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Introduction

Nova Scotia has a long, rich history in the fishery. We have an ocean coastline of more than 6,500 km and nowhere in our province can you get more than 60 km from salt water.

The seafood processing sector is an essential part of the fishery in Nova Scotia. Our processing plant workers have a long and distinguished history, but their history has also had many tragedies through workplace injuries.

Up to 5,000 Nova Scotians work in seafood processing plants. We all depend on our experience, equipment, and each other to stay safe. We depend on safety procedures and response planning when we get in trouble.

This handbook is about staying out of trouble when we can and being prepared for trouble when it comes, despite our best prevention efforts.

Please use this handbook, and WORK SAFELY.
Terms Used

Words used in this handbook.

Many different terms in the seafood processing industry mean similar things. For the purpose of this handbook, the following terms will be used; alternate terms are provided.

CSA - Canadian Standards Association
Fish - Shellfish, groundfish or pelagics
Hoist - Derrick, boom, or crane
Manager - Supervisor, lead-hand
MSDS - Materials safety data sheets
OH&S - Occupational health and safety
Plant - Processing plant
PPE - Personal protection equipment
Shellfish - Crab, lobster, scallop or shrimp
Vessel - Boat or ship

Wharf - Quay, pier, jetty, landing or dock
WHMIS - Workplace hazardous materials information system

Know the Risks, Share the Responsibility

Each year hundreds of Nova Scotians are injured while working in the seafood processing industry. This sector has one of the highest rated incident/injury rates of all industry sectors in the province. Many of these incidents could be prevented with proper training and equipment.

Improving our safety record is a shared responsibility. All companies and individuals in the sector share the cost of incidents and injuries. Working together to improve our safety record will be a benefit to everyone.

By following some simple procedures, using equipment properly and being more aware of hazards, we can prevent many more injuries and deaths.
Common Injuries

The most common injuries and their causes in the seafood processing sector are as follows:

- **Lifting injuries** - improper lifting, lifting heavy items and lifting above shoulder height.

- **Slips, trips and falls** - slippery floors, improper footwear and not wearing fall restraint gear.

- **Shoulder injuries** - lifting above shoulder height and improper lifting.

- **Sprains and strains** - improper lifting, improper footwear, slips and falls, repetitive motions.

- **Finger injuries** - cuts from knives and pinch points.

The sources of many of these injuries are knives, metal items, floors and stairs, particles, machines and pallets.

The parts of the body which are injured most frequently include:

- Back
- Fingers
- Shoulders
- Multiple regions
- Arms
- Wrist
- Foot and ankle
- Hands
- Knee

When employers and employees are aware of the most common injuries and their causes, they can work together to develop plans to prevent these injuries.
Hazard Identification and Control

In order to reduce injuries, hazards to workers must be identified, the risk of these hazards causing injury must be reduced, and workers must be made aware of hazards. There are numerous potential hazards in the workplace, which include:

- **Safety hazards** - machines and equipment such as forklifts, conveyors, conveyor belts and facilities such as cold storages.

- **Ergonomic hazards** - poorly designed workspaces, transport equipment or tools.

- **Physical hazards** - heat, cold, humidity, noise, or vibration.

- **Chemical hazards** - cleaners, ammonia, freon and fish toxins.

- **Biological hazards** - diseases carried and transferred by humans, insects and animals.

- **Stress** - production deadlines, verbal or physical threats.

Hazard control is the process of reducing the likelihood of injury, illness, disease, and property damage in the workplace. It also requires having in place a means of measuring the success of those controls. The methods of identifying and controlling hazards in the workplace normally include:

- Establishing a safety committee.

- Keeping safety committee meeting minutes, developing action items with timelines and identifying people responsible.

- Training all personnel in safety procedures for their specific job.

- Developing and practicing an evacuation plan for fire and chemical hazards.

- Ensuring all workers use appropriate personal protection equipment.

- Posting warning signs in all risk areas and on equipment.
Section 1: Workplace Safety
Process of Prevention

There are three ways of preventing incidents from occurring. These are:

**Primary** - The best way to ensure worker safety is to build safety into the plant, equipment and process flow design. This may include:

- Ensuring plant design includes adequate alarms, fire extinguishing equipment, and evacuation routes.
- Ensuring equipment setup protects workers from potential hazards. Installing guards over screw conveyors, posting signs which warn of danger and having easily accessible shutoff switches are some ways of reducing hazards.
- Ensuring process layout design provides adequate floor space around work areas for transport of materials and movement of workers. Also, workstations should be designed to reduce the need for lifting, reaching, twisting and moving products.

**Secondary** - Identifying and resolving possible hazards. This requires effective policy and procedures, communication and reporting.

- Workers must notify managers when a hazard is identified.
- Safety inspections must be completed regularly to verify that the systems in place are effective.
- Safety committees must review inspection findings and worker complaints, and recommend actions to management.
- Managers must act on recommendations from the committee.

**Tertiary** - This provides effective management of known risks. For example, it ensures workers in certain areas have personal protection equipment to reduce their risk of injury.
Completing inspection checklists provides a number of benefits to both the employee and employer:

- **Identifies hazards** - Regularly inspecting each department identifies unsafe conditions that can be corrected before they cause injury or harm.

- **Reveals unsafe practices** - Completing an inspection identifies whether or not safety procedures are being followed.

- **Provides records** - Providing records so that the inspector can ensure all unsafe conditions have been addressed.

- **Provides feedback** - Completing checklists provides feedback to the safety committee, workers and the employer.

- **Provides preventative measures** - Supporting organized ways for all workers to participate in incident prevention.

### Safety Checklist

Completing inspection checklists provides a number of benefits to both the employee and employer:

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- **Provides preventative measures** - Supporting organized ways for all workers to participate in incident prevention.
Safety Committee

In Nova Scotia, a safety committee is required if there are 20 or more people employed at the workplace.

The committee size is determined by the employer but half the committee members must be non-management employees. The employee representatives are to be selected by the employees. People selected for the committee should have a commitment to health and safety, good communication skills, experience in the workplace and some health and safety training.

The committee should meet at least once a month. The committee or member activities should include:

- Reviewing incidents and investigations.
- Reviewing reports related to occupational health and safety.
- Monitoring training program attendance required by regulation, or necessary to carry out functions as a committee.
- Developing meeting agendas; recording and publishing meeting minutes.
- Prioritizing hazards into categories including:
  A - Critical: severe injury, illness or property damage.
  B - Moderate: non-serious injury, minor illness or property damage.
  C - Low: minor injury.

