
- the Thailand Maritime Enforcement Coordination Center's search and rescue activities at sea only cover Thai waters;
- the region has no agreements about fishing vessel safety at sea;
- whilst Thai safety on the sea laws follow international maritime laws, they do not cover fishing vessels;
- Thai fishing vessels have no insurance coverage; and
- Thailand lacks strong control of fishing vessel standards.

Another overview of safety in the Thai fishing industry observed that, "the principal factors affecting sea safety were seen to include lack of appropriate safety equipment on all vessels; trawler designs that carry a lot of top hamper which are at risk during typhoons or cyclones; and the declining economic viability of small-scale fishing enterprises associated with a declining resource base leading to higher levels of risk taking."[14]

Hazards and risks in fishing

A fishing boat is an unstable platform in perpetual motion, making what is already a high risk occupation even more unsafe. Most of the work is carried out on deck. Decks are routinely washed by seawater, covered with nets and gear, and with a moving cargo of fish. Fish, slime and leaking hydraulic fluid can increase the dangers of deck work. Fishers work in all sea conditions including hostile weather in rain, storms, and extremes of temperature. There are no fixed working hours, with the working rhythm being determined by the sea and the catch. Except for transit times out to fishing grounds, crews typically work around the clock. Fatigue sets in quickly, with crews pushed to breaking point.[15] The vessel is both a place to work and a place to live. In some types of fishing, the fishers live on board for six months at a time or longer.[16]

While the dangers found in different types of fishing operations are very similar, the levels of risk arising from specific dangers may vary between types of vessels. For example, compared to inshore fishing boats, deep sea trawlers use heavier duty machinery, more electricity, have more confined spaces, and are at sea for much longer periods. What is well known are the safety blackspots on fishing vessels and the types of work that are known to be high risk activities for the safety and health of crew members.[17] These include:

- the winch, cables, ropes and otterboards,[18] which are clear causes of occupational injuries;
- tasks associated with fishing operations, such as shooting or hauling in the net, are responsible for the majority of falls overboard and accidents;
- lighting and visibility in the handling and transit zones is frequently inadequate; and
- the noise to which crews are exposed, even in the rest area, is often at levels regarded as dangerous, particularly for those crew members working in the engine room.

Specific hazards in fishing and risks arising from them, primarily applicable to purse seine and trawlers, are outlined below.

1. *Drowning* is one of the main risks in fishing and a main cause of fatalities in the industry worldwide. Causes of drowning include:

i. Falling into water

[14] Bay of Bengal Programme: "Safety at Sea", in *Bay of Bengal News* (2001, Vol. 3, Nos 1-2, June-Sep), p. 7.
[15] D.W: Nixon. undated. *Legal concerns in the fishing industry*. (Providence, University of Rhode Island), p. 1.
[16] Commission of European Communities: *Health and safety training in the fishing industry* (Luxemburg, 1993), p. 5.
[17] Commission of European Communities: *Health and safety training in the fishing industry* (Luxemburg, 1993), p. 13.
[18] Otterboards are used to keep the net open and may be made of iron, wood, or both. They may be oval, rectangular, hollow or solid.

- while shooting (putting out or setting) or hauling in the net;
- while climbing from the deck to the superstructure (the bridge/dock) on the outside of the boat;
- through missing one's footing while walking along, or working on, the edge of the boat;
- when walking along the outrigger pole to change rope settings; and
- especially if one is knocked unconscious or stunned as a result of a fall.

ii. Swimming and diving[19] entails a risk of drowning especially when diving to free the net and subsequently getting entangled in it. Diving can also result in damage to lungs and ear drums. On purse seine net boats, for example, setting the net requires two swimmers to go into the water, one on either side of the boat. They remain in the water for long periods of time, as they help guide the setting of the net and the pulling of the net.

iii. Being swept overboard in rough seas

iv. Vessel sinking or capsizing

v. In colder waters, death from hypothermia[20] is a related risk.

2. *Lack of provision of safety equipment:* A regulation of Thailand's Marine Department[21], requires life rafts, life rings and life jackets to be carried onboard by all fishing boats regardless of size[22]. However, the SEAFDEC study found that life rings and life jackets were mostly not available onboard. Less than 50 per cent of fishing boats in the central part of the Gulf of Thailand and the Andaman Sea carried this legally required safety equipment, with correspondingly very low percentages in the southern and eastern part of the Gulf of Thailand. The ILO/NFAT/OSH Bureau consultations and interviews at fishing piers found that the cost and the bulkiness – in terms of restricting movement and the limited storage space, are prohibitive factors.

The SEAFDEC report states that "in the study areas, a trawler (length overall less than 15 metres) fishing in areas more than 12 nautical miles away from the shore, has about 15 crew members working onboard but without having life rafts, life rings and life jackets on board. On the other hand, purse seiners (length overall equal or more than 15 metres) that fish more than 24 nautical miles away from the shore, carry onboard some safety equipment such as life rings and life jackets. However in general, many fishing boats do not install life rafts."[23] The survival of workers awaiting rescue from water will be aided by the wearing of appropriate buoyancy aids (including marine work vests and personal flotation devices) or life jackets, and by the availability of ladders and life-saving equipment, including chains, handholds, lifelines, or other means to enable persons to support themselves in the water. The emergency arrangements should take into account the fact that it will not be appropriate for many workers to wear buoyancy aids or life jackets at all times.[24]

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[19] The Ministerial Regulation on the Prescribing of Standard for Administration and Management of Occupational Safety, Health and Environment in Relation to Diving Work B.E. 2548 (A.D. 2005), is applicable to the diving work, which is performed underwater at the depth from 10 feet; but not exceeding three hundred feet deep. See also the Memorandum of Principle and Rationale Supplementary of the Ministerial Regulation on Prescribing the Standards of Administration and Management of Occupational Safety, Health and Environment in Relation to Diving Work B.E. 2548 (A.D. 2005).

[20] Hypothermia is a condition in which core body temperature drops below the required temperature for normal metabolism and body functions which is defined as 35.0°C.

[21] Regulation of Ship Inspections of 1985, presented by Nopporat Nasuchon at IFISH4 in 2009.

[22] Life jacket - one for every crew member; Life ring/buoy - one per boat stored on the port or starboard side of the deckhouse; inflatable life raft. These must be checked every year.

[23] B. Chokesanguan: 2011. *Impact of fisheries management in improving safety at sea measures: A case Study in Thailand*, paper presented at the ASEAN-SEAFDEC Conference on Sustainable Fisheries for Food Security: Fish for the People 2020: Adaptation to a Changing Environment, Bangkok, 13-17 June, 2011 p. 6.

[24] ILO: *ILO Code of practice, safety and health in ports* (Geneva, 2005), pp. 436-437.

3. *Poorly trained skippers and crews* is hazardous. This is a serious problem in the Thai fishing industry given that there are so many mixed crews using foreign migrant labour. The Food and Agriculture Organization (FAO) emphasizes the importance of "suitable equipment, training, experience, information and judgment to avoid getting into trouble in the first place."[25] Language barriers and a high rate of job mobility in the fishing sector are also factors that needs to be taken into account in work organization onboard and in the provision of training. The 2013 ILO study on employment practices and working conditions in Thailand's fishing sector found that that majority of fishers (63.1 per cent) had at least one year of experience working in the industry, but over two-thirds of all fishers had been working for their current employer for less than a year.[26]

The SEAFDEC study observed, "there is a large number of foreign crew working onboard the fishing boats in the Andaman Sea, central and eastern parts but smaller in number in the southern part of the Gulf of Thailand, with competence not usually meeting the standard because many foreign crew did not receive any training on the basic sea safety measures."[27] The ILO/NFAT/OSH Bureau consultations and field visits found that no training was provided on the use of machinery or other OSH issues, rather, on the job training dominated.

4. *Poor work organization on board:* Work organization on board is a difficult subject to examine because of the disparate nature of fishing as an activity and the wide range of factors influencing work organization. These factors include: the type of vessel and fishing, the number of crew and their level of experience and training, language barriers among the crew, the duration of trips, and even climatic conditions at the fishing ground.[28]

5. Injuries from *slips and trips* are a constant problem in fishing given the crowded nature of decks, the often wet and slippery conditions of decks when fishing, and the constant, unstable motion of the boat. It is recommended that decks have a non-slip surface. This can be achieved by mixing sand with the paint used for decks, or by using non-slip or enamel paints. In addition, adhesive non-slip sheeting may be used in passageways, and decks should be washed down frequently to remove slippery waste.

6. *Falls* can result in more serious injury. Falls may occur either through open decks that are slippery with waste, open holds, or through having to walk on ice in the hold. Suitable footwear, such as rubber boots with anti-slip soles, should be worn. On access to holds, cold rooms, storerooms, accommodation spaces, engine rooms and other indoor spaces, proper ladders with handholds should be provided. Hatch covers must remain closed and latched when not in use or shielded so as to prevent persons falling through the hatch. Falls on access ways above deck are a risk, as it can be common to see ladders comprising of just metal rungs with no handhold whatsoever, the use of which presents real difficulties and a danger of falling.

Falls from masts and gantries are a risk. The ladder or stairs usually comprise separate steps individually welded to the mast and with a protective frame around the whole. The risks are the same with other stairways and ladders on board, but amplified by the scale of oscillation arising from the vessel's movement and by the height of the mast above the deck. A further risk is falling from the gangway, which on many Thai vessels does not have any handrails. This can be especially dangerous if a person comes off the gangway and falls between the boat and the wharf. Gangways need to be fitted with handrails.

7. *Physically demanding work and musculoskeletal problems*: Fishing work is by its nature physically demanding and strenuous, involving long periods of standing, stooping, bending, repetitive and forceful movements in awkward body positions, and hauling, carrying and handling heavy or awkward loads on decks which are usually in constant motion and often wet and slippery. Fishers' major tasks at sea involve

[25] G. Petursdottir, O. Hannibalsson and J.M.M. Turner: *Safety at sea as an integral part of fisheries management*, (Rome, FAO, 2001).

[26] ILO: *Employment practices and working conditions in Thailand's fishing sector* (Bangkok, 2013), p. 41.

[27] B. Chokesanguan: 2011. *Impact of fisheries management in improving safety at sea measures: A case Study in Thailand*, paper presented at the ASEAN-SEAFDEC Conference on Sustainable Fisheries for Food Security: Fish for the People 2020: Adaptation to a Changing Environment, Bangkok, 13-17 June 2011, p. 7.

[28] Commission of European Communities: *Health and safety training in the fishing industry* (Luxemburg, 1993), p. 14.

pulling and lifting, mostly manually, either a heavy net or other heavy gear (trap, rod-line); crouching over the edge of the deck; and loading and unloading fish into and from holds (fish sorting on ships also involves repetitive work).

