What Safety Hazards Do You Need to Look for on your Commercial Fishing Vessel?

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This paper describes a detailed safety inspection programme that is employed aboard several large vessels in Alaskan waters. The inspection process focuses on prevention of injuries to workers both above and below decks. The programme identifies risk factors concerning possible injuries to fish processor workers. It tries to find ways to eliminate or mitigate these factors.

Fish processor workers are exposed to many hazards. These include:

- deck hazards such as tools, oxyacetylene use and welding fume exposure, chemicals, worn gear and safety equipment;
- factory hazards and risk factors for musculo-skeletal disorders, including unguarded points, chemicals, personal protection equipment, lifting issues, ergonomics;
- freezer hazards, including unguarded points, clothing, lifting issues, ergonomics;
- offloading hazards, including cargo gear, unguarded points, overhead hazards, safety rails or lines and lack of use of hard hats;
- cargo gear and handling hazards, including inadequate inspection records, crane certifications, crane wires, control labels, worn lifting gear; exposure to hazardous chemicals; and
- safety risks in living quarters, including inadequate use of smoke detectors, cigarette burns, overloaded circuits and exposed wiring.

The programme uses a methodical and detailed safety inspection process to minimize risk factors.

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Before safety policies can be written, before safety training can be designed, and before risks can be identified, current conditions and issues must be measured or assessed. Employees must recognize that the management is committed to improving safety. The best way to accomplish this is to perform safety inspections and make OBVIOUS improvements based on the safety inspections. This challenge is magnified in commercial fishing, where generations of 'We have ALWAYS done it this way' have built up.

When I was first asked to explain my safety inspection process, I must admit to being a little stumped. Like many safety professionals, much of what I look for is in my head, not on a checklist. I try to imagine if someone could be injured or made ill by the conditions I am observing. Some professionals refer to this as 'Safety Eyes'. Our challenge now is to open your 'Safety Eyes'.

Inspection equipment

Video or digital camera: Frequently when I'm doing an inspection, even on a vessel I am familiar with, I see hazards but it's hard to describe their location. With a video camera, I can tape the hazard and then show it to the vessel management. The tape also serves as a springboard for problem-solving discussion.

Micro Cassette Recorder: Tape Measures and Voltage Detectors can be very useful at times…and usually are most needed when they are not with you.

Inspection Issues: Machine Guarding is a huge issue in commercial fishing, but is frequently not seen as the biggest

* *This article is edited and abridged from a paper presented at the Third International Conference on Fishing Industry Safety and Health (IFISH-3) held in Mahabalipuram from February 1 through 6, 2006. For the full version of the paper, write to BOBP-IGO. The author is Safety & Compliance Manager, American Seafoods Company, 2025 First Ave. Suite 900, Seattle, WA 98121, 206-256-2677.*

hazard. This is interesting since everyone in the commercial fishing industry knows someone who has lost a finger or an arm in a piece of processing equipment.

In 1996, I interviewed a Baader Technician in Dutch Harbor who had lost four fingers of his right hand including the thumb. His response was "That's Fishing". Fortunately the industry has come a long way since then.

A review of OSHA regulations gives room for interpretation.

OSHA 1910.212(a)(5) : Exposure of blades. When the periphery of the blades of a fan is less than seven feet above the floor or working level, the blades shall be guarded. Now does that mean if a fan or a belt is eight feet off of the floor, it is safe? NO! Plenty of people in today's work force can reach that high. And people are always climbing a ladder or other structure to reach something they need to work on…so GUARD IT.

There isn't room here to describe every situation on a commercial fishing vessel that requires guarding. So a few general conditions:

Blades: The modern factory processor has LOTS of whirling rotating blades. Guard them AND make sure that machines cannot be activated during servicing.

Belts: Both drive belts and product feed belts need to be covered or designed in such a way that crew cannot get caught in them.

Conveyor Belts: Conveyors of all types are used to move product from one place to another. Guidelines for guarding them can be vague, but be aware that transitions can suck people and product in and do extensive damage.

Shafts: Rotating shafts need to be guarded in order to prevent clothing or hair from getting wrapped around them, even if the shaft is open ended.

Fall Protection: Fall Protection issues are one of the greatest risks in commercial fishing. Open hatches,

elevated surfaces, and open decks all pose significant hazards. OSHA regulations require that anyone exposed to a possible fall of 4 feet or more be protected, either by railings or by a fall arrest system.

A study in ***Climbing*** magazine many years ago gave the following statistics; a fall of four feet means 20 percent chance of a broken bone; a fall of 10 feet means 80 percent chance of a broken bone AND a 20 percent chance of a spinal injury. Fall 20 feet, and they are not sure if it is the broken bones or the spinal injury that killed you.