<table>
<thead>
<tr>
<th>Probability of Occurrence</th>
<th>Critical</th>
<th>Moderate</th>
<th>Low</th>
</tr>
</thead>
<tbody>
<tr>
<td>Likely to occur</td>
<td>Death, permanent disability, limb loss</td>
<td>Serious injury or illness, temporary disability</td>
<td>Cuts, soft tissue injuries, sprains</td>
</tr>
<tr>
<td>Possibly occur</td>
<td>Truck accident</td>
<td>Refrigeration leak</td>
<td>Filleting, trimming</td>
</tr>
<tr>
<td>Unlikely to occur</td>
<td>Limb loss in machine. Fire in plant.</td>
<td>Plate freezer injury</td>
<td>Packing, freezers</td>
</tr>
<tr>
<td></td>
<td>Locked in freezer</td>
<td>Forklift collision</td>
<td>Packaging preparation</td>
</tr>
</tbody>
</table>
Recommended ground rules for meetings are:

- Review agenda previous to meeting.
- Review previous meeting minutes and any related reports referenced in the agenda.
- Post meeting minutes in the workplace.
- Be prompt and regular in attendance.
- Participate in all discussions.
- Give freely of your personal experience.
- Listen attentively, and take accurate notes.
- Appreciate the views of others.
- Provide constructive feedback.
- Receive feedback willingly.
- Stick to the topic of discussion.

Sample Safety Committee Meeting Agenda:

1. Determination of quorum.
2. Approval of minutes from last meeting.
3. Outstanding items from previous minutes.
5. Review of incidents.
6. Update on health and safety training.
7. Input on design of new processing line and recommendations to management.
9. Date and time of next meeting.
10. Adjournment.
Emergency Planning

Evacuation Plan

Each plant should have an evacuation plan in case of a fire, chemical spill or refrigerant leak. All workers must know and practice the evacuation plan. The evacuation plan should be posted in each processing area so that workers know which exit(s) should be used.

Muster Stations

During evacuation safety drills, workers leaving each exit should go to a designated muster area. This permits assigned safety officers to quickly complete a count and determine if anyone is remaining in the plant.

All evacuation exits should be clearly marked and visible to all workers in the processing area.
Plants should use signs to both inform and remind workers about safe work practices.

Information signs should be posted in common areas of the plant where workers gather, such as lunchrooms or locker rooms. These signs include:

• Occupational Health & Safety Division contact information.

• Names and contact numbers for all members of the plant safety committee.

Signs specific to certain work areas should be posted at all worker entrances to that process area; for example, “Personal protection equipment required beyond this point.”

Equipment specific signs, such as warning signs or lock-out procedures should be placed on the equipment and be visible from where workers are located.

All chemical and pressurized lines in the plant such as ammonia, freon or gas should be identified. Direction of flow should be indicated, and shutoff valves should be clearly visible.

Other signs such as first aid station, eye wash station, decontamination showers and the location of personal protective equipment should be clearly visible from processing areas.
Personal Protective Equipment (PPE)

Foot Protection

Footwear should be selected according to the job hazard. High cut boots offer superior ankle support, and thick soles offer insulation from cold and more support to the lower legs. If there is risk of punctures or impact then steel soles and toes are recommended.

Hand Protection

Finger and hand injuries are very common in plants and protective gloves are worn in most jobs. Rubber and cotton gloves insulate from cold and heat, thick rubber gloves provide improved grip, and steel mesh gloves protect from cuts.

The most suitable glove that protects from temperature extremes and risk of injury should be selected for the job.

Head Protection

Hard hats or bump hats are designed to protect from bumps, falling objects, harmful substances and contact with energized objects. A hard hat should be bright in colour so it is visible. It should also be inspected frequently for cracks or excessive wear.

Hearing Protection

Hearing protection is required when sound exceeds 85 decibels; however, a rule of thumb is that if you cannot carry on a conversation hearing protection should be used. Ear plugs are adequate for low noise levels and earmuffs are more suitable for noisier work areas.

Fall Protection

An anchored fall restraint with a shock absorber should be used when working over anything that could cause injury or when more than 3 metres above a safe surface.
Protect Yourself from Job Hazards

Following proper procedures and staying focused and alert helps to ensure a safe environment. Whether you are on a wharf, boarding a vessel, or in the plant, working conditions can be safe if everyone involved in the operation is committed to safe working practices.

Understand the Hazards

Some of the common serious job hazards in seafood processing plants include forklift hazards, risk of falling, equipment maintenance injury and hazardous materials.

These serious hazards pose grave physical risk, and can result in death if proper procedures are not followed.

More common but less physically serious hazards are slips, falls, strains, sprains, and cuts.

Wearing proper protective equipment, being well trained for the job you are performing, and being careful with everything you do in the workplace all reduce the opportunity for injuries to occur.
Forklift Safety

All forklifts should be inspected regularly, records maintained, and all necessary certifications for both the equipment and the operator must remain current.

Forklifts should be equipped with strobe lights on the rear.

Internal combustion (gas/propane) forklifts are not permitted to operate in areas where combustible gases or dust may be present, or in enclosed structures unless adequate ventilation for gases exists.

Forklifts should have designated alleyways with a width of maximum load plus 600mm for a one-way aisle, and 900mm clearance for a two way aisle.

All workers should be aware of designated forklift aisles and check carefully before crossing an aisle, to avoid collisions.

Painting aisles, marking designated crossing areas, and installing mirrors at intersections will help reduce the possibility of collisions.

Forklift drivers must remain aware of potential hazards such as slopes, wharf edges and obstructions. Protective guardrails should be erected where forklift upsets and collisions with fixed equipment or piping may occur.
Fall Protection

Workers require a fall arrest system when exposed to a fall hazard. Fall hazards are present when working:

- 3 meters or more above a safe surface.
- Above a surface or thing that could cause injury upon contact.
- Above an open pit, vat or tank containing hazardous materials.

There are three components to a fall arrest system:

- **Anchor point** - The anchor point should be able to support 4,000 pounds or more. Ideally an anchor point is located above the shoulder of the worker.
- **Lanyard** - A CSA approved lanyard which will prevent a free fall greater than 4’ and is attached to an anchor point. Lanyards longer than 4’ are permitted if a shock absorber is used.
- **Harness** - A CSA approved full body harness that is adjustable to fit the worker. This harness consists of leg and shoulder straps and an upper back suspension unit which will distribute and reduce the impact force of any fall.
Equipment Maintenance

Many injuries occur when cleaning, maintaining and repairing processing equipment. These injuries are caused by a number of hazards including tool slippage, contact with sharp parts, being injured when equipment is turned on, and exposure to energy.

Lockout procedures should always be used to protect workers from hazardous energy during regular servicing or maintenance of equipment.

Whenever completing equipment maintenance proper eye, hand and foot protection devices should be used. Using rubber gripped tools will reduce the opportunity for the tool to slip while in use.

Energy hazards which may be encountered include power, steam, hydraulics, pneumatic, gravity, and any other item or substance that may be under pressure. Chemical hazards such as cleaning agents, cooking oils or refrigerated liquids also pose hazards.

Recommended Lockout Procedures

All cleanup and maintenance personnel should be trained in lockout procedures for all equipment they may encounter. Also, plant workers should know what a lockout procedure involves. A lockout procedure is comprised of the following steps:

1. Stop all energy flows by turning off power supplies, valves and supply lines.
2. Place locking mechanisms on switches and valves.
3. Secure the machine in a de-energized state. This may require blocking the machine or draining lines.
4. Place signs or tags on switches and valves indicating they are currently locked out.
5. Test to ensure equipment is de-energized prior to commencing cleanup, repair or maintenance.
6. Before restarting equipment ensure that all guards are in place.
7. Remove all lockout devices and check to ensure all workers are away from the equipment before re-starting.
Hazardous Materials

There are six classes of controlled hazardous products categorized under WHMIS. All workers who use or come in contact with these products should be WHMIS certified.