The results of both heavy and often repetitive work performed in a short time cycle and the lack of rotation among different tasks[29] are injuries to bones, joints, and tendons known collectively as 'musculoskeletal disorders.' Musculoskeletal disorders can often lead to permanent injury or disability. As an interviewee in an Indonesian fishing study described succinctly, "all of a fisherman's body parts hurt."[30]

8. *Cuts, punctures, abrasions, and wounds*: When it comes to injury and infections, fishermen's hands are particularly prone to injury. Between broken ends of warps, knife cuts, hook injuries, crushed fingers, and rope burns, infections are almost inevitable. Fishers can cut their hands while repairing nets or handling the catch. Worse still, hand injury and infection can lead to accidents. (See also Disease, Part 2, Section 19). There is also a danger of eye injuries from hooks, spikes, and wire.

9. *Injuries from fish and the catch*: Fish hauled on board while still alive and thrashing may cause injuries by a sudden flip of the tail, a jab by the beak, 'sword' or saw, bites to limbs or fingers, or painful stings. There is also the further risk of such cuts and abrasions becoming infected. Knife injuries, which can sometimes result in loss of fingers, are common when fish are manually beheaded, gutted, skinned or filleted on board.

10. *Machinery and equipment*.

- Winches, hoists and accompanying cables and ropes are especially dangerous pieces of machinery. Dangers include: getting fingers, a hand, an arm or foot stuck in the winch drum as it hauls back the gear, getting hit by a broken line as it recoils, and tripping over a line.
- Entanglement in the fishing gear under tension, winch drums and barrels or wire cables; and crushing injuries, of fingers and whole limbs – when connecting trawl doors, setting and hauling trawl, purse seine and other fishing gear.
- Fishing hooks and 'spines' in steel wire ropes sticking into hands or other parts of the body. Personal protective equipment can be used to reduce such injuries.
- Workers can also be injured by loads falling from hoists.

Areas of the body most frequently injured include the hands, lower limbs, head and neck and upper limbs, followed by the chest, spine and abdomen. The most common types of traumas are open wounds, fractures, strains, sprains and contusions. Many non-fatal injuries may involve amputation of fingers, hands, arms and legs as well as injuries to the head and neck. Infections, lacerations and minor traumas of hands and fingers are quite frequent.[31]

11. *Fittings projecting from decks*: Contact with eyebolts, bollards, capstans, etc., can result in injury. Whilst such fittings are essential for the operation of the vessel and cannot be eliminated, they can be located in less frequented zones and painted to distinguish them from their surroundings. Hatches can be identified by alternate diagonal stripes in red and white or yellow and black. Special care must be taken to latch or stow away all moveable fittings, including coiling ropes away.

12. *Electrical safety*: Contact with an electric current can result in tingling sensations, contact burns, loss of muscular controls, painful shock, cardiac and respiratory arrest, or death. There can be direct contact with

[29] ILO: *Safety and health in the fishing industry*, Report for the Tripartite Meeting on Safety and Health in the Fishing Industry (Geneva 1999), p. 23.
[30] P. Markkanen: "Dangers, delights and destiny on the sea: Fishers along the East Coast of North Sumatra, Indonesia", in *New Solutions* (2005, Vol. 15, No. 2), p. 126.
[31] ILO: *Safety and health in the fishing industry,* Report for the Tripartite Meeting on Safety and Health in the Fishing Industry (Geneva 1999), p 21.

live components (fixed installations, portable equipment, and cables) or indirect contact with components which have become live through a fault in the system. Given the wet marine environment, good safety standards and practices when using electricity – both fixed installations and cables and portable equipment – are critical. On purse seine net fishing boats, relatively little electricity is used. While underwater lamps for attracting fish at night are used, these are insulated to marine safety standards. On overseas trawlers, which are much bigger boats, greater use is made of electricity.

13. *Lighting and visibility*: Internal lighting on vessels, essential for fishing work in handling and transit zones, is often not adequate. On purse seine boats, the nature of the night time fishing operation itself means that many deck operations are carried out in the dark or with severely reduced lighting. Internal lighting must be carefully and sensibly positioned at the most dangerous locations and should preferably be fluorescent. It should not interfere with visibility and should not be visible from outside to the extent that other vessel's fishing operations are hampered.

14. *Noise and vibration*. Continuous exposure to noise and vibration onboard fishing vessels, such as the loud noise from the engine room, can result in permanent hearing problems and damage, known as 'noise-induced hearing loss.' The sufferer does not become deaf but hearing loss is sufficiently severe that the person loses the ability to understand speech in normal conditions, which is considered a severe social and work handicap. Tinnitus, a disturbing 'ringing in the ear' can be another result of excessive noise, and can result in regularly disturbed sleep and general discomfort.

15. *Chemical risks* include exposure to chemicals such as chlorine which is used to wash and preserve fish, can irritate membranes of eyes and nose, and lungs; fuel and oil containers that are often scattered about on boats; and empty chemical drums that are used as fish buckets. The ILO/NFAT/OSH Bureau consultations and field visits found that chlorine based bleaches and detergents were the main chemicals used.

16. *Confined spaces and asphyxiation*. A confined space is a place which is substantially enclosed (though not always entirely), where asphyxiation occurs due to the lack of oxygen or poisoning from toxic gases, for example, from hydrogen sulphide fumes. It may be unsafe to enter a confined space either because the air has too little oxygen in it or because it has poisonous fumes in it. Examples include rotting fish producing hydrogen sulphide gas in holds, or refrigerated salt water tanks, fumes from fuel or engines, and escaped refrigerant gases. In the Thai fishing industry, confined space accidents have sometimes involved multiple fatalities when workers have gone into holds to rescue workers in difficulty and, lacking training and proper equipment, have themselves been overcome by toxic fumes and died.[32]

17. *Long hours of work and continuous working* are often the norm in fishing; regular hours of work do not exist. Crew often work day and night; especially in nocturnal fishing. The intensity of the work offers little chance for rest breaks and the length of the working day offers insufficient time for recuperation or for leisure time. Extremely long hours of work are compounded by continuous working, with boats going out day after day or night after night during the fishing period. Deep sea trawlers may remain at sea for up to eight months at a time or longer. Long hours of work and continuous working impact negatively on health, and contribute to fatigue, itself also a contributory factor in ill health, and to increased risk of accidents. Article 14 (b) of C188 indicates that for fishing vessels regardless of size remaining at sea for more than three days, minimum hours of rest shall not be less than ten hours in any 24-hour period; and 77 hours in any seven-day period

The ILO/NFAT/OSH Bureau consultations and field visits found that working hours on board some purse seine net fishing operations are 12 hours minimum not including waiting time. Working hours off-shore are

[32] "Confined space" means a place which has limited area of entrance and exit with insufficient ventilation that could not produce hygienic and safe condition, e. g., in a tunnel, cave, well, pit, underground room, safe room, fuel tank, fermented tank, tank, silo, pipe, furnace, container or other objects of similar characteristics. Ministerial Regulation on the Prescribing of Standard for Administration and Management of Occupational Safety, Health and Work Environment in Confined Space B.E. 2547 (A.D. 2004).

five hours maximum depending on quantities of catches. The 2013 ILO study on employment practices and working conditions in Thailand's fishing sector analysed the working hours of fishers, by length of time at sea. The study found that short-haul fishers and long-haul fishers mostly have indefinite work hours (41.1 per cent of the sample), or work 17-24 hours per day (25.4 per cent). A greater percentage of short-haul fishers surveyed worked less than eight hours a day compared to the long-haul crews.[33] The lack of regulation in the fishing industry in Thailand is a contributing factor in the long working hours. There is no clear separation between working hours and rest hours. However, employers stated that waiting time/on-call can be counted as rest hours in the case of the fishing sector. So from starting the voyage to fishing operations, workers can get around two to six hours rest, with five to six hours rest whilst offshore. However, this time travelling to and from the fishing grounds is often spent repairing nets.

According to the SEAFDEC safety at sea study, trawlers started fishing operations – from net setting, net hauling until catch sorting – before sunrise and finished before midnight. Fishing operations were normally done about three times a day, with about four hours of towing of nets on average, during which time the crew sorted the fish to be kept in the fish hold. Total working time was 15 hours per day.[34] Purse seiners started fishing after sunset, about 22.00 hours, (having left port four to five hours earlier) and finished after sunrise, with a total working time of about 12 hours per day including time spent for net arrangement.[35]

18. *Fatigue* is a fact of life in the fishing industry. Fatigue is extreme physical and/or mental tiredness brought on by frequent lack of sleep. Fatigue can prevent you doing your work properly and safely thereby putting your life and the lives of other crew members at risk.[36] People need seven to eight hours of sleep per night to be refreshed and 100 per cent fit for work. Human biology has evolved to have a body clock based on being alert during the day and sleep at night. Fatigue builds up if we get less than seven to eight hours sleep per night. Sleep is the only way to recover from sleep loss and fatigue. Young workers – over 16 and under 18 – need about one hour more of sleep than adults. With long work days, accident risks begin to increase significantly especially after around ten hours of consecutive work.[37]

In order to address the risks and hazards associated with fatigue, the crew should talk about what fatigue looks like and be alert for the signs and symptoms. Individuals are poor judges of their own state of alertness. In assessing your own alertness or that of a crew member, do not make judgments based on how you or they feel at the time. Instead, assess sleep patterns over the period of the last few days.

Good practices: Fatigue checklist
Canadian fishers advise to watch for the following top 10 signs and symptoms of fatigue:

- being more irritable than usual;
- being uncommunicative;
- being frustrated by tasks;
- being unable to stay focused;
- cutting corners to get the job done;
- losing the 'big picture';
- taking unusual risks;
- responding slowly to situations;
- not noticing risks or warning signs; and

[33] ILO: *Employment practices and working conditions in Thailand's fishing sector* (Bangkok, 2013), p. 52.
[34] B. Chokesanguan: 2011. *Impact of fisheries management in improving safety at sea measures: A case Study in Thailand*, paper presented at the ASEAN-SEAFDEC Conference on Sustainable Fisheries for Food Security: Fish for the People 2020: Adaptation to a Changing Environment, Bangkok, 13-17 June 2011, p. 7.
[35] B. Chokesanguan: 2011. *Impact of fisheries management in improving safety at sea measures: A case Study in Thailand*, paper presented at the ASEAN-SEAFDEC Conference on Sustainable Fisheries for Food Security: Fish for the People 2020: Adaptation to a Changing Environment, Bangkok, 13-17 June 2011, p. 7.
[36] European Union: *European handbook for the prevention of accidents at sea and the safety of fisherman* (European Union, 2007).
[37] Maritime New Zealand: *Fatigue tools for vessel owners: Get your sleep; reduce your risk* (Wellington, 2007).