Railings: Railings are the best form of protection around deck openings. Railings can be made of rope or chain, but in all cases railing must be capable of withstanding a load of at least 200 pounds, applied in any direction at any point on the top rail. (200 lbs is a bit light considering the size of some crew members).

Slips and fall: Perhaps the most common injury in commercial fishing is caused by slipping or tripping and falling onto the walking surface. Are your decks slippery? Does your house floor get the right

kind of wax? Is your crew wearing the correct footwear? Do your showers have anti slip mats inside them and outside of them? Are your stair treads too short for a human foot or are they worn smooth?

Chemicals: There are numerous chemicals used in the commercial fishing industry and since storage space is at a premium, many chemicals are in concentrated form.

MSDS: Material Safety Data Sheets (MSDS) are required by US law to be provided by every chemical manufacturer. Every employer is required to maintain up to date MSDS for every chemical they have in their facility. MSDS contain information like Chemical Content, Health Hazards, Environmental Hazards, Physical Hazards, Permissible Exposure Limits, Safety and Personal Protection Equipment Requirements, Emergency Contact Numbers, and First Aid Measures.

Labelling: Labelling is a key requirement for all chemicals being used on a vessel. All chemical containers, including those used only for a short duration, should be clearly labeled with the name of the chemical, the hazards associated with the chemical, and the personal protective equipment that should be used when working with the chemical.

Storage: Storage space is always at a premium on ocean-going vessels. Chemical storage is a constant problem. Great care must be utilized to make sure that incompatible chemicals are not stored together. There are many chemicals that should not be exposed to water or flame. A few common mistakes:

- **Acids or Caustics and Oils** – Mix these and you may get a fire.
- **Acids and Caustics** – Combined improperly, they can react and produce intense heat or an explosion.
- **Chlorinated products and Ammonia Products** – A common Galley or House issue, this combination can produce a cloud of chlorine gas.

Personal Protection Equipment: Personal Protection Equipment (PPE) encompasses a wide range of products that represent the last line of defense in preventing illness and injury. When conducting an inspection make sure to observe crew members closely. Are they using the proper PPE? Are they using it properly?

Steel Toed Boots: Steel Toed Boots are often overlooked or disregarded but can be of great value in preventing work disabling injuries. In the factory, there are motors and tools that when dropped can easily break toes. In the freezer, a 20 kg box of frozen fish hits with the impact of a hammer when dropped.

Safety Glasses & Safety Goggles: Safety Glasses should be used in tasks that involve airborne objects and substances presenting a hazard to a crew member's eyes. Commercial fishing has lots of these hazards but has not embraced the idea of safety eyewear. Fish scales, dirt, salt water, fish fins, cleaning chemicals, etc all represent eye hazards in factories. Deckhands have all of these hazards plus metal from punches, wire snags, and snapping lines. Engineers and technicians are working around moving machinery, chemicals, grinding metal, etc.

The argument against safety glasses has always been that they get dirty. This argument is pretty weak when you consider the fact that almost every crew has at least one person that wears prescription glasses. They are able to wear their prescription glasses because they clean them regularly, so everyone else should be able to clean their safety glasses. It should also be noted that all the "dirt" that gets stuck on safety glasses is dirt that was headed toward someone's eyes.

Safety goggles should be worn whenever there is grinding or chemical operations that could result in a splash. Under these conditions, safety glasses do not offer adequate protection. Safety Goggles should be INDIRECTLY ventilated. Many goggles designed for woodworking are directly vented and chemicals might be able to splash through the vents.

Sea Story

A Galley Assistant in the Bering Sea was having trouble cleaning a spot on the galley deck. He went down to the factory and brought a caustic cleaner called 'Super Red' in a paper cup. When the Galley Assistant returned to the galley he was distracted by another problem and sat the paper cup on a table. A thirsty crewman dashing through the galley snatched up the cup and thinking it was 'red punch', swallowed the whole cup in a single gulp. The chemical destroyed his esophagus. According to the story, he had to have a new esophagus made from a piece of his intestine.

Fact or fiction… the story above illustrates the need to use proper containers and labeling... even when it is 'only going to be for a minute'.

Respirators: are used to filter out substances that can cause harm if breathed into the lungs. Some substances found on fishing vessels that should be addressed are: Caustic and Acid Vapors, Welding Fumes, Dusts from grinding, Cutting Fiberglass, Additives, and Refrigerant Gases.