Class A: Compressed Gases
• Heat - explosion.
• Rupture - rocket.

Class B: Combustible and Flammable
• Flame - ignite or explode.
• Water - combustible upon contact.

Class C: Oxidizing
• Heat - may cause combustion.
• Flame/friction - may cause combustion.

Class D: Poisonous & Infectious

Immediate and Serious
• Gas, vapour - nausea, dizziness or death.
• Skin contact - burning, nerve gas.
• Swallowing - nausea, vomiting, or death.
• Eye contact - irritation, burning, blindness.

Materials Causing Other Toxic Effects
• Repeated exposure - chronic affects which may include allergies, skin or lung irritation, or cancer.

Bio-hazardous Infectious Material
• Skin contact - irritation, infection or disease.

Class E: Corrosive Material
• Skin or eye contact - severe irritation or tissue damage.
• Inhalation - lung irritation or damage.

Class F: Dangerously Reactive Material
• Mixing - release of gas or combustion.
• Water contact - release of gas or combustion.
• Heat/flame/friction - combustion.
Section 2: General Safety
General Safety

There are many hazards and dangers associated with the preparation of seafood products. From the time that the raw materials arrive at the processing facility, either by vessels or by carriers, the products must be transported and handled in a quick manner to prevent spoilage. All of these activities require workers to use specialized equipment in an environment that can pose potential dangers.

From the time the fish arrives at the wharf or the plant door, it must be rapidly placed into controlled storage. From storage to processing to final shipment, the fish are handled, transformed to the final state, packaged and labeled pending shipment to customers. Workers must perform repetitive tasks using specialized equipment to complete these activities. Potential dangers and hazards require workers to be constantly aware of their duties and surroundings.

Although there are numerous categories of processing, many of the hazards are common to all fish processing operations. There are operating practices that protect both the employees and the product. These are included in the plant sanitation programs and worker hygiene programs.

The role of workers is to perform their duties following company policies and procedures and, most importantly, to carry out their duties in a safe manner. A few common practices that all employees can follow to assist in maintaining a safe workplace are:

- Know your job and the dangers that are associated with tasks you perform.
- Report all instances of unsafe practices or work conditions.
- Follow established company procedures.
- Be alert to the dangers or safety hazards of your job.

All workers must remain attentive while in the workplace in order to reduce the chance of causing injury to themselves or co-workers.
Unloading Safety

Unloading fish from vessels or trucks presents a number of hazards that can be prevented. Following safety practices, knowing how to use equipment, and being aware of hazards all help reduce safety risks.

Always look where you are putting your hands and feet. Watch for and report uneven docks, rotten boards, and protruding hooks and nails. Wear boots or shoes with good traction to avoid slipping.

Make sure the ladders and gangways used to board the vessel are in good repair and free of ice, snow and debris. Make sure gangways and ladders are not missing boards or rungs.

Maintain a three point contact when boarding.

Install safety netting below gangways.

Secure gangways to both the vessel and the dock.

Climbing on Vessels

Vessels and wharves vary in size and design. There are some basic rules to follow when boarding a vessel.
Working on Decks

A rocking vessel deck can pose a number of hazards that can result in slipping and falling.

The following precautions can reduce the occurrence of injuries:

- Keep the deck clear of unnecessary equipment and debris to prevent slipping and falling.
- Be aware of open hatches and loose decking.
- Install guards around open hatches.

Using Hoists

Hoists lift heavy things such as equipment from the vessel and fish tubs. Always stand clear when a hoist is in operation. Hoists are dangerous to be around because:

- Heavy loads may be suspended over people’s heads.
- Chains, blocks, and other gear are suspended over people’s heads.
- Heavy objects are in motion above workers.

Before starting to unload a vessel ensure that:

- Only authorized people required to help unload are present.
- A visual check of the unloading system, including ropes, blocks, chains and so forth has been done.
- Those present have protective equipment including a hard hat and foot protection.
Hazard | **Load hitting a person.**
---|---
Danger | Head Injuries; knocking person down or overboard.
Precaution | Inspect hoist regularly.
Precaution | Use a spotter where visibility may be impaired.
Precaution | Check to see if the area is clear of people other than those required to unload.
Precaution | Ensure the emergency shutoff device is within easy reach of the hoist operator.

Precaution | Only operate a hoisting system if you are trained to do so.

Precaution | Train the hoist operator and the loading crew in communication systems or signals.
<table>
<thead>
<tr>
<th>Hazard</th>
<th>Load falling.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Danger</td>
<td>Physical injury.</td>
</tr>
<tr>
<td>Precaution</td>
<td>Stand clear while the hoist is in operation.</td>
</tr>
<tr>
<td>Precaution</td>
<td>Wear a hardhat and foot protection.</td>
</tr>
</tbody>
</table>

**Precaution**
- Keep the operator informed of what is happening on the deck and the wharf.

**Precaution**
- Check that the load is secured and the equipment is in good repair before lifting. Properly maintained and operated equipment ensures control of the load.
Wharf Safety

When working on or around wharves, workers must be aware of their own activities and the activities of others. The wharf can be busy with forklift and vehicle traffic all operating in the same limited space. Signs should be posted identifying the need for awareness due to forklift and truck traffic.

The most common injuries on wharves are caused by vehicles colliding with workers, workers falling on slippery or cluttered surfaces, and workers being struck by moving tubs/buckets or falling boxes.

<table>
<thead>
<tr>
<th>Hazard</th>
<th>Vehicle traffic.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Danger</td>
<td>Physical injury or death.</td>
</tr>
<tr>
<td>Precaution</td>
<td>Use designated parking spaces away from wharf area to reduce traffic flow on the wharf.</td>
</tr>
</tbody>
</table>

Precaution

Use backup alarms on forklift and trucks to warn of moving vehicles.

Precaution

Be aware of forklift and truck routes and check carefully before entering the wharf area, to avoid collisions.
<table>
<thead>
<tr>
<th>Hazard</th>
<th>Slippery or cluttered wharfs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Danger</td>
<td>Falling under equipment, falling in water, physical injury.</td>
</tr>
<tr>
<td>Precaution</td>
<td>Wear good boots with good treads to prevent slipping.</td>
</tr>
<tr>
<td>Precaution</td>
<td>Keep the wharf area clear of debris and unused equipment. Routine maintenance and cleanup of the wharf makes for a safe work area.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Hazard</th>
<th>Slipping, sliding or physical strain.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Danger</td>
<td>Sustaining a lower back injury or dropping objects on your foot.</td>
</tr>
<tr>
<td>Precaution</td>
<td>Use proper lifting techniques. See chart below.</td>
</tr>
</tbody>
</table>

**Safe Lifting Tips**

- Get as close to the object as possible before lifting
- Clear all obstacles then slide the object towards you
- Avoid twisting
- Get help carrying or pulling heavy or awkward objects
- Place heavy objects on surfaces that are knee high to avoid lifting from the floor or forklift to the processing lines
- Stack or lift heavy objects no higher than shoulder level, when possible
<table>
<thead>
<tr>
<th>Precaution</th>
<th>Hazard</th>
<th>Danger</th>
<th>Precaution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wear foot protection that has a good grip to prevent slipping.</td>
<td>Improperly stacked totes or wharf boxes.</td>
<td>Physical injuries.</td>
<td>When stacking totes and wharf boxes make sure they are securely stacked to prevent falling over.</td>
</tr>
<tr>
<td>Clean the work areas regularly and immediately after spills.</td>
<td>Working in slippery conditions.</td>
<td>Slipping on surfaces.</td>
<td>Be aware of weather conditions, fish slime, and activities on the wharf.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Keep area clear of ice, snow and fish offal.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Wear proper footwear.</td>
</tr>
</tbody>
</table>
Receiving and Storage

Fish arrives at the processing plants either from the vessels or by truck. Once the cargo arrives, fish must be stored in a chill room quickly to prevent spoilage. The workhorse for the unloading, storage and transportation activities in the plant is the forklift. Forklift use presents dangers of which all workers need to be aware.