- doing tasks in the wrong order.[38]

19. *Diseases*

- Skin diseases/infections related to the handling of fish with bare hands are common – contact eczema, either allergic or non-allergic, and boils and abscesses are recurrent problems affecting hands and fingers. Protective gloves are essential and all infections should be treated quickly. Provided there are facilities, fishers can help prevent infection by: thorough hand washing with a germicidal hand wash solution at the end of every work period; and prompt treatment and cleaning of all cuts, scrapes and scratches (using first aid).
- Skin cancer is a common cancer and mostly affects people working outdoors (see exposure to sun).
- Respiratory diseases: Occupational asthma is an allergic respiratory disease which is associated with several types of fish but mostly with crustaceans and molluscs through inhalation of fish protein. Fishmeal processing, and the grinding of shells and shrimps can result in asthma as well.
- Communicable diseases in fishing continue to remain an occupational health problem especially where trawlers are at sea for long periods. For instance, the presence of tuberculosis (TB) linked to the lack of pre-recruitment medical examinations, means that TB can be transmitted to colleagues on board. Other diseases are contracted through impure water (e.g. dysentery, cholera) and at ports of call (e.g. malaria, dengue).[39]

20. *First aid provision and training and medical care*: Good first aid skills can mean the difference between life and death, or between short-term and life-long injury. The ILO/NFAT/OSH Bureau consultations and field visits found that provision of first aid kits was not a common practice though this depended from boat to boat. No first aid training was provided, and no one on board was a trained first aid responders. Furthermore, there is no system of pre-medical checks for fishers in Thailand to determine their fitness for the job. Crew members should learn as much first aid as they can. At sea, there are only other crew members to turn to for help. If an injury happens, it should be recorded. Before the start of the fishing season, the first aid kit should be checked to make sure it is fully stocked.

The 2013 ILO report on fishing in Thailand noted that ILO C188 stipulates the availability of first aid kits on fishing vessels, and found however that, "Nearly three-fourths (73.2 per cent) of the sample group of 596 fishers affirmed that the boats they worked on had first aid kits, with no differences between long-haul and short-haul vessels. But this finding suggests that more than one-quarter of fishing vessels do not have first aid kits on board, despite the profession being dangerous enough to send one out of five fishers to a clinic or hospital as the result of a work-related injury. As the first-aid kits are usually kept in the skipper's cabin, it is possible that they would not know whether the boat had a first aid kit. But given the potential of accidents and their distance from shore, it could be argued that they should be made aware as part of occupational safety and health training."[40]

21. *Accommodation/living conditions*: The accommodation on board very much depends upon the type of fishing, the vessel, and its size. Coastal fishing within Thai waters accounts for the highest percentage of vessels in Thailand, and inshore fishing boats are usually cramped, sometimes extremely so. Accommodation spaces have to be shared and there is no privacy, and this may increase stress as well as facilitate the passage of contagious diseases.[41] Poor accommodation and resulting lack of quality sleep and rest may also contribute to fatigue.

22. *Sanitation and hygiene*: Frequently, there is a lack of clean drinking water, of decent washing facilities and toilets. Since most purse seine vessels do not have washrooms and toilets, hygiene levels are low and viral and bacterial borne diseases can spread easily, especially in a tropical climate. Clean drinking water,

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[38] WorkSafeBC: *Gearing up for safety: Safe work practices for commercial fishing in British Columbia* (WorkSafeBC, 2012), p. 14.

[39] H. Wickramatillake: "Seafaring and health with an emphasis on Asian seafarers", in *Asian-Pacific Newsletter on Occupational Health and Safety* (2011, Vol. 18, No. 2, Sep.).

[40] ILO: *Employment practices and working conditions in Thailand's fishing sector* (Bangkok, 2013), p. 59.

[41] Commission of European Communities: *Health and safety training in the fishing industry* (Luxemburg, 1993).

[42] ILO: *Employment practices and working conditions in Thailand's fishing sector* (Bangkok, 2013), p. 60.

especially when spending several days at sea, is not abundant. Often clothes are very dirty due to lack of cleaning facilities.

The ILO/NFAT/OSH Bureau consultations and field visits found that on purse seine net boats, crew accommodation was cramped (3m X 7m). There were no toilet or washroom facilities, and there was insufficient clean drinking water (only 1,000 litres, per 40 workers, per voyage). Non-potable water was also limited (4,000–5,000 litres per 40 workers per other activities/voyage), with crew often washing on deck using water out of a hold on the deck. The SEAFDEC case study also confirmed that the traditional Thai fishing boats have no toilets, bathrooms nor mess rooms. This means that the living quality of the crew in most Thai fishing boats is still low compared with other jobs on land. It is only recently that some fishing boats already have begun to have toilets or bathroom facilities.[43]

23. *Stress*: Many factors contribute to stress among seafarers. A 2009 study in Germany cited that separation from the family, time pressure, long working days and fatigue, excessive heat in workplaces and insufficient qualification of subordinate crew members were the most significant factors leading to stress on board.[44] Furthermore, harassment and bullying, anxiety, disruptive thinking and behaviour, job insecurity, loneliness, short ship turnaround times, unfriendly bunk/cabin mates, sexual abuse, lack of shore leave and addiction to alcohol and drugs were acknowledged as contributory factors for stress.[45]

24. *Personal protective equipment and work clothing*: The ILO/NFAT/OSH Bureau consultations and field visits found that on purse seine net boats, work clothing was not provided, so crews wore their own personal clothing for fishing operations. Rubber boots were only provided for those working in fish storage holds. According to the ILO/NFAT/OSH Bureau consultations and field visits, winch operators sometimes do not wear protective gloves.

25. *Alcohol* affects the ability to make good decisions; coordination and body motor control; and concentration and alertness.[46]

Thai vessel owners and skippers state that consumption of alcohol on board fishing boats is common, though they try to limit it. According to the ILO/NFAT/OSH Bureau consultations and field visits, some crew members insisted that it was their right to drink whilst on board. In response, given crew shortages, Thai vessel owners and skippers stated that refusing crew members the right to drink alcohol on board could result in the crew leaving to work on another boat where alcohol consumption was permitted.

26. Fishing crews experience a range of *extreme temperatures*, from hot sun to cooler, wet conditions, and they work in this climate without suitable clothing or protective equipment, and without sufficient drinking water. The average temperature in Thailand is 27.7°C. The warmest average high temperature is 35°C in April; the coolest average minimum/low temperature is 20°C in January.[47] In colder, deeper waters, falling into or immersion in water can result in death from hypothermia.

27. *Exposure to sun*: Working for long periods on the decks of boats means crew have prolonged exposure to UV radiation, increasing the risk of lip and skin cancer. There is also a risk of eye damage from excessive glare from the sun.

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[43] B. Chokesanguan: 2011. *Impact of fisheries management in improving safety at sea measures: A case Study in Thailand*, paper presented at the ASEAN-SEAFDEC Conference on Sustainable Fisheries for Food Security: Fish for the People 2020: Adaptation to a Changing Environment, Bangkok, 13-17 June, p. 7.

[44] M. Olsenburg et al.: "Seafaring stressors aboard merchant and passenger ships", in *International Journal of Public Health* (2009, Vol. 54, No. 2, Apr.), pp. 96-105.

[45] H. Wickramatillake: "Seafaring and health with an emphasis on Asian seafarers", in *Asian-Pacific Newsletter on Occupational Health and Safety* (2011, Vol. 18, No. 2, Sep.).

[46] FishSAFE New Zealand: *Safety guidelines for small commercial fishing vessels*, http://www.fishsafe.co.nz/guidelines/docs/Safety-guidelines-for-small-commercial-fishing-vessels.pdf [accessed 31 October 2013].

[47] http://www.climatetemp.info/thailand/ [accessed 31 Oct. 2013].

28. *Bad weather and weather forecasting*: Gales, major storms and heavy fog are significant causes of small boat accidents often resulting in sinking, capsizing, grounding, becoming lost, and collisions. However following the catastrophic natural disasters of Typhoon Gay in 1989 and the 2004 Indian Ocean Tsunami, it appears that weather forecasting systems in Thai fishing grounds have been much improved.

29. *Vessel safety*: A number of factors relating to vessel safety can produce significant risks for fishers' health and safety:

i. Unsuitable and non-seaworthy boats: The best safety equipment is the boat itself.[48] Safety features of boats relate to boat design, construction, watertight integrity, stability and machinery.[49] Principally due to a decline in fish stocks, small fishing craft in Thailand are often sailing further offshore on prolonged fishing trips but having been built for inshore fishing and day trips, these boats are too small and lack the necessary basic safety equipment. Consequently, their crews' safety has steadily deteriorated. Opinions on vessel safety in Thailand vary.[50] A SEAFDEC case study in Thailand found that more than 70 per cent of the fishing boats sampled passed the annual inspection conducted by the Thai Marine Department for docking and maintenance of engines with gear and navigational equipment installed onboard.[51] However, an FAO study on small fishing vessel safety in parts of Asia, including Thailand, concluded that, "the safety of these small fishing vessels is not under control... Regulations for registration may exist but enforcement is very much at random. Regulations for design, construction, safety equipment and crew qualifications are in most cases non-existent – though those responsible may have authority to set rules and enforce them."[52]

ii. Capsizing. Reasons causing a boat to capsize may include poor stability in bad weather, often associated with overloading, etc. Boats often capsize or sink before crew members are able to access onboard survival equipment.

iii. Loss of power on board. Many small fishing boats are powered by an outboard motor and do not carry either a spare engine or sailing rig. Loss of power may even happen to larger fishing vessels.

iv. Fire on board, and smoke inhalation. Fire extinguishers should be part of safety equipment and periodically checked by an external authority to confirm if they are in working order. Fatal poisoning is often related to the inhalation of toxic fumes caused by fires on board.

v. Lack of navigational equipment. This increases the risks of vessels become lost, straying too far out to sea, sailing too near dangerous rock or reef formations, or coastline, as well as increased risks of collision with other vessels. In Thailand, most fishing vessels conduct good maintenance of their equipment specifically the radar, GPS and echo sounders. Special attention has always been given to echo sounders, since these are used for navigation as well as for successful fishing operations.[53]

   Sound navigational equipment is also necessary to ensure that a small boat will be seen on the radar of a large ship at night to avoid collision. The radar beams sent by the large ship must be reflected by the small boat. Since fiber-reinforced plastic (FRP) or wooden boats reflect radar

[48] Marine Safety Agency: *Fishermen and safety: a guide to safe working practices* (London, 1996).
[49] A. Erlingsson: 2006. *Safety of small fishing vessels in India, Maldives, Sri Lanka and Thailand*, paper presented at the IFISH-3 Conference, Mahabalipuram, Chennai, 1-7 Feb 2006.
[50] Thai Vessels Act, B.E. 2481 (1938) as amended until Act (No. 6), B.E. 2540 (1997).
[51] B. Chokesanguan: 2011. *Impact of fisheries management in improving safety at sea measures: A case Study in Thailand*, paper presented at the ASEAN-SEAFDEC Conference on Sustainable Fisheries for Food Security: Fish for the People 2020: Adaptation to a Changing Environment, Bangkok, 13-17 June.
[52] A. Erlingsson: 2006. *Safety of small fishing vessels in India, Maldives, Sri Lanka and Thailand*, paper presented at the IFISH-3 Conference, Mahabalipuram, Chennai, 1-7 Feb 2006.
[53] B. Chokesanguan: 2011. *Impact of fisheries management in improving safety at sea measures: A case Study in Thailand*, paper presented at the ASEAN-SEAFDEC Conference on Sustainable Fisheries for Food Security: Fish for the People 2020: Adaptation to a Changing Environment, Bangkok, 13-17 June 2011, p. 6.

beams poorly, small boats need a special radar reflector. Guidance can found on how to easily make a radar reflector.[54]

vi. Poor communications. Lack of radio contact precludes efficient search and rescue action. In the SEAFDEC case study in Thailand, most fishing boats used citizen band (CB) transceivers to communicate among ships and between ships as well as to the shore. In the eastern part of the Gulf of Thailand, more than 50 per cent of fishing boats used single side band (SSB) transceivers compared with the other areas where the use of SSBs was limited to few vessels only. However, the study also confirmed that many fishing boats usually do not use VHF transceivers because VHF radio signal could not be accessed from long distances, thus, CB transceivers have been most effectively used instead.[55]

[54] For a description of how to make one, see: O. Gulbrandsen and G. Pajot: *A safety guide for small offshore fishing boats* (Madras, Bay of Bengal Programme, 1993), p. 24.

