

International Hazard Datasheets on Occupation



Indigenous Fisherman Diver

What is a Hazard Datasheet on Occupation?

This datasheet is one of the International Datasheets on Occupations. It is intended for those professionally concerned with health and safety at work: occupational physicians and nurses, safety engineers, hygienists, education and Information specialists, inspectors, employers' representatives, workers' representatives, safety officers and other competent persons.

This datasheet lists, in a standard format, different hazards to which indigenous fisherman divers may be exposed in the course of their normal work. This datasheet is a source of information rather than advice. With the knowledge of what causes injuries and diseases, it is easier to design and implement suitable measures towards prevention.

This datasheet consists of four pages:

- Page 1: Information on the most relevant hazards related to the occupation.
- Page 2: A more detailed and systematized presentation on the **different hazards** related to the job with indicators for preventive measures (marked as numbered shields and explained on the third page).
- Page 3: Suggestions for **preventive measures** for selected hazards.
- Page 4: **Specialized information**, relevant primarily to occupational safety and health professionals and including information such as a brief job description, a list of tasks, notes and references.




Who is an indigenous fisherman diver?

A worker whose main job is to hunt or gather fish or other marine products underwater using bare or protected hands, traps, spears, snares, or other specifically designed devices.

What is dangerous about this job?

- Indigenous fisherman divers work under pressure and are dependent of surface supplied air through hoses or self contained underwater breathing apparatus. Any interruption of the air supply can result in death from drowning, decompression sickness or barotrauma due to a rapid ascent.
- The nature of this work takes the diver long distances from any form of assistance and medical care.
- Divers handle dead or injured marine life. In certain areas, this may increase the risk of attack by sharks and other marine predators.
- Diving in any waters may reduce the body temperature and lead to hypothermia.
- Between dives, divers work on the deck of small fishing boats and may be exposed the extremes of sun and bad weather.
- Divers handling marine life may be exposed to strong toxins.
- Many of these divers are using inferior equipment which is subject to failure.
- Long term exposure to pressure can lead to dysbaric osteonecrosis.

Hazards related to this job

Accident hazards 	<ul style="list-style-type: none"> Slips, trips and falls on deck of dive boat 	1
	<ul style="list-style-type: none"> Struck by falling object while diving 	
	<ul style="list-style-type: none"> Struck by propeller or boat while diving, surfacing or working on the surface 	2
	<ul style="list-style-type: none"> Injuries due to exploding pressure tanks 	
	<ul style="list-style-type: none"> Stepping on object on dive boat or on the sea bed 	1
	<ul style="list-style-type: none"> Caught or trapped in nets, coral or underwater caves 	3
	<ul style="list-style-type: none"> Caught in compressor drive belts 	4
	<ul style="list-style-type: none"> Overexertion in lifting catch or other diver onto boat 	
	<ul style="list-style-type: none"> Contact with hot surfaces such as the compressor or boat engine 	
	<ul style="list-style-type: none"> Contact with various forms of marine life resulting in injection or absorption of toxins 	
	<ul style="list-style-type: none"> Interruption of air supply due to cut or separated air hose 	3
	<ul style="list-style-type: none"> Cuts, bites, stings or scratches from marine life 	
Physical hazards 	<ul style="list-style-type: none"> Exposure to extremes of pressure leading to decompression sickness (DCS) and barotrauma as a result of rapid ascent 	3 5 6 7 8 9 10
	<ul style="list-style-type: none"> Long term exposure to pressure leading dysbaric osteonecrosis (DON) 	5 7 8 9 10
	<ul style="list-style-type: none"> Pressure damage to ears and sinuses 	5 6
	<ul style="list-style-type: none"> Exposure to heat and sun between dives 	
	<ul style="list-style-type: none"> Exposure to cold while diving 	
	<ul style="list-style-type: none"> Exposure to noise while operating the compressor or boat engine 	
Chemical hazards 	<ul style="list-style-type: none"> Exposure to carbon monoxide gas in the divers' breathing air 	11
	<ul style="list-style-type: none"> Exposure to diesel emissions in the divers' breathing air 	11
Biological hazards 	<ul style="list-style-type: none"> Exposure to marine toxins 	