Unloading Fish at the Plant

Dangers associated with unloading cargo from trailers:

- Forklift toppling over
- Forklift sliding off of loading ramp
- Pinning people between load and trailer
- Falling off equipment
- Back injuries from lifting boxes onto pallets
- Forklift collisions when transferring products
- Inhaling diesel fumes from trucks
- Trailer or loading ramp moving

Precautions to take when unloading cargo from trailers:

- Check that the transport trailer is parked tight to loading doors before driving a forklift into the trailer. Place chocks in front of rear tires.

- Ensure ramps are secured to trailers before use.

- Make sure the load is even and securely placed on the forklift.
Drive carefully on sloped roadways, and install guardrails where there is risk of the forklift toppling over.

Check for the location of co-workers when loading or unloading cargo.

Never stand or step on forks of a forklift while it is moving.

Transporting Product into the Plant

Many collisions between workers and forklifts occur when workers or drivers are not paying attention. When moving a load to areas where people are working, drivers must proceed slowly and carefully and workers must be alert to the activities around them.

<table>
<thead>
<tr>
<th>Hazard</th>
<th>Forklift colliding with workers when transporting product.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Danger</td>
<td>Physical injuries; death.</td>
</tr>
<tr>
<td>Precaution</td>
<td>Check any mirrors for oncoming traffic.</td>
</tr>
<tr>
<td>Precaution</td>
<td>Stop and sound forklift horn before entering doorways and blind spots.</td>
</tr>
</tbody>
</table>
Hazard: Not being able to see potential safety hazards due to low lighting.

Danger: Physical injuries from tripping over clutter, bumping into machines or equipment.

Precaution: Check that all lights are functioning and are able to light the work area well.

Precaution: Replace burnt out lights before commencing work.

Precaution: Remove clutter and unnecessary materials and equipment from the work area.

Precaution: Use rear forklift lights if available.

Hazard: Forklifts running into workers or equipment.

Danger: Serious physical injuries.

Precaution: Be aware of other people’s activities and equipment when working in close quarters.

Precaution: Stop and sound horn before entering doorways and blind spots.

Precaution: Place mirrors at blind intersections.

Precaution: Check doorways before walking or driving through. When walking through doorways, walk to the side of the entrance, not the center.
Lifting and Carrying Containers

Most seafood processing operations are very labour-intensive. Raw materials - fish, packaging materials, cleaning supplies - when received must be sorted, moved and stored. Lifting and carrying of containers is a common activity in all areas of the operation.

<table>
<thead>
<tr>
<th>Hazard</th>
<th>Emissions from equipment or forklifts.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Danger</td>
<td>Choking or lung damage from toxic gas vapours.</td>
</tr>
<tr>
<td>Precaution</td>
<td>Adequately ventilate all work areas, especially if propane is in use. Routinely check all tanks and lines for leakage.</td>
</tr>
</tbody>
</table>

**Precaution**
Place detection gauges in high risk areas.

**Precaution**
Post signs of chemical dangers.

**Precaution**
Lift only what you are capable of lifting.

**Hazard**
Physical strain.

**Danger**
Back strains and pulled muscles.

**Precaution**
Use proper procedures when lifting objects. (See Safe Lifting Tips, pg. 26)
<table>
<thead>
<tr>
<th>Hazard</th>
<th>Precaution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Catching hands or clothing when loading boxes or containers onto or near moving belts and equipment.</td>
<td>Use equipment such as pallet jacks to move heavy containers.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Danger</th>
<th>Precaution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Injuries to hands and arms.</td>
<td>Ensure machines are properly guarded.</td>
</tr>
<tr>
<td></td>
<td>Report any missing guards.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Precaution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Keep focused on the work you are doing. Inattentiveness can result in work errors and incidents.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Precaution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do not wear loose fitting clothing.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Precaution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use mechanically assisted lifting aids.</td>
</tr>
</tbody>
</table>
Storage in Coolers and Freezers

The activities in refrigerated rooms are usually limited to forklift operation and a few workers handling containers. The most common injuries are from slipping on wet or ice covered floors and from being struck by falling boxes or containers. The colder temperatures necessitate use of protective clothing.

<table>
<thead>
<tr>
<th>Hazard</th>
<th>Slipping and falling on slippery floors.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Danger</td>
<td>Back, head and leg injuries.</td>
</tr>
<tr>
<td>Precaution</td>
<td>Wear safety boots with good treads.</td>
</tr>
<tr>
<td>Precaution</td>
<td>Keep the floor clear of debris. Routine cleanups are needed to provide an uncluttered environment.</td>
</tr>
<tr>
<td>Precaution</td>
<td>Use in-floor heating, if available, in freezers to reduce ice build-up.</td>
</tr>
<tr>
<td>Hazard</td>
<td>Boxes stacked too high or are not secured.</td>
</tr>
<tr>
<td>--------------</td>
<td>--------------------------------------------</td>
</tr>
<tr>
<td>Danger</td>
<td>Boxes falling on the workers causing physical injuries.</td>
</tr>
<tr>
<td>Precaution</td>
<td>Make sure the boxes are securely nested and not stacked too high.</td>
</tr>
<tr>
<td>Precaution</td>
<td>Install racking systems to keep containers stable.</td>
</tr>
<tr>
<td>Precaution</td>
<td>Wear safety shoes and hard hats.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Hazard</th>
<th>Ammonia leaks in freezer units.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Danger</td>
<td>Workers exposed to harmful gases.</td>
</tr>
<tr>
<td>Precaution</td>
<td>Evacuate the area until the problem is resolved.</td>
</tr>
<tr>
<td>Precaution</td>
<td>Install sensors and alarm systems.</td>
</tr>
<tr>
<td>Hazard</td>
<td>Temperature in freezer and cold storage rooms.</td>
</tr>
<tr>
<td>---------------------</td>
<td>-----------------------------------------------</td>
</tr>
<tr>
<td>Danger</td>
<td>Prolonged exposure to cold temperatures can affect workers’ coordination and reaction times.</td>
</tr>
<tr>
<td>Precaution</td>
<td>Wear cold weather clothing.</td>
</tr>
</tbody>
</table>

Precaution: Take scheduled breaks in order to maintain your internal body temperature.
**Dry Storage**

The storage of packaging materials, chemicals, cleaning equipment and/or ingredients is located away from the processing areas and, in many instances, on different floors. Storage and movement of these products to processing areas presents potential dangers and hazards to workers.