[55] Chokesanguan, B. 2011. *Impact of fisheries management in improving safety at sea measures: A case Study in Thailand*, paper presented at the ASEAN-SEAFDEC Conference on Sustainable Fisheries for Food Security: Fish for the People 2020: Adaptation to a Changing Environment, Bangkok, 13-17 June, p. 6.

Table 1: The most important jobs or places related to risk of injuries

Jobs or tasks	On board vessels injury	On shore injury
Setting and hauling trawl, purse seine and other fishing gear	Entangled in the fishing gear, winch drums and barrels or wire cables, crushing injuries, fall overboard	
Connecting trawl doors	Crushing injuries, fall overboard	
Bleeding and gutting	Cuts from knives or machines, musculoskeletal disorders	Cuts from knives or machines, musculoskeletal disorders
Long-line and hand-line	Wounds for hooks, entangled in the line	
Heavy lifting	Musculoskeletal disorders	Musculoskeletal disorders
Filleting	Cuts, amputations using knives or machines, musculoskeletal disorders	Cuts, amputations using knives or machines, musculoskeletal disorders
Trimming fillets	Cuts from knives, musculoskeletal disorders. Knife injuries, which can sometimes result in loss of fingers, are common when fish are manually beheaded, gutted, skinned or filleted on board.	Cuts from knives, musculoskeletal disorders
Work in confined spaces, loading and landing	Intoxication, asphyxia	Intoxication, asphyxia

Source: V. Rafnsson: "health problems and disease patterns", in ILO: *Encyclopedia of Occupational Health and Safety*, 4th edition, Vol. 3, Part 10 (Geneva, 1998).

ILO GMS TRIANGLE project

Safety and health training manual for the commercial fishing industry in Thailand

Part 3: Training modules on improving safety and health for fishers based on good practices

Introduction

Having outlined the various hazards and risks in fishing in Part 2, Part 3 of the Manual presents nine training modules on improving safety and health for fishers based on the participatory risk assessment approach (see the section on methodology in 'about the training manual'):

Module 1: Introduction to health and safety in fishing in Thailand
Module 2: Good practices on preventing drowning at sea including the use of safety equipment
Module 3: Good practices on machine safety
Module 4: Good practices for improving workplace organization on board
Module 5: Good practices on carrying and handling heavy and/or awkward loads
Module 6: Good practices on coping with fatigue
Module 7: Good practices on first aid on board
Module 8: Good practices on working safely in confined spaces
Module 9: Good practices for dealing with alcohol abuse on board

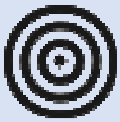
Each module outlines the aims and task, and provides supporting information, which includes the safety and health form with an example of a worked solution, and photographs and illustrations of customary practices and good practices. These modules and worked examples are not an exhaustive list but cover the main risks and hazards identified in a broad consultation process in several parts of Thailand with various stakeholders.

Trainers should introduce the module, and outline the aims, and then divide the group into smaller groups. The safety and health form is to be filled in by the groups, who will report on:

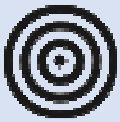
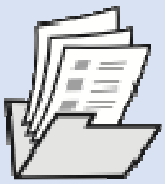
- What are the hazards?
- Who is most at risk of injury or illness?
- What actions need to be put in place to prevent injury and illness?
- Who should take action and when?

The group is then to choose a representative to report back on their findings/views. This safety and health form is intended to be monitored and reviewed, and updated as necessary. Trainers should encourage discussion around customary practices and good practices, and display and discuss the photographs and illustrations.

Training module 1
Introduction to health and safety in fishing in Thailand

Aims 	To help us to: • List the various heath and safety problems that participants have experienced, or aware of, in the fishing industry in Thailand • From this list, to select the health and safety problems most prevalent/relevant to the participants in their fishing sector as a basis for further discussion and training exercises
Task 	In a group setting: • List the main health and safety problems for discussion and work in small groups • Select 3-4 of these problems for discussion and work in small groups
Supporting information 	• See Parts 1 and 2 of this manual

Training module 2
Good practices on preventing drowning at sea including use of safety equipment

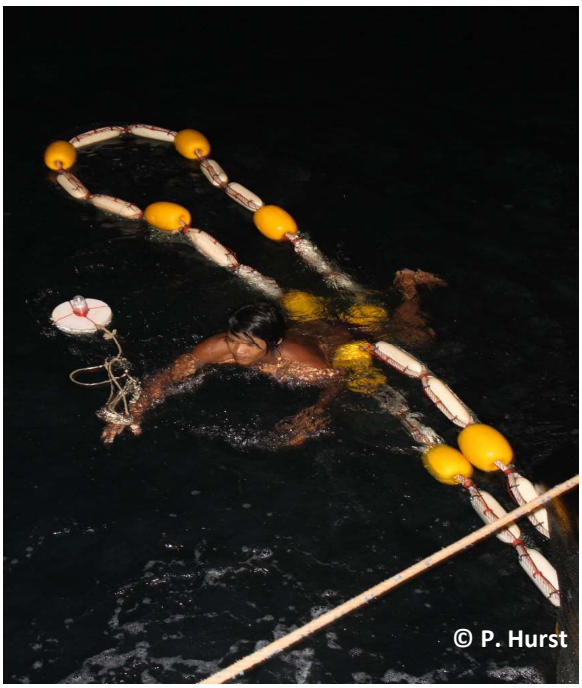
Aims 	To help us to: • Discuss the risks of drowning at sea when falling into water, being swept overboard, or through the boat sinking or capsizing • Discuss wearing and use of personal protective safety equipment
Task 	In your small group, using the supporting information and safety and health form: • In column 2 of the safety and health form, identify the risks of drowning faced by fishers, especially falling or being swept overboard • In column 3 of the safety and health form, identify the different type of procedures and safety equipment required, the wearing and use of buoyancy aids, work vests, personal floatation devices, lifejackets and lifelines • Elect a representative to report back with your group's views
Supporting information 	• See Part 2, Section 1 on drowning, and Section 2 on lack of provision of safety equipment • Safety and health form with example of a worked solution • Customary practice: photo of a crew member adjusting the ropes of the boat's starboard outrigger boom at night, without a safety line; photo of crew member opening and closing the net at night time • Good practices: illustrations of wearing a safety line and a lifeline and providing a means of getting back on board in case a crew member falls into water

Preventing drowning at sea: Safety and health form

Column 1	Column 2	Column 3	Column 4
What are the hazards?	**Who is most at risk? How could they be injured or made ill?**	**What actions need to be put in place to stop crew members being injured or made ill?**	**Who should take action? Action completed when?**
Risk of drowning from: ▪ Falling into water	Crew: ▪ Working on deck	▪ Use of buoyancy aids – work vests, personal floatation devices	▪ Action by vessel owner or skipper
▪ Being swept overboard	▪ Climbing on the outside of the boat from deck to the superstructure	▪ Use of lifelines	
	▪ Walking along the edge of the boat	▪ Coordination with search and rescue services	
	▪ Walking along outrigger booms	▪ Emergency procedures clearly identified and the crew trained in them, including: use of a buddy system; stop the boat immediately or the skipper decides to cut the nets; training the crew to rescue colleagues who are in the sea	
Record your actions, monitor and review this safety and health risk assessment form, and update when necessary. You should state the date when you next intend to review it.			

Customary practices: Preventing drowning at sea

Crew member of a purse seine fishing vessel working at night, and without a safety line, adjusting ropes on the boat's starboard outrigger boom. Gulf of Thailand.



Night fishing on a purse seine fishing boat. Crew member (one on either side of the vessel) in the water for long periods when the net is in use, helping with its opening and closing, including placing warning lights on the net. Gulf of Thailand.

Good practices: Preventing drowning at sea and use of personal safety equipment.

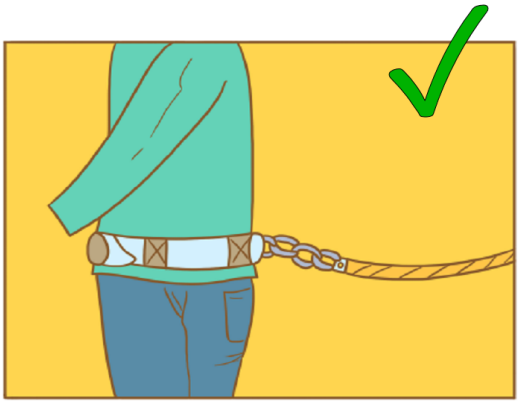
The survival of workers awaiting rescue from water will be aided by the wearing of appropriate buoyancy aids (including marine work vests and personal flotation devices) or life jackets, and by the availability of ladders and life-saving equipment, including chains, handholds, lifelines, or other means to enable persons to support themselves in the water. The emergency arrangements should take into account the fact that it will not be appropriate for many workers to wear buoyancy aids or life jackets at all times.[56] Buoyancy aids (including marine work vests, and personal flotation devices) only provide support to conscious wearers who are able to swim and help themselves. Buoyancy aids may be suitable in sheltered water where there are other persons in the vicinity and rescue can be expected very quickly. Such garments are lightweight and offer very little hindrance to movements.[57] Life jackets will support their wearers, particularly those who are unable to swim, injured, exhausted, or unconscious. Life jackets are the most effective means to prevent drowning, and modern designs of the self-inflating type allow them to be worn by workers undertaking manual tasks such as the mooring of ships.[58] If your personal floatation device or lifejacket is not inherently buoyant, it must be automatically inflatable and must also have a manual inflation system. Manual-only inflatable devices are not acceptable.[59]

Lifelines: If falling directly into the sea is a possibility, for example, when adjusting ropes on the outrigger on a purse seine net vessel – a lifeline should be used. The lifeline is longer than the maximum fall and is attached to the handrail or some other part of the vessel, with the other end attached to the fisher's belt. In this way the body falls freely into the water but is not completely submerged, allowing the person to

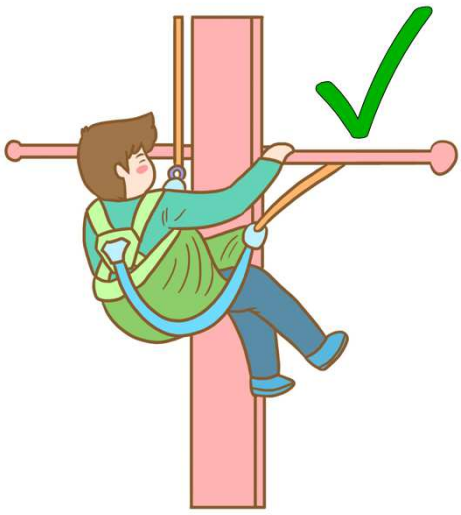
[56] ILO: *ILO Code of practice, safety and health in ports* (Geneva, 2005), pp. 436-437.