Respirator Clearance Exams: Everyone who wears a respirator is required to have a respirator clearance exam by a medical provider. Is there a medical reason why a person using a respirator should be prohibited from using it? The exam will determine the answer.

Disposable "Dust Masks": There are a variety of "Dust Masks" or nuisance level masks available from a variety of manufacturers, avoid them. If someone needs to wear a "Dust Mask" to feel better, then they should step up the something that can legally be called a respirator.

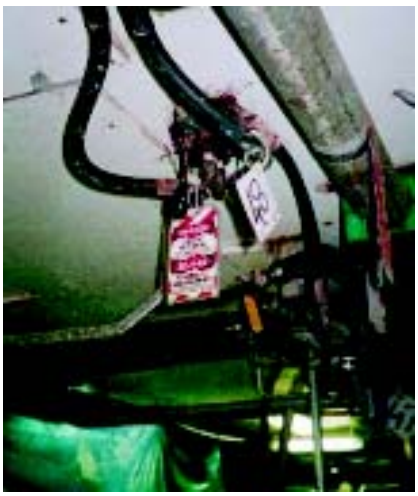
Full-Face Respirators: Full Face Respirators offer a higher protection factor plus eye protection from vapors and gases. Full Face respirators are also available with welding face shields and many are adaptable for use as airline respirators.

Self Contained Breathing Apparatus (SCBAs): SCBAs are used in situations where the user has to take his or her own air supply into the situation with them. SCBAs have a full-face mask, a regulator and a compressed air bottle. The most widespread use of SCBAs is in fire response and it is important to note that there are MANY SCBAs out there that are not approved for use in fire response.

Deck Hazards

Without a doubt, the deck of a commercial fishing boat is a dangerous place, but the risks can be managed and reduced.

Deck Gear: Wire Rope (cable), Lines, Shackles, Hammerlocks, Winches, Flat Links, Hooks and other gear sustain a tremendous amount of strain during fishing operations. Buy good-quality material. Thoroughly test any new gear before putting it into use.



Flotation: Flotation should be worn on open decks at all times and should definitely be worn during fishing operations. Warm weather or cold, there are enough varieties of flotation devices available to eliminate excuses. The majority of the fatalities in the 2002 Alaskan Fisheries were man-overboard situations – the men concerned WERE NOT wearing flotation devices.

Welding and Cutting Guidelines

Transporting, Moving and Storing Compressed Gas Cylinders:

- Keep valve protection caps in place when not being used. Do not use oil to lubricate caps or valves.
- When cylinders are hoisted, use a pallet or a bottle cage. Do not hoist with a choker sling.
- Move cylinders by tilting and rolling them on their bottom edges. Prevent cylinders from being dropped, struck, or from striking each other.
- Do not use valve protection caps for lifting cylinders.
- Do not pry or hammer on cylinder valve protection caps to loosen them when frozen. Use warm, but not boiling water to thaw the caps loose.
- **Store oxygen cylinders away from acetylene cylinders.** A non-combustible wall at least 5 feet high should be used to separate cylinders.
- Acetylene cylinders shall be kept in an upright position at all times except, if necessary, for short periods of time while cylinders are actually being hoisted or carried. **At no time should an acetylene cylinder be stored or moved upside down!**
- Storage rooms for cylinders containing flammable gases shall be well ventilated. Do not place or store cylinders in a location where they would be subject to open flame, hot metal, or other sources of artificial heat. Do not place cylinders containing oxygen or acetylene or other fuel gas in confined spaces.

Wear personal protective equipment. Wear welding gloves, helmet, leather apron, welding chaps, leather shoes, welding goggles, and other personal protective equipment to help prevent weld burns and injury. Do not wear clothing made of synthetic fibers while welding.

Torches: Clogged torch tip openings should be cleaned with suitable cleaning wires, drills or other devices designed for that purpose. Do not use defective torches. Inspect torches at the beginning of each shift. Light torches with friction lighters or other approved devices, and not with matches or from other hot work.

Welding cables and connectors: All arc welding and cutting cables must be completely insulated and flexible, capable of handling the maximum current requirements of the work in progress.

Factory hazards and risk factors: Musculo-skeletal disorders; ergonomics; lifting issues including unguarded points; chemicals; personal protection equipment; freezer hazards, including unguarded points; clothing.

Off loading hazards, including cargo gear, overhead hazards, safety rails or lines and lack of use of hard hats; cargo gear and handling hazards, including inadequate inspections records, crane certifications, crane wires, control labels, and worn lifting gear.

Safety risks in living quarters: Smoke detectors, cigarette burns, overloaded circuits and exposed wiring, floor surfaces.