<table>
<thead>
<tr>
<th>Hazard</th>
<th>Vision impairment.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Danger</td>
<td>Visibility is limited, and maneuvering on stairs can result in trips and falls.</td>
</tr>
<tr>
<td>Precaution</td>
<td>When carrying light but bulky materials do not stack the materials so high that your visibility is impaired.</td>
</tr>
</tbody>
</table>

**Precaution**

Provide good lighting in stairways and ensure stairs are in good repair.

**Precaution**

Check doorways and passageways before entering.
### CHEMICAL STORAGE

<table>
<thead>
<tr>
<th>Hazard</th>
<th>Materials loosely stacked and not properly secured can result in containers or boxes falling on workers.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Danger</td>
<td>Physical injury.</td>
</tr>
<tr>
<td>Precaution</td>
<td>Store the supplies on racks uniformly stacked to prevent them from falling.</td>
</tr>
<tr>
<td>Precaution</td>
<td>Remove damaged or unnecessary materials from the storage areas.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Hazard</th>
<th>Broken or punctured chemical containers, chemical burns, toxic fumes.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Danger</td>
<td>Harmful chemicals may spill or seep into the environment or come in contact with workers.</td>
</tr>
<tr>
<td>Precaution</td>
<td>Do not handle chemicals and cleaning agents unless you have WHMIS training.</td>
</tr>
<tr>
<td>Precaution</td>
<td>Make sure that the WHMIS data sheets for chemicals in storage are available and current.</td>
</tr>
<tr>
<td>Precaution</td>
<td>Store chemicals in a safe and controlled environment. Remove all chemicals that are no longer needed.</td>
</tr>
</tbody>
</table>
Although there are many different categories of processing, many of the hazards are common to all fish processing operations. There are operating practices that protect both the employees and the product. These are included in the plant sanitation programs and worker hygiene programs.

Workers need to be aware of the risks and dangers that are inherent in their jobs. Many jobs require workers to be in cold environments, working near hot oils and steam, standing on concrete floors, working from heights and walking on slippery floors.

The activities taking place in a plant require the use of forklifts that are constantly moving in and out of the work area. Some equipment has sharp blades, knives, or moving parts and much of the equipment is pressurized.

In addition, maintenance and general house cleaning are required to ensure that the equipment and the facilities are in proper working order.

All of these activities present potential dangers and hazards which workers must remain aware of in order to prevent injury to themselves and others.

---

**Physical Hazards**

**Lifting, slipping, repetitive motions, and reaching.**

Slippery floors, confined spaces, and lifting and carrying boxes and containers are common activities in fish processing plants. These also result in the majority of injuries.

---

**Safe Lifting Tips**

- Get as close to the object as possible before lifting
- Clear all obstacles then slide the object towards you
- Avoid twisting
- Get help carrying or pulling heavy or awkward objects
- Place heavy objects on surfaces that are knee high to avoid lifting from the floor or forklift to the processing lines
- Stack or lift heavy objects no higher than shoulder level, when possible
Lifting objects.

### Danger

Sustaining lower-back injury or dropping an object on your foot.

### Precaution

Use proper procedures when lifting objects. (See Safe Lifting Tips, pg. 38)

### Precaution

Wear foot protection.

---

**Hazard**

Slippery floors and walkways.

**Danger**

Oil, grease, fish slime, water and salt can be present in fish plants and make surfaces very slippery.

**Precaution**

Use footwear with good grips.

**Precaution**

Clean up spills right away.

**Precaution**

Clean floor surfaces regularly.
<table>
<thead>
<tr>
<th>Hazard</th>
<th>Repetitive work activities-lifting and carrying, filleting fish, making boxes, and continuous standing.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Danger</td>
<td>Soft tissue injuries such as tendonitis and carpal tunnel syndrome.</td>
</tr>
<tr>
<td>Precaution</td>
<td>Never put undue strain on your back. Lift with the power coming from your legs. Use cushioned mats at your workstation.</td>
</tr>
<tr>
<td>Precaution</td>
<td>Keep your equipment in good repair. For example, knife steeling keeps a sharp edge on your knife, which reduces effort and provides greater productivity; lift jacks with smooth working wheels reduce strain in pushing and pulling the load.</td>
</tr>
<tr>
<td>Precaution</td>
<td>Vary any repetitive movements to relax your muscles.</td>
</tr>
<tr>
<td>Precaution</td>
<td>If possible implement a job rotation program.</td>
</tr>
<tr>
<td>Precaution</td>
<td>During break periods, perform stretching exercises to relieve strain.</td>
</tr>
<tr>
<td>Precaution</td>
<td>Workstations should be adjustable to fit different worker heights.</td>
</tr>
<tr>
<td>Precaution</td>
<td>Workstations should minimize reaching for, or lifting product.</td>
</tr>
<tr>
<td>Precaution</td>
<td>Review work processes and redesign as necessary.</td>
</tr>
<tr>
<td>Hazard</td>
<td>Airborne contaminants.</td>
</tr>
<tr>
<td>------------</td>
<td>------------------------------------------------------------</td>
</tr>
<tr>
<td>Danger</td>
<td>Respiratory illness; blackouts; allergic reactions.</td>
</tr>
<tr>
<td>Precaution</td>
<td>Hood and ventilate all processing equipment that emit vapours.</td>
</tr>
<tr>
<td>Precaution</td>
<td>Ensure there is adequate and appropriate ventilation when working in closed areas. Ventilate away from the breathing zone.</td>
</tr>
<tr>
<td>Precaution</td>
<td>Report any instances when propane or ammonia odours are suspected.</td>
</tr>
<tr>
<td>Precaution</td>
<td>Routinely check equipment to ensure that all fittings are properly secured.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Hazard</th>
<th>Reaching and twisting.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Danger</td>
<td>Back and soft tissue injuries.</td>
</tr>
<tr>
<td>Precaution</td>
<td>Adjust your work method to reduce the amount of stretching that is required. Do not extend yourself when lifting objects overhead. Wherever possible, use mechanical assistance when lifting heavy objects.</td>
</tr>
<tr>
<td>Precaution</td>
<td>Avoid twisting at the waist. Move your whole body when turning.</td>
</tr>
</tbody>
</table>
Precaution: Do not handle or prepare cleaning solutions unless you are trained in WHMIS.

Precaution: Advise management if you have any sensitivities or allergies to chemicals or products being used in your work area.

Precaution: Wear respiratory protective equipment when working in areas where there is excessive dust or where there are gaseous or toxic substances.

Precaution: Use appropriate masks as defined in the MSDS, and ensure protective masks fit properly.

Precaution: If you become dizzy or weak, leave the work area immediately.
Plant Maintenance and Repairs

Routine inspection along with scheduled maintenance ensures the building and equipment are in good operating condition. Failure to have a safe facility can lead to injuries and unscheduled downtime.

Management and staff, consistent with the OH&S Act and Regulations, must jointly attempt to identify the precautions needed to ensure that the workplace is safe. They should also detail safety requirements when working in specialized areas such as electrical, refrigeration or boiler rooms.