[57] ILO: *ILO Code of practice, safety and health in ports* (Geneva, 2005), p. 437.
[58] ILO: *ILO Code of practice, safety and health in ports* (Geneva, 2005), p. 437.
[59] WorkSafeBC: *Gearing up for safety: Safe work practices for commercial fishing in British Columbia* (WorkSafeBC, 2012), p. 50.

remain on the surface holding on to the lifeline. The lifeline end attached to the vessel must be easily accessible so that it can be hauled in without difficulty.[60]



When heavy weather or work conditions require it, crew should wear a safety line to protect themselves from falling overboard.

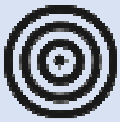


When working aloft, wear a lifeline.

[60] Commission of European Communities: *Health and safety training in the fishing industry* (Luxemburg, 1993), p. 51.

Provide a means of getting back on board in case a crew member falls into the water.

Training module 3
Good practices on machinery safety

Aims 	To help us to: • Discuss the most dangerous machinery on Thai fishing boats • Work out what health and safety actions need to be taken to protect crew members, by who, and when
Task 	In your small group, using the supporting information and safety and health form: • Identify the most dangerous machinery in your/Thai fishing boat(s). Record your findings in column 1 • For each piece of dangerous machinery, identify which crew member are most at risk of injury, and the nature of the injuries they could suffer. Record your findings in column 2 • For each piece of dangerous machinery, list the safety measures/actions that need to be put in place to prevent crew members from being injured or killed. Record your findings in column 3 • In column 4, identify who should be responsible for taking the safety/health actions you have identified (vessel owner, skipper). Can any actions be delegated to crew supervisor? • Elect a representative to report back with your group's views
Supporting information 	• See Part 2, Section 10 on machinery and equipment • Safety and health form with example of a worked solution • Customary practice: photo of an unguarded winch without an emergency stop button; photo of an operator using his hand to guide the rope • Good practices: operator's checklist and illustrations of the winch, and using a tool to keep the winch line spooling properly in the drum

Machinery safety: Safety and health form

Column 1	Column 2	Column 3	Column 4
What are the hazards?	**Who is most at risk? How could they be injured or made ill?**	**What actions need to be put in place to stop crew members being injured or made ill?**	**Who should take action? Action completed when?**
▪ Powered winch used for hauling in nets etc.	▪ Winch operator ▪ Risk of loss of fingers or hands, broken arm etc.	1. Guard the winch drum with a simple net guard (see illustration) or hand rail	1. Action by vessel owner or skipper
		2. Fit each winch, if possible, with an emergency stop button (see illustration)	2. Action by vessel owner
		3. Provide clear access to winches, removing objects blocking access so in case of emergency, there is rapid access to the winch operator	3. Action by skipper
		4. Ensure that there is another worker keeping an eye on the winch operator who is ready to respond in case of emergency	4. Action by crew supervisor
		5. Ensure good communication with the bridge in case of an emergency in which the winch needs to be switched off	5. Action by crew supervisor
▪ Unguarded propeller shaft in the engine room	▪ Risk of entanglement and loss of limbs	▪ Enclose the propeller shaft so all moving parts are properly guarded	▪ Action by vessel owner
		▪ Train operators in correct use of propeller shaft guards	
Record your actions, monitor and review this safety and health risk assessment form, and update when necessary. You should state the date when you next intend to review it.			

Customary practices: machine safety

Customary practice: Purse seine net fishing boat with an unguarded power winch without an emergency stop button. Samut Sakhon port

Customary practice: Unguarded winch with no emergency stop button where the winch operator has his hand incorrectly and dangerously placed directly on the winch to guide the rope. Risk of serious entanglement.

Good practices: Machinery safety

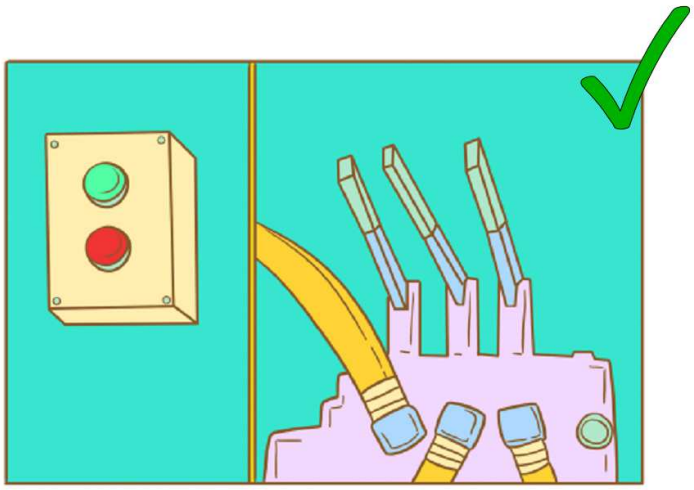
Operator's checklist

1. You know how to stop the machine before you start it;
2. All guards are in position and all protective devices are working;
3. The area around the machine is clean, tidy and free from obstructions;
4. You tell your crew supervisor at once if you think a machine is not working properly or any safeguards are faulty;
5. You are wearing appropriate protective clothing and equipment, such as gloves

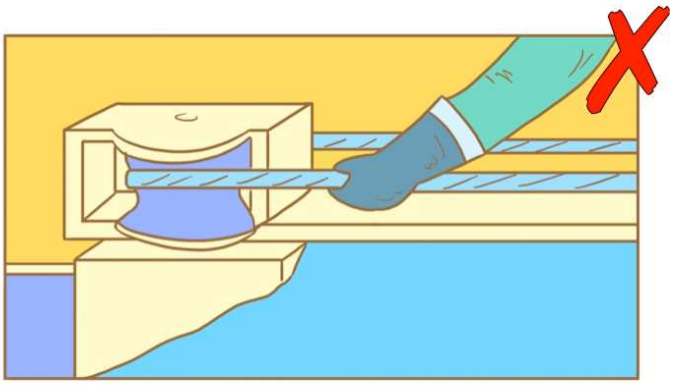
Actions that can be put in place to stop crew members being injured or made ill

a) Moving parts of power-operated equipment – such as chain and belt drives, gearing, and shafting – must be GUARDED to avoid allowing hands, arms, feet or clothing to be caught.

b) Winches, drums, capstans, and similar equipment must have a master on/off switch (emergency stop button) on deck that is easy to reach. This ensures equipment can be stopped quickly if someone or something gets caught in it. Make sure the switch is clearly marked and crew members know where to find it (see illustration below). An additional switch in the wheelhouse is also good practice.



Winch with a master on/off switch (emergency stop button).

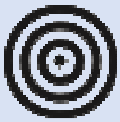


Customary practice: Furthermore, never use moving lines as a handhold. In the illustration above, the winch has a safety guard, but the operator - incorrectly - is using the moving line as a handhold.

Good practice: The safe procedure is to use a tool, not your hand, to keep the winch line spooling properly in the drum.

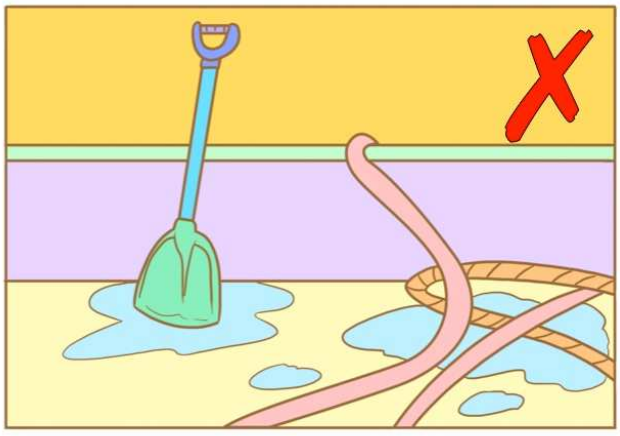
A Thai crew supervisor who lost his left arm years before while operating the winch, Samut Sakorn © ILO.

Training module 4
Good practices on improving workplace organization on board

Aims 	To help us to: • Identify the safety and health risks arising from poor workplace organization and practices • Identify good practices to reduce injuries by improving workplace organization and good practices
Task 	In your small group, using the supporting information and safety and health form: • In column 1, list the types of poor workplace organization and practices that could result in accidents and injuries • In column 2, identify which crew members are at particular risk from the various poor workplace organization and practices, and the possible nature of their injuries • In column 3, identify and list the good practices that need to be in place to improve workplace organization and practices • In column 4, identify who should be responsible for taking the safety/health actions you have identified (vessel owner, skipper). Can any actions be delegated to crew supervisor? • Elect a representative to report back with your group's views
Supporting information 	• See Part 2, Section 4 on poor work organization on board • Safety and health form with example of a worked solution • Customary practices: illustrations of poor workplace organization and procedures • Good practices: illustrations on good workplace organization and procedures on the use of hoses, tools, equipment, ladders and suspended loads

Improving workplace organization on board: Safety and health form

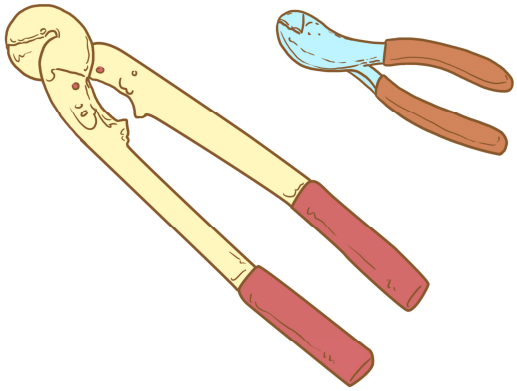
Column 1 What are the hazards?	Column 2 Who is most at risk? How could they be injured or made ill?	Column 3 What actions need to be put in place to stop crew members being injured or made ill?	Column 4 Who should take action? Action completed when?
▪ Passageways are cluttered or blocked with stored equipment/gear, causing slipping and tripping hazards, and blocking emergency access/exit	▪ All crew members. Injuries ranging from cuts, to twisted ankles and broken bones	▪ Unblock passageways connected with emergency access, e.g. to power winches ▪ Improve crew training on good workplace organization and practices ▪ Ensure fuel line leaks are speedily and thoroughly cleared up	▪ Action by skipper and crew supervisor(s) ▪ Immediate action to unblock passageways and store gear correctly
▪ Poor storage of items. Slipping and tripping hazards	▪ All crew members. Injuries ranging from cuts, to twisted ankles and broken bones	▪ Use existing storage space more efficiently or increase storage space to correctly store equipment/gear ▪ Keep fishing equipment organized orderly and train crew on this issue	▪ Skipper in coordination with crew supervisor(s); within one month
Record your actions, monitor and review this safety and health risk assessment form, and update when necessary. You should state the date when you next intend to review it.			