Preventive measures

- 1** Use rubber footwear when working on the deck of the boat and diving
 - 2** There is an internationally recognized flag that tells all other boats in the vicinity that there is a diver underwater.
When the flag is displayed all boats should stay clear and proceed very slowly.
An international dive flag should be displayed so all other boats can see it when a diver is underwater.
 - 3** Divers should always work in pairs, within easy view of another diver. This allows one's partner to help in freeing one from obstructions or in sharing air if a hose or a mask is lost or ruptured.
In a diving emergency when the air supplying hose or mask is lost or ruptured, divers can share air at depth.
If necessary two divers can slowly surface together sharing air.
 - 4** Construct and maintain a guard around the compressor drive belts. .
 - 5** For every dive, a diver should surface no faster than 18 metres per minute and exhale while surfacing or no faster than the slowest bubbles.
 - 6** The diver must always breath normally.
One must never hold one's breath. While coming up to a new depth or to the surface, the diver should always exhale slowly.
 - 7** Dives should be planned so that the deepest part of the dive is carried out first and the diver works progressively shallower. By doing the deepest dive of the day first and each dive progressively shallower nitrogen levels are slowly reduced and the risk of decompression sickness decreases.
 - 8** Before diving, between dives and after diving, divers should drink large amounts of water to prevent dehydration which increases the risk of decompression sickness.
During a diving day a diver should try to drink at least 3 to 4 litres of water.
 - 9** By making a safety stop at 5 metres for 3 to 5 minutes, nitrogen in the divers' body has more time to turn into gas and escape through breathing.
A good practice is for the boat crew to hang a line with a weight from the boat with a flag or a marker at a depth of five metres. The divers then find the marker and hold onto the rope for three to five minutes.
A diver with a watch or someone on the boat should keep the time and tell the divers when the five minutes has passed.
For long, deep dives one or more decompression stops may be necessary.
Special training is necessary to read diving tables to determine the time and depths of decompression stops.
 - 10** While resting on the surface the body is able to get rid of nitrogen simply through breathing.
The longer the diver is able to rest between dives the more nitrogen the diver will be able to get rid of.
A work routine should be developed where divers are able to stay on the surface at least one hour between long, deep dives.
 - 11** The traditional dive boat can be modified to reduce the possibility of carbon monoxide gas entering the air supply.
The air intake for the compressor needs to be moved well away from the exhaust gases of both the compressor and the boats engine.
Often extending the air intake two meters above the compressor using a hose attached to a pole will reduce considerable the presence of exhaust gases in the breathing air.
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Specialized information

Synonyms Diver, pearl diver, sponge diver, oyster diver, diving fisherman.

Definitions and/or description Using surface supplied compressed air or air from self-contained breathing apparatus (SCUBA), dives in waters up to 60 metres depth to hunt for fish using spears; to gather shell fish; to gather marine life for aquaria or to harvest fish traps. On rotation (while not diving) may be called to monitor the compressor, tend to diving air hoses, operate the boat, prepare the catch for storage and transportation. Prior to departure from village will inspect the diving equipment and may be called upon to inspect and maintain the boat and compressor motors. On shore may be called upon to build and repair fish traps as well as diving boats. May also engage in diving salvage operations. Catching fish and other forms of aquatic life, selling some produce at local markets.



Related and specific occupations Commercial diver, boat operator, diving tender, fisherman, coastal waters, subsistence agricultural and fishery workers.

Tasks Anchoring; attaching; boat operating; building (boats); building (traps); checking; cooking; diving; fueling; handling (lines); handling (hoses); handling (marine products); harvesting; inspecting; lifting; loading; lubricating; maintaining; navigating; observing; operating; positioning; repairing; sorting; storing; transporting; trapping; unloading

Primary equipment used Air Hose; anchors; boats; compressor; depth gauge; dive flag; diving mask; fins; fish trap; gloves; nets; shirts (long sleeve with roll collar); spear; spear gun; shoes; ropes; SCUBA equipment; watch; weight belt

Workplaces where the occupation is common Basically operates in tropical, shallow waters from open dive boats. May travel several days from home base depending on season, weather and target catch.

Notes According to research carried out and in Thailand by Indigenous Fishermen Diver Project and in the Philippines by the Diving Diseases Research Centre (DDRC), there is a high incidence of decompression sickness (DCS) among the diving population. (As much as 85% of the diving population in Thailand suffers from type I DCS). There are also large numbers of fisherman divers with DON as evidenced by recent research by DDRC in the Philippines.



Both the Thai and Philippines projects have reported a considerably elevated mortality rate due to diving related injury and illness.

Home made, poor and deficient equipment has not been designed for safe diving and carries no provisions for secondary air sources.

No or limited access to first aid, medical care nor recompression facilities.

Work is often carried out at long distances from any form of assistance and there is no means of communications from the boat to sources of assistance.

References Gold, D: The Sea Gypsies of Thailand. Asian Diver Magazine. 12/97. Vol 6 No 4



Gold, D: Indigenous Divers, in Stellman, J. (Ed) The ILO Encyclopaedia of Occupational Health and Safety, 4th Edition, ILO Geneva, 1998. Vol 3. pp 66.3-4.

McDonald, K. Bends in the Philippines. Diver. 7/95. Vol 40 No 7.