Maintenance in fish plants requires specialized labour and the ability to work in a variety of environments. Each has its own potential hazards that can affect the safety of the worker. There are some common practices workers can use to reduce the risk of incidents.

Hazard: Working from heights using a variety of equipment - ladders, lifts, and scaffolding - to carry out maintenance and repairs.

Danger: Falls resulting in injury or death.

Precaution: When working from high heights (greater than 3 meters), use scaffolding or a fall protection harness.

Precaution: Use sturdy ladders that do not exceed 30 feet in height. Use ladders that have safety feet and are in good repair.

Precaution: Do not climb on “makeshift” devices such as chairs, crates, totes or wharf boxes.
Precaution  If using a forklift as a workstation, ensure a work cage is properly secured to the lifting forks.

Hazard  **Using power tools, heavy equipment or pressurized hoses to do repairs on the facilities.**

Danger  Injuries to limbs, eyes or hearing.

Precaution  Wear hard hats and safety footwear when carrying out any repairs.

Precaution  Use the right tool for the right job.

Precaution  Wear eye protection to protect from flying objects, particles or splashing liquids.

Precaution  Wear ear protection to reduce noise to a comfortable level.

Precaution  Wear gloves, hand pads, sleeves or wristlets to protect the hands from injury.

Precaution  When working from high heights (greater than 3 meters), use scaffolding or a fall protection harness.
Equipment Maintenance and Repairs

The operation of a fish plant requires the use of a variety of equipment. Some is specific to a particular process. However, there is equipment that is common to all operations such as tables and processing lines, freezers, packing machines, conveyor belts, pallet jacks, forklifts, knives and cutting machines.

Routine maintenance to equipment prevents injury or harm to the workers who will be using the equipment.

<table>
<thead>
<tr>
<th>Hazard</th>
<th>Working on equipment while plant is in operation.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Danger</td>
<td>Physical injury to employees or self.</td>
</tr>
<tr>
<td>Precaution</td>
<td>Advise all employees in the immediate area before starting any equipment repairs.</td>
</tr>
<tr>
<td>Precaution</td>
<td>If possible, remove equipment from the work area to carry out repairs.</td>
</tr>
</tbody>
</table>

Hazard  Working on equipment that has moving parts and/or cutting edges.

Danger  Electrical shock; injuries to limbs.

Precaution  Before working on any mechanized equipment ensure that the energy source is shut off, any residual energy is eliminated, and a lockout tag is affixed to the control panel.

Precaution  Wear appropriate protective equipment (hard hats, eye protection, gloves, mask) when working on any pressurized pipes and valves.
<table>
<thead>
<tr>
<th>Precaution</th>
<th>Hazard</th>
<th>Precaution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do not remove any guards that have been installed to protect a moving part of the equipment unless you are trained and authorized to do so.</td>
<td><strong>Tripping on cables, hoses or cords on floor.</strong></td>
<td>Cover or securely tape all cables, hoses or cords that are located in any walk or passageway.</td>
</tr>
<tr>
<td><em>DO NOT REACH BEHIND GUARD</em></td>
<td><strong>Physical injury.</strong></td>
<td></td>
</tr>
<tr>
<td>Precaution</td>
<td><strong>Never overload an outlet with too many plugs.</strong></td>
<td></td>
</tr>
<tr>
<td>Precaution</td>
<td><strong>Using hand tools and power tools for repairs.</strong></td>
<td><strong>Cuts and electrical shock.</strong></td>
</tr>
</tbody>
</table>
Inadequate lighting.

Physical injuries from tripping over clutter, bumping into machines or equipment.

Check that all the lights are functioning and light the work area well.

Replace burnt out lights before commencing work.

Remove clutter and unnecessary materials and equipment from the work area.

Make sure all electrical cords are in good repair and are properly grounded.

Use ground fault interrupt devices with all power tools.

Propane or gas leaks.

Explosion or fire.

Only trained personnel should replace or repair propane or gas cylinders.

Use proper tools for tightening all tank fittings.

If a leak is suspected put soapy water on joints to identify leak.
Cleaning the Plant

A clean and uncluttered workplace is a safe workplace. The cleaning process exposes workers to a variety of chemicals, posing potential risks.

<table>
<thead>
<tr>
<th>Hazard</th>
<th>Toxic or explosive cleaning chemicals.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Danger</td>
<td>Explosion or poisonous gases.</td>
</tr>
<tr>
<td>Precaution</td>
<td>Do not mix or use cleaning chemicals unless you are trained in their use. Mixing of some chemicals may cause explosive reactions or produce toxic gases.</td>
</tr>
</tbody>
</table>

Use of chemicals.

<table>
<thead>
<tr>
<th>Danger</th>
<th>Cleaning chemicals can cause illness, burns, eye and respiratory irritation.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Precaution</td>
<td>Only trained workers should be involved in the cleaning and sanitation program. Training must include WHMIS training.</td>
</tr>
<tr>
<td>Precaution</td>
<td>Do not use any chemicals that are not labeled, or are not on the MSDS sheets.</td>
</tr>
<tr>
<td>Precaution</td>
<td>Follow all mixing and application instructions. Do not vary the procedures.</td>
</tr>
<tr>
<td>Precaution</td>
<td>Sound alarm, notify emergency response team as necessary.</td>
</tr>
</tbody>
</table>
### General Safety on the Processing Line

There are some work areas that are common to all processing plants. Workers must be aware of any hazards associated with these operations to protect themselves and others from injury.

<table>
<thead>
<tr>
<th>Hazard</th>
<th>Cluttered work areas.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Danger</td>
<td>Injuries from spills and falls.</td>
</tr>
<tr>
<td>Precaution</td>
<td>Remove unnecessary equipment and debris from the work area.</td>
</tr>
<tr>
<td>Precaution</td>
<td>Store all equipment, including cleaning equipment, in its proper place.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Hazard</th>
<th>Slippery floors.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Danger</td>
<td>Injury to back and limbs.</td>
</tr>
<tr>
<td>Precaution</td>
<td>Wear footwear with good grips.</td>
</tr>
<tr>
<td>Precaution</td>
<td>Clean up spills immediately.</td>
</tr>
</tbody>
</table>
**Open or slippery floor drains.**

**Danger**
Injury to back and limbs.

**Precaution**
Make sure that drain covers are properly installed and in good repair.

**Precaution**
Wear footwear with good grips.

**Working on processing lines.**

**Danger**
Soft tissue injuries such as tendonitis or carpal tunnel syndrome.

**Precaution**
Use cushioned or anti-fatigue mats at your workstation.

**Precaution**
Adjust the height of your workstation to reduce the need for lifting product or equipment.
Precaution: Keep your equipment in good repair - e.g. knife steeling.

Precaution: Vary your repetitive movements to relax your muscles. If possible implement a job rotation program.

Precaution: During break periods, perform stretching exercises to relieve strain.

Hazard: Cuts from knives and fish bones.

Danger: Injury to hands; bacterial infections.

Precaution: Exercise caution and good techniques when using knives.

Precaution: Wear protective gloves.