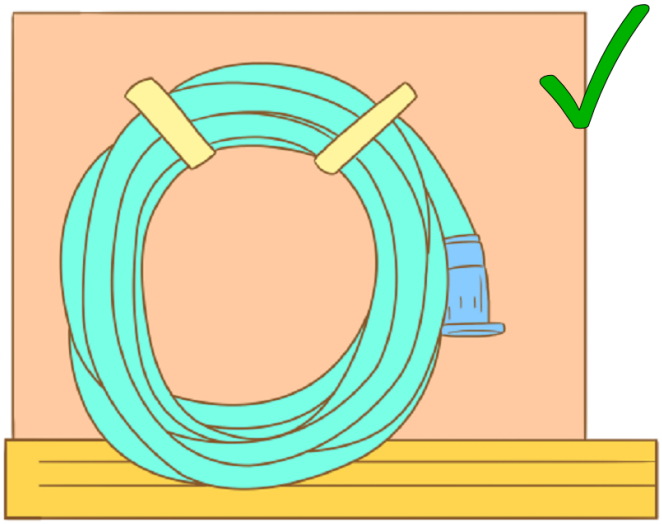
Customary practice: Uncoiled ropes, and tools, left lying around where crew can trip over them.

Good practices: Improving workplace organization

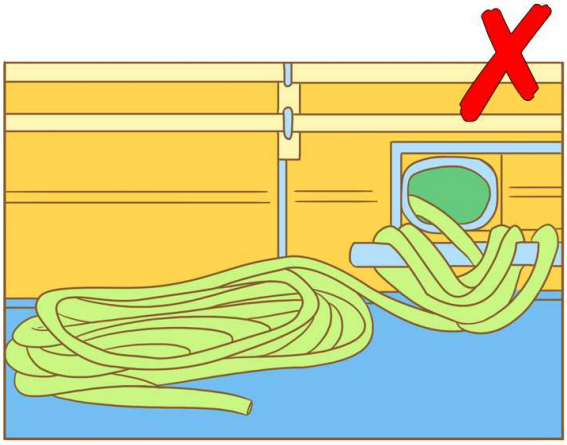
Keep passageways clear. Don't store gear in them. Do not block access to winches where rapid access is vital in case of emergencies. All work areas – including decks, the engine room, the wheelhouse, and the anchor area – must be kept free of slipping and tripping hazards.



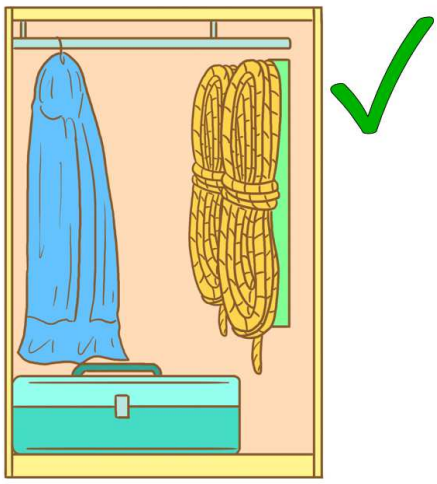
Keep a bolt or wire cutter (or knife) on board to cut lines or gear that is tangled or needs to be cut away quickly.



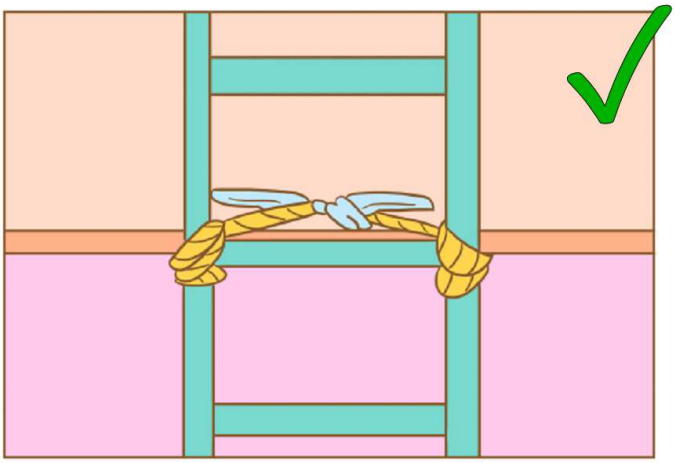
When not using water hoses, coil them on brackets.



Coil and stow lines at all times.



Tools and equipment must be securely stowed when not in use.



Ladders must be of sound design and in good condition. When using portable ladders, they must be secured.

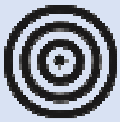
Never stand or walk under a suspended load.

Never pass a boom — loaded or unloaded — over crew member, if possible.

Keep the load as low to the deck as possible:

- To avoid the risk of lifting the load over crew members
- To keep the weight low to avoid swing hazards.

Training module 5
Good practices on carrying and handling heavy and/or awkward loads

Aims 	To help us to: • Identify the types of injuries which can result from carrying and handling awkward and heavy loads • Identify safe carrying and handling methods
Task 	In your small group, using the supporting information and safety and health form: • In column 1, list the types of lifting and/or handling (bending, stooping, reaching out) of heavy/awkward loads most likely to give you problems – with your back, shoulders, arms, wrists, muscles, hips, knees, legs, or other parts of your body • In column 2, describe which crew members are at particular risk from the types of lifting and/or handling of heavy/awkward loads, and how • In column 3, list how lifting and/or handling of heavy loads could be improved by the use of machinery, crew training in lifting techniques and so on • In column 4, identify who should be responsible for taking the safety/health actions you have identified (vessel owner, skipper). Can any actions be delegated to crew supervisor? • Elect a representative to report back with your group's views
Supporting information 	• See Part 2, Section 5 on physically demanding work and musculoskeletal problems • Safety and health form with example of a worked solution • Customary practice: photo of hauling in the net with its catch • Good practices: illustrations on good practices in lifting a heavy load

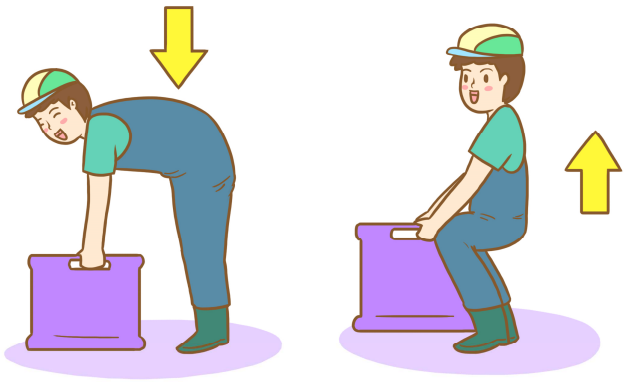
Carrying and handling heavy and/or awkward loads: Safety and health form

Column 1 **What are the hazards?**	Column 2 **Who is most at risk? How could they be injured or made ill?**	Column 3 **What actions need to be put in place to stop crew members being injured or made ill?**	Column 4 **Who should take action? Action completed when?**
▪ Shooting and hauling in nets	▪ Crew members involved in shooting and hauling in nets ▪ Risk of musculoskeletal injuries	▪ Training in correct lifting and handling techniques by competent person(s). The skipper to participate in the training as well	▪ Action by skipper and crew supervisor
▪ Handling loads that weigh more than 20kg	▪ All crew members	▪ Use proper lifting techniques	▪ Fishing boat owner, skipper
▪ Recovering trawls from the sea – ropes may coil and lead to broken ribs	▪ Crew members who hold the ropes	▪ Use the winch to recover trawls	
▪ Using the swing to scoop the fish – may cause sprains	▪ All crew members	▪ Use the hoist to lift	
▪ Culling fish with improper posture	▪ All crew members	▪ Demonstrate proper posture	
Record your actions, monitor and review this safety and health risk assessment form, and update when necessary. You should state the date when you next intend to review it.			

Customary practice: Purse seine net fishing vessel. Hauling in the net with its catch of sardines, Gulf of Thailand.

Good practices: Carrying and handling heavy and/or awkward loads

All crew must be taught safe lifting techniques. Bend your knees and lift with your legs, not your back. Keep the weight close to your body. Use a hoist or winch, or ask for help if something is too heavy to lift by yourself. Don't take chances – back injuries can end your working life.

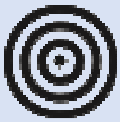


Good practice for carrying and handling heavy and/or awkward load.