Precaution: Wash and disinfect cuts from knives or bones.
<table>
<thead>
<tr>
<th>Hazard</th>
<th>Moving parts, conveyors and belts.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Danger</td>
<td>Injury to hands and limbs.</td>
</tr>
<tr>
<td>Precaution</td>
<td>Do not wear loose clothing.</td>
</tr>
<tr>
<td>Precaution</td>
<td>Keep hands clear of all moving parts.</td>
</tr>
<tr>
<td>Precaution</td>
<td>Do not reach behind, around or remove any guards.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Hazard</th>
<th>Hot water and cookers.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Danger</td>
<td>Burns and scalding from steam and liquids.</td>
</tr>
<tr>
<td>Precaution</td>
<td>Ensure steam hood or vents are functioning properly.</td>
</tr>
<tr>
<td>Precaution</td>
<td>Exercise caution when opening and closing cooking vats.</td>
</tr>
<tr>
<td>Precaution</td>
<td>Vent steam away from workers.</td>
</tr>
<tr>
<td>Precaution</td>
<td>Use gauges to monitor the temperature and pressure.</td>
</tr>
</tbody>
</table>
Loading Fish onto Processing Line

When in production, there is a need to move fish as quickly as possible from storage through the processing line and then to the finished product. Speed and labour intensive activities can lead to accidents and injuries.

### Hazard: Lifting and moving containers.

#### Danger
- Use proper procedures when lifting objects.

#### Precaution
- Do not attempt to lift oversized containers.

### Safe Lifting Tips
- Get as close to the object as possible before lifting
- Clear all obstacles then slide the object towards you
- Avoid twisting
- Get help carrying or pulling heavy or awkward objects
- Place heavy objects on surfaces that are knee high to avoid lifting from the floor or forklift to the processing lines
- Stack or lift heavy objects no higher than shoulder level, when possible

### Hazard: Loading fish blocks onto mechanical cutting machines or conveyor belts.

#### Danger
- Injury to hands or arms.

#### Precaution
- Keep hands away from any moving cutting knives or screw conveyors. Do not by-pass any guards that are in place.

#### Precaution
- Shut off the equipment if it is necessary to dislodge any stuck product. Before attempting to dislodge the product, place a lockout on the control panel.

#### Precaution
- Be alert and conscious of your job at all times.
Packaging and Labeling

The common injuries in this area result from the type of equipment used and the repetitive nature of the work activities.

<table>
<thead>
<tr>
<th>Hazard</th>
<th>Repetitive motion.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Danger</td>
<td>Soft tissue injuries such as tendonitis or carpal tunnel syndrome.</td>
</tr>
<tr>
<td>Precaution</td>
<td>Vary your repetitive movements to relax your muscles.</td>
</tr>
<tr>
<td>Precaution</td>
<td>During break periods, perform stretching exercises to relieve strain.</td>
</tr>
</tbody>
</table>

| Precaution | Lift with your legs, not your back. |

<table>
<thead>
<tr>
<th>Hazard</th>
<th>Strapping and stapling machines.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Danger</td>
<td>Hand injuries.</td>
</tr>
<tr>
<td>Precaution</td>
<td>Keep hands clear of the moving parts of the equipment.</td>
</tr>
<tr>
<td>Precaution</td>
<td>Wear properly fitted clothing to avoid getting caught in the machinery.</td>
</tr>
</tbody>
</table>

| Precaution | Lift with your legs, not your back. |
### Chilling and Freezing

<table>
<thead>
<tr>
<th>Hazard</th>
<th>Precaution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Injuries in icehouse.</td>
<td>Wear footwear with good grips.</td>
</tr>
<tr>
<td>Injuries to back or limbs.</td>
<td>Advise others if you are working alone.</td>
</tr>
<tr>
<td>Keep limbs clear of moving parts.</td>
<td>Have a co-worker on the outside when you are working in the icehouse.</td>
</tr>
<tr>
<td>Ice from chutes falling on workers.</td>
<td>Wear hard hats when there is risk of things dropping from overhead.</td>
</tr>
<tr>
<td></td>
<td>Keep limbs clear of moving parts.</td>
</tr>
</tbody>
</table>

#### Danger
- Injury to the head and back.
- Do not stand under an ice chute. Be aware of the location of the chute whether in the hold of a vessel or in an icehouse.
- Wear hard hats when there is risk of things dropping from overhead.
- Prolonged exposure in a cold and freezing environment.
- Hypothermia, reduced reaction times, frostbite.
- Wear cold weather clothing.
- Take scheduled breaks in order to maintain your internal body temperature.
**Precaution**

Freezers.

**Danger**

Injuries to hands or arms from plate freezers.

**Precaution**

Do not activate the compression of the plates until all people are clear of the plate freezer.

**Precaution**

Always use solid spacers between plates to limit compression.

**Hazard**

Ammonia leakage.

**Danger**

Asphyxiation and burns from ammonia gas.

**Precaution**

Evacuate all personnel from the area.

**Precaution**

Monitor equipment for leaks, broken parts, or other problems.

**Precaution**

Report any instance of ammonia leakage.

**Hazard**

Lifting boxes and freezer pans.

**Danger**

Back strains and pulled muscles.

**Precaution**

Use proper procedures when lifting objects. (See Safe Lifting Tips, pg. 53)

**Precaution**

Lift only what you are capable of lifting.

**Precaution**

Use equipment to move the containers horizontally.
## Palletizing the Product

<table>
<thead>
<tr>
<th>Hazard</th>
<th>Lifting and twisting.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Danger</td>
<td>Back strains and pulled muscles.</td>
</tr>
<tr>
<td>Precaution</td>
<td>Use proper procedures when lifting objects. (See Safe Lifting Tips, pg. 53)</td>
</tr>
<tr>
<td>Precaution</td>
<td>Lift only what you are capable of lifting.</td>
</tr>
</tbody>
</table>

**Precaution**

Use equipment to move the containers horizontally not vertically.

**Hazard**

Getting struck by falling containers.

**Danger**

Injury to head, legs or feet.

**Precaution**

Wear hard hat and safety footwear.
**Hazard**  
**Injuries from forklifts or pallet jacks.**

**Danger**  
Physical injuries from forklifts could include bruising, broken bones or death.

**Precaution**  
Operate the forklift at slow speeds in congested work areas. Workers should be aware when forklifts are in operation.

---

**Hazard**  
**Physical strain.**

**Danger**  
Back injuries from pushing or pulling a pallet jack.

**Precaution**  
Make sure the pallet jacks are in good repair and that the lift and wheels move freely.

---

**Precaution**  
Do not overload the pallet to the point that it’s difficult to move.
Storage, Cold Storage and Shipping

In storage areas, boxes are commonly placed on pallets which are then piled on top of one another or placed on racks. There are usually limited personnel working in these areas and vehicle traffic can be fast and busy at times. Due to the confined environment, there is an increased risk of persons being struck by a forklift or by objects falling from overhead. If the area is a cold storage area, there is also the added danger of prolonged exposure to the cold.

<table>
<thead>
<tr>
<th>Hazard</th>
<th>Working alone in a cold storage.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Danger</td>
<td>Hypothermia; frostbite; death.</td>
</tr>
<tr>
<td>Precaution</td>
<td>Install signage on the locks that work is in progress to prevent someone from locking the door while workers are inside.</td>
</tr>
<tr>
<td>Precaution</td>
<td>Advise co-workers whenever there is a requirement to work alone in the cold storage.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Hazard</th>
<th>Physical injuries.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Danger</td>
<td>Back strains and pulled muscles.</td>
</tr>
<tr>
<td>Precaution</td>
<td>Use proper procedures when lifting objects. (See Safe Lifting Tips, pg. 53)</td>
</tr>
</tbody>
</table>
Use equipment such as the forklift to move containers vertically.

**Hazard**

Physical injuries.

**Danger**

Injury to back and limbs.

**Precaution**

Wear footwear with good grips.

---

Lift only what you are capable of lifting.

**Hazard**

Falling containers.

**Danger**

Physical injury.

**Precaution**

Check that the load is secured and the forklift is in good repair before lifting.

**Precaution**

Wear a hardhat and safety footwear when working in a cold storage.

---

Inadequate lighting.

**Danger**

Physical injuries and damage to the facilities.

**Precaution**

Immediately report or fix any burnt out light bulbs.
<table>
<thead>
<tr>
<th>Hazard</th>
<th>Forklift traffic.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Danger</td>
<td>Physical injury or death.</td>
</tr>
<tr>
<td>Precaution</td>
<td>Use backup alarms to warn of moving vehicles.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Hazard</th>
<th>Icy, slippery or cluttered floors.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Danger</td>
<td>Falling under equipment, slipping on the floors, other physical injury.</td>
</tr>
<tr>
<td>Precaution</td>
<td>Be aware of ice buildup on floors.</td>
</tr>
<tr>
<td>Precaution</td>
<td>Wear boots with good treads to prevent slipping.</td>
</tr>
</tbody>
</table>

| Precaution | Clear debris away from the work area before commencing work. Do not store unnecessary equipment or supplies in the storage areas. |
**Hazard**  
Slipping, sliding or physical injury.

**Danger**  
Sustaining a lower back injury or dropping objects on your foot.

**Precaution**  
Never put undue strain on your back.

**Precaution**  
Lift with the power coming from your legs.

**Precaution**  
Wear foot protection that has a good grip to prevent slipping.

**Hazard**  
Improperly stacked or placed totes or wharf boxes.

**Danger**  
Boxes and containers falling on workers causing physical injuries.

**Precaution**  
When stacking totes and wharf boxes make sure they are placed and secured to prevent falling over.

**Precaution**  
Keep passage ways open to prevent collisions with forklifts. Always look before walking from behind stacked containers.
Make sure the load is evenly and securely placed on the forklift.

Precaution

Drive carefully on sloped roadways.

Precaution

Check that the trailer is parked tight to loading and unloading doors.

Precaution

Make sure any ramps are secured before driving the forklift on or off trailers, and that wheel chocks are in place.

Precaution

Check the location of co-workers when loading or unloading cargo.

Precaution

Never stand on the bucket, forks, or other accessories, especially while they are moving.
Section 3: Processing Safety
Processing Safety

Each process type - Groundfish, Salted, Pelagics, Canned, Value-added or Shellfish - is unique in its operations and poses specific hazards to workers. All processing operations use a combination of mechanical and manual activities, and many processes use specialized equipment. Workers require specialized training for some equipment operation to avoid injury.

The processing of all fish products is repetitive in nature and workers need to remain aware when carrying out repetitive and sometimes routine activities. There is a need for workers to “stay alert” and keep in mind that there are potential hazards to themselves and those working around them. Not being attentive and not concentrating on the work at hand can contribute to workplace injuries.

Safe lifting techniques are also important in all types of processing and are outlined in the chart below.

<table>
<thead>
<tr>
<th>Safe Lifting Tips</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Get as close to the object as possible before lifting</td>
</tr>
<tr>
<td>• Clear all obstacles then slide the object towards you</td>
</tr>
<tr>
<td>• Avoid twisting</td>
</tr>
<tr>
<td>• Get help carrying or pulling heavy or awkward objects</td>
</tr>
<tr>
<td>• Place heavy objects on surfaces that are knee high to avoid lifting from the floor or forklift to the processing lines</td>
</tr>
<tr>
<td>• Stack or lift heavy objects no higher than shoulder level, when possible</td>
</tr>
</tbody>
</table>
Groundfish - Fresh and Frozen

The hazards of groundfish processing are associated with equipment used for cutting, slicing, scaling and/or skinning the fish.

<table>
<thead>
<tr>
<th>Hazard</th>
<th>Using skinning, filleting, scaling machines.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Danger</td>
<td>Cuts from sharp blades; severe damage to, or loss of limbs, physical injuries.</td>
</tr>
<tr>
<td>Precaution</td>
<td>Do not operate equipment unless properly trained.</td>
</tr>
<tr>
<td>Precaution</td>
<td>Obey safety signs on equipment. Do not reach behind safety guards.</td>
</tr>
<tr>
<td>Precaution</td>
<td>Do not reach into or stretch over moving parts.</td>
</tr>
<tr>
<td>Precaution</td>
<td>Wear properly fitted clothing to avoid getting caught in the machinery.</td>
</tr>
<tr>
<td>Precaution</td>
<td>Shut down equipment and install a lock out device BEFORE reaching in or around moving parts.</td>
</tr>
</tbody>
</table>
Precaution: Adjust work methods to reduce lifting and twisting when moving trays or boxes.

Precaution: Be aware of the limitations of the equipment. Do not exceed manufacturers operating guidelines.

**Hazard**

**Use of knives.**

**Danger** Soft tissue injuries such as tendonitis or carpal tunnel syndrome.

**Precaution** Maintain a sharp knife. Steeling often and correctly will keep the knife sharp and you will then require less effort for making your cuts.

**Precaution** Safely store your knife in a sheath between uses.

**Precaution** Exercise your wrists during breaks.
Precaution

If possible, implement job rotation.

Hazard

Loading and unloading freezers and plate freezers.

Danger

Physical injury.

Precaution

Use proper lifting techniques when loading the freezers and plate freezers.

Precaution

Avoid twisting when lifting pans or trays.

Precaution

Check that co-workers are clear of the plate freezer BEFORE lowering the plates.

Precaution

Use mechanical aids when stacking pans or trays to heights above your waist.
## Salt Fish

Salt fish preparation requires workers who are skilled in the use of knives and specialized splitting and skinning machines. Workers are also required for moving boxes and trays from one workstation to another.

<table>
<thead>
<tr>
<th>Hazard</th>
<th>Using heading, splitting and skinning machines.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Danger</td>
<td>Cuts and physical damage to hands and arms.</td>
</tr>
<tr>
<td>Precaution</td>
<td>Keep hands clear from all moving parts of the machines.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Hazard</th>
<th>Loose salt on the floors.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Danger</td>
<td>Sprains and strains, slipping or sliding.</td>
</tr>
<tr>
<td>Precaution</td>
<td>Keep the floors clean of debris, especially loose salt.</td>
</tr>
<tr>
<td>Precaution</td>
<td>Wear boots with good grips.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Danger</th>
<th>Do not reach around or near cutting blades.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Precaution</td>
<td>Routinely inspect all machines to ensure that any guards are in place and that automatic shut-