Correct manual lifting and handling procedures to be followed:

- Use mechanical lifting equipment or trolleys to move heavy items
- Get help when lifting heavy items
- Remember to follow these safe lifting methods:
    - squat to pick up the object and lift using your leg muscles not your back;
    - lean close, keeping the heavy item against your body; and
    - move your feet to turn, do not twist your body.
- Set up your work station so that everything is at elbow level and easy to reach
- Find a comfortable position to work in. Change your position during the day. Change position while standing, move around
- Take a rest break every 2-3 hours, even a short break helps to stretch the body
- Take turns with other workers to do different types of tasks if possible

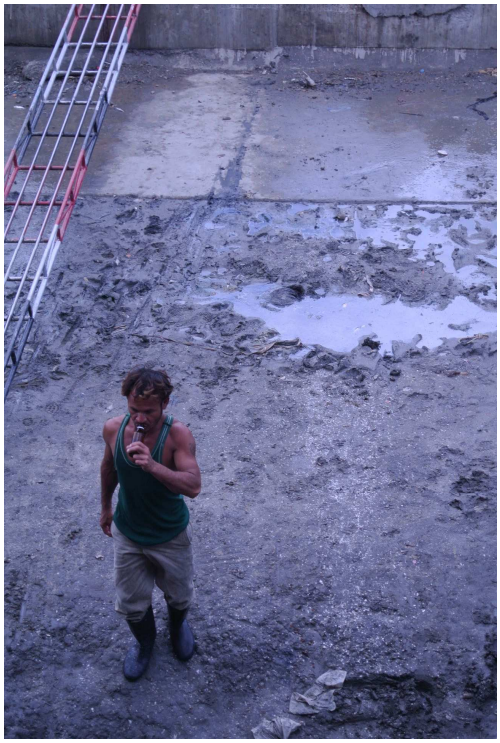
Training module 6
Good practices on coping with fatigue

Aims 	To help us to: • Identify the signs, symptoms and cause of fatigue (extreme tiredness through lack of sleep and a sense of exhaustion), on coastal and/or overseas/deep sea fishing boats • Discuss what types of practical measures could be taken on coastal and/or overseas/deep sea boats to lessen fatigue
Task 	In your small group, using the supporting information and safety and health form: • Discuss the main signs, symptoms and causes of fatigue on coastal and/or overseas/deep sea fishing boats, referring to the fatigue checklist • Discuss what types of practical measures could be taken on coastal and/or overseas/deep sea fishing boats to lessen fatigue, and how such measures could be put into effect and maintained • Elect a representative to report back with your group's views
Supporting information 	• See Part 2, Section 18 on fatigue • Safety and health form with example of a worked solution • Good practices: action points • Customary practice: Photo of fisher drinking red bull to stay awake

The Work in Fishing Convention, 2007 (No. 188), Article 14 (b) stipulates that minimum hours of rest for vessels at sea for three or more days shall not be less than:
(i) ten hours in any 24-hour period; and
(ii) 77 hours in any seven-day period.

Action points
There is no one way to manage fatigue. The solutions need to fit your vessel, its operation, and the skipper and crew who work on board. If fatigue is a problem on board, then owners, skippers, crew supervisor and crew should be involved in finding solutions to the problem. Make sure everyone regularly has time off for sleep. A minimum of six hours continuous sleep in every 24 hours is recommended (time sleeping is not the same as time off). Take short naps whenever possible (40 minute and two hours are the best if you want to work soon after waking up). This works best before a person actually gets tired.[61]

[61] FishSAFE New Zealand: *Safety guidelines for small commercial fishing vessels*, http://www.fishsafe.co.nz/guidelines/docs/Safety-guidelines-for-small-commercial-fishing-vessels.pdf, pp. 90-92 [accessed 31 Oct. 2013].



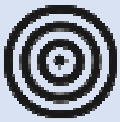
Customary practice: Fisher drinking energy drink to stay awake © ILO.

Coping with fatigue: Safety and health form

Column 1	Column 2	Column 3	Column 4
What are the hazards?	**Who is most at risk? How could they be injured or made ill?**	**What actions need to be put in place to stop crew members being injured or made ill?**	**Who should take action? Action completed when?**
▪ Accidents relating to machines, seafaring and fishing	▪ Skipper, crew	▪ Have a rest period of at least 10 hours a day or 77 hours per week. Take proper rest during travel times to and from fishing grounds or between casting and hauling in the net	▪ Action by skipper
▪ Diseases caused by working including heart disease, cancer or gastritis	▪ All crew members	▪ Have a rest period of at least 10 hours a day or 77 hours per week	▪ Action by skipper
Record your actions, monitor and review this safety and health risk assessment form, and update when necessary. You should state the date when you next intend to review it.			

Note: The rest period should be a time without any work. Therefore the time of repairing the trawl is not considered rest time.

Training module 7
Good practices on first aid on board

Aims 	To help us to: • Identify current levels of first aid onboard on both purse seine net fishing boats and overseas/deep sea trawlers, including provision of first aid kits and trained first aiders who are also trained in resuscitation techniques • Identify what types of improvement to first aid are needed for both purse seine net fishing boats and overseas/deep sea trawlers
Task 	In your small group, using the supporting information and safety and health form: • Discuss whether first aid kits are provided and whether any crew members have first aid training • Discuss improvements such as the provision of first aid kits, their storage onboard, and which crew members could be trained as first aiders (including resuscitation techniques) • Elect a representative to report back with your group's views
Supporting information 	• See Part 2, Section 20 on first aid provision and training and medical care • Safety and health form with example of a worked solution • Good practices: first aid kit provisions

The Work in Fishing Convention, 2007 (No. 188) Article 29 on medical care states that "each Member shall adopt laws, regulations or other measures requiring that:

(a) "fishing vessels carry appropriate medical equipment and medical supplies for the service of the vessel, taking into account the number of fishers on board, the area of operation and the length of the voyage;

(b) fishing vessels have at least one fisher on board who is qualified or trained in first aid and other forms of medical care and who has the necessary knowledge to use the medical equipment and supplies for the vessel concerned, taking into account the number of fishers on board, the area of operation and the length of the voyage."

For fishing vessels of 24 metres in length or over, for example overseas/deep sea trawlers, the Convention contains additional medical care requirements in Article 30.

Good practices on first aid: Safety and health form

Column 1	Column 2	Column 3	Column 4
What are the hazards?	**Who is most at risk? How could they be injured or made ill?**	**What actions need to be put in place to stop crew members being injured or made ill?**	**Who should take action? Action completed when?**
▪ Lack of first aid kit trained first aider(s)	▪ All crew	▪ Provide level 1 first aid kit (see below), store in a place known to all workers and easily accessible	▪ Action by skipper
		▪ Train some crew members as first aiders	▪ Action by skipper
		▪ Training on resuscitation techniques by professionally qualified trainers	▪ Vessel owner to organize provision of this training
Record your actions, monitor and review this safety and health risk assessment form, and update when necessary. You should state the date when you next intend to review it.			

Customary practice: Captain of the purse-seine vessel shows the basic medical supplies kept on board, bandages and painkillers © ILO.

Good practices: First aid kit provisions

Basic first aid kit: First aid items must be kept clean and dry and must be ready to take to the scene of an accident. A weatherproof container is recommended.

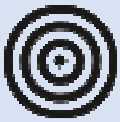
12 14 cm x 19 cm wound cleansing towelettes, individually packaged

30	hand cleansing towelettes, individually packaged
50	sterile adhesive dressings, assorted sizes, individually packaged
6	10 cm x 10 cm sterile gauze dressings, individually packaged
2	10 cm x 16.5 cm sterile pressure dressings with crepe ties
2	20 cm x 25 cm sterile abdominal dressings, individually packaged
4	cotton triangular bandages, minimum length of base 1.25 m
2	safety pins
1	14 cm stainless steel bandage scissors or universal scissors
1	11.5 cm stainless steel sliver forceps
6	cotton tip applicators
1	2.5 cm x 4.5 m adhesive tape
1	7.5 cm x 4.5 m crepe roller bandage
1	pocket mask with a one-way valve and oxygen inlet
6	pairs of medical gloves (preferably non-latex)
1	instruction card advising workers to report any injury to the employer for entry in the first aid records, and how a worker is to call for assistance

Level 1 first aid kit: A weatherproof container is recommended for all items except the blankets. Blankets should be readily available to the first aiders on board.

3	blankets
24	14 cm x 19 cm wound cleaning towelettes, individually packaged
60	hand cleansing towelettes, individually packaged
100	sterile adhesive dressings, assorted sizes, individually packaged
12	10 cm x 10 cm sterile gauze dressings, individually packaged
4	10 cm x 16.5 cm sterile pressure dressings with crepe ties
2	7.5 cm x 4.5 m crepe roller bandages
1	2.5 cm x 4.5 m adhesive tape
4	20 cm x 25 cm sterile abdominal dressings, individually packaged
6	cotton triangular bandages, minimum length of base 1.25 m
4	safety pins
1	14 cm stainless steel bandage scissors or universal scissors
1	11.5 cm stainless steel sliver forceps
12	cotton tip applicators
1	pocket mask with a one-way valve and oxygen inlet
6	pairs of medical gloves (preferably non-latex)
	first aid records and pen

Training module 8
Good practices on working safely in confined spaces

Aims 	To help us to: • Discuss the problem of working in confined spaces, such as fish storage, holds • Identify preventative and emergency procedures
Task 	In your small group, using the supporting information and safety and health form: • In column 1, identify and record the risks associated with working in oxygen deficient spaces where there may also be an accumulation of toxic gases such as hydrogen sulphide • In column 2, identify what type of safety measures and emergency procedures need to be put in place • Elect a representative to report back with your group's views
Supporting information 	• See Part 2, Section 16 on confined spaces and asphyxiation • Safety and health form with example of a worked solution • Good practices: operator's checklist on working safely in confined spaces

Working safely in confined spaces: Safety and health form

Column 1	Column 2	Column 3	Column 4
What are the hazards?	**Who is most at risk? How could they be injured or made ill?**	**What actions need to be put in place to stop crew members being injured or made ill?**	**Who should take action? Action completed when?**
▪ Working in confined spaces, e.g. fish holds, where is a lack of oxygen as well as poisonous gases	▪ Crew member(s) working in the confined space ▪ Rescuers also at risks if not properly trained and equipped	▪ Supervisor to control the work at all times ▪ Ventilation of the confined space prior to entry ▪ Operator to wear safety harness attached to a safety line held by a worker outside ▪ Emergency procedures in place including rescue harness and first aid	▪ Action by crew supervisor
Record your actions, monitor and review this safety and health risk assessment form, and update when necessary. You should state the date when you next intend to review it.			

Good practices: Working safely in confined spaces

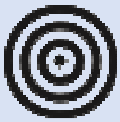
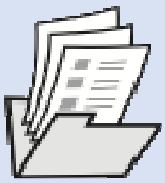
Make sure you have a safe system for working inside the confined space. Use the results of your findings on your safety and health form to help identify the necessary precautions to reduce the risk of injury[62]. Before entering compartments, hulls, or engine rooms that have been closed for some time, allow outside air to circulate through for a few minutes.

Operator's checklist

- Appointment of a supervisor
- Are persons suitable for the work?
- Check the size of the entrance
- Cleaning before entry
- Provision of ventilation - open doors, hatches and ports so that the space can be fully ventilated
- Testing the air
- Check how the alarm is raised
- Preparation of emergency arrangements including communications
- Wear a safety harness with a safety line attached, held by someone outside the confined space so they can pull you out if a problem occurs
- Provision of a rescue harnesses - lifelines attached to harnesses should run back to a point outside the confined space
- Properly trained and equipped rescuers.

[62] Health and Safety Executive: *Confined spaces: a brief guide to working safely*, 2013, http://www.hse.gov.uk/pubns/indg258.pdf [accessed 31 Oct. 2013).

Training module 9
Good practices for dealing with alcohol abuse on board

Aims 	To help us to: • Address the problem of alcohol consumption on board fishing vessels, and to discuss possible solutions to the problems • Discuss ways of tackling excessive alcohol consumption on board your boat • Discuss what collective measures to tackle the alcohol problem could be taken by vessel owners and skippers
Task 	In your small group, using the supporting information and safety and health form: • In your opinion, does excessive alcohol consumption increase the risk of accidents onboard your fishing vessel? Are there any examples you could give of the effects of over consumption of alcohol on your boat? • Vessel owners and skippers often say that if they limit alcohol consumption too severely, crew members will leave the boat to work on another boat where such restrictions do not apply. Is this a true statement? What could be done by vessel owners and skippers working together collectively to establish rules and procedures to deal with alcohol abuse on board their vessels? • Elect a representative to report back with your group's views
Supporting information 	• See Part 2, Section 25 on alcohol • Good practices: action points

Action Points

If you regularly drink more than 35 units a week you are probably already experiencing things like feeling tired or depressed, putting on weight, memory loss, sleeping badly and having sexual problems. You could also suffer from high blood pressure. If you are drunk or hungover at sea you are potentially a risk to everyone on the boat. Some people are argumentative if they drink a lot, even when they are sober. It can be confusing trying to work out how many units of alcohol you are drinking as alcohol content in drinks varies so much.

Develop rules on the consumption of alcohol at work which should apply to everyone on board. It should be developed in consultation with crew.[63]

[63] FishSAFE New Zealand: *Safety guidelines for small commercial fishing vessels*, http://www.fishsafe.co.nz/guidelines/docs/Safety-guidelines-for-small-commercial-fishing-vessels.pdf, pp. 96-97 [accessed 31 Oct. 2013].

Checklist for Carrying out Your Own Safety and Health Risk Assessment on Your Fishing Vessel

Workplace: Fishing deck and bridge

1. Subject: Falling or being knocked overboard

Risk: Drowning

Questions

- Are emergency procedures clearly identified and the crew trained in them?
- Are safety lines and flotation devices readily to hand?
- Are there means of contacting other fishing vessels in the vicinity?

2. Subject: Lifting and hauling

Risk: Being struck by objects during lifting, musculoskeletal injuries when lifting and handling heavy and awkward loads

Questions

- Are you wearing an approved safety helmet?
- Are you using a lead-line?
- Are you familiar with the hand-signs used in hoisting work?
- Are you using approved lifting gear, cables and slings?
- Do you know the correct lifting position?
- Do you lift heavy things together?
- Do you regularly rotate physical work with another person?

3. Subject: Order and tidiness

Risk 1: Falling through openings in the floor

Questions

- Are you aware of openings in the floor such as gratings, tank covers, hatches, etc.?
- Are openings in the floor adequately covered?
- Are openings in the floor adequately fenced off?

Can you work at a safe distance from the opening?

Risk 2: Being struck by objects that are inadequately secured or not properly stowed; and getting entangled or inability to move above the vessel freely and quickly in case of emergency due to clutter and poorly stowed objects

Questions

- Are all loose objects secured?
- Have all ropes, cables and hoses been so arranged that no one can get entangled?
- Can water containers be removed from bridge area and water and be stored in other types of non-passage blocking containers?

Risk 3: Inability to move above the vessel freely and quickly in case of emergency due to clutter and poorly stowed objects

Questions

- Can water containers be removed from bridge area and water and be stored in other types of non-passage blocking containers?

4. Subject: Communication

Risk: Accident/incident due to unfamiliarity with the safe way of working, lack of visibility, and miscommunication due to lack of common language between crew and bridge

Questions

- Do you know what is expected of you?
- Do you know how to carry this out in the right way?
- Do you know how to carry this out safely?
- Do you always have a clear unblocked view of the workplace from the bridge?
- Are there any alarm systems?

5. Subject: Personal protective equipment (PPE)
Risk: Injury through failure to use PPE, improper use or incorrect PPE
Questions

- Do you have all your PPE in case you have to help on the deck?
- Do you know how to use the PPE?
- Is the PPE still approved?
- Do the people on the stern deck wear the PPE before starting work?
- Deck: work vests and life jacket
- In the hold: gloves and boots

6. Subject: Hauling and shooting nets
Risk: Trapping, injuries from being struck, being knocked overboard,
Questions

- Is the crew on the deck wearing PPE?
- Is the right means of securing the net used? It is better to have longer lines than to join two lines with eyelets
- Are people standing in safe places?
- Is everyone in sight when the winch starts up?
- Are all objects out of the direction of tow of the net so that they cannot become entangled in the net?
- Are there emergency stop buttons? Do you know where they are?
- Are there at least two qualified people on the bridge when hauling and shooting nets?

7. Subject: Machinery (mechanical/electrical/thermal) and protection (emergency stops/insulation/screening)
Risk: Trapping and injury owing to unsafe use
Questions

- Do you know how the controls of the equipment work?
- Is there an emergency stop button? Do you know where it is?
- Do you have an overview of the area around the equipment or machine?
- Do you know what protective devices there are on the equipment you are going to work with, and where they are?
- Are colleagues in the safe working zones and out of range of the equipment
- Do the protective devices work? Consider:
    - Zero-voltage protection
    - Are moving parts adequately guarded or screened off?
- Are all sharp parts screened off?
- Are all sharp parts that cannot be screened off marked with black/yellow warning tape?

8. Subject: Working at height
Risk: Falling from a height, including falling into the water and drowning
Questions

- Can the place where you have to work be reached by permanent stairs?
- When the workplace has to be reached by a ladder, does this have a climbing cage?
- If the workplace cannot be reached via permanent stairs or a ladder with climbing cage, do you then use an approved safety harness or line?

Annexes

Annex 1: OSH-related articles in the Work in Fishing Convention, 2007 (No. 188)

Globally, ILO Convention No. 188 aims to provide fishers with:

1. A safe and secure workplace that complies with safety standards
2. Fair terms of employment
3. Decent working and living conditions on board ship
4. Health protection, medical care, welfare measures and other forms of social protection

Responsibilities of fishing vessel owners, skippers and fishers are laid down in Article 8:

8.1 The fishing vessel owner has the overall responsibility to ensure that the skipper is provided with the necessary resources and facilities to comply with the obligations of this Convention.

8.2 The skipper has the responsibility for the safety of the fishers on board and the safe operation of the vessel, including but not limited to the following areas:
(a) Providing such supervision as will ensure that, as far as possible, fishers perform their work in the best conditions of safety and health;
(b) Managing the fishers in a manner which respects safety and health, including prevention of fatigue;
(c) Facilitating on-board occupational safety and health awareness training; and
(d) Ensuring compliance with safety of navigation, watch-keeping and associated good seamanship standards.

8.3 The skipper shall not be constrained by the fishing vessel owner from taking any decision which, in the professional judgement of the skipper, is necessary for the safety of the vessel and its safe navigation and safe operation, or the safety of the fishers on board.

8.4 Fishers shall comply with the lawful orders of the skipper and applicable safety and health measures.

2. Minimum age for employment on Thai fishing boats

Provisions in Ministerial Regulation 10 of the Labour Protection Act of 1998 (LPA) prohibit the employment of children under 15 on fishing boats. However, children aged between 15 and 16 years of age can work on a marine fishing vessel if their mother or father works on the same vessel, or if the mother, father, or guardian gives written permission for the child to work.[64]

Article 9 of the Work in Fishing Convention, 2007 (No. 188) deals with the minimum age for employment. The Convention stipulates that:

- The minimum age for work on board a fishing vessel shall be 16 years. However, the competent authority may authorise a minimum age of 15 for persons who are no longer subject to compulsory schooling as provided by national legislation, and who are engaged in vocational training in fishing.
- The competent authority may authorise persons of the age of 15 to perform light work during school holidays. In such cases, it shall determine, after consultation, the kinds of work permitted and shall prescribe the conditions in which such work shall be undertaken and the periods of rest required.
- The minimum age for assignment to activities on board fishing vessels, which by their nature or the circumstances in which they are carried out are likely to jeopardize the health, safety or morals of young persons, shall not be less than 18.
- The engagement of fishers under the age of 18 for work at night shall be prohibited.

[64] Based on interviews with migrant fishermen, it does not appear that fishing boat owners are complying with the above-mentioned provisions of Ministerial Regulation 10, except for prohibiting the employment of children under 15 (Source: International Organization for Migration: *Trafficking of fishermen in Thailand*, (Bangkok, 2011)).

- Night shall be define in accordance with national law and practice. It shall cover a period of at least nine hours starting no later than midnight and ending no earlier than 5 a.m. An exception to strict compliance with the night work restriction may be made by the competent authority when: (a) the effective training of the fishers concerned, in accordance with established programmes and schedules, would be impaired; or (b) the specific nature of the duty or a recognised training programme requires that fishers covered by the exception perform duties at night and the authority determines, after consultation, that the work will not have a detrimental impact on their health or wellbeing.

Safety and health training manual for the commercial fishing industry in Thailand

The GMS TRIANGLE project and NFAT are working together to strengthen protection for fishers in a number of areas, and have identified occupational safety and health as a particular concern. There is broad recognition that work in fishing can be hazardous. OSH training and the risk assessment approach is included under the Operational Principles of the NFAT Code of Conduct; however, specific training materials do not exist.

The Manual first outlines the various hazards and risks in fishing, and then presents modules for addressing these – based on the participatory risk assessment approach. The training is targeted at skippers, crew supervisors and vessel owners – as well as members of fisheries associations at national and provincial levels, and is designed primarily for purse seine boats and trawlers. This Manual has been developed in consultation with ILO, NFAT, and the OSH Bureau in the Department of Labour Protection and Welfare, Ministry of Labour. Inputs were also provided by the Department of Fisheries, the Marine Department, the Southeast Asian Fisheries Development Centre (SEAFDEC), and the Foundation for AIDS Rights (FAR). These partners will also be involved in the delivery of these training materials, and will continue to cooperate to prevent and reduce fatalities, injuries and ill health in the fishing sector in Thailand.

The **Tripartite Action to Protect the Rights of Migrant Workers within and from the Greater Mekong Subregion** (GMS TRIANGLE project) is a five-year project that aims to strengthen the formulation and implementation of recruitment and labour protection policies and practices in the Greater Mekong Subregion, to ensure safer migration resulting in decent work. The project is operational in six countries: Cambodia, Lao People's Democratic Republic, Myanmar, Malaysia and Viet Nam. In each country, tripartite constituents (government, workers' and employers' organizations) are engaged in each pf the GMS TRIANGLE project objectives – strengthening policy and legislation, building capacity of stakeholders and providing services to migrant workers. These goals are interdependent, with policy advocacy and capacity building activities driven by the voices, needs and experiences of workers, employers, and service providers.

ILO Regional Office for Asia and the Pacific
United Nations Building
Rajdamnerrn Nok Avenue
Bangkok 10200, Thailand
Tel.: +662 288 1234 Fax: +662 288 3062

Email: BANGKOK@ilo.org www.ilo.org/asia

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ISBN 9789221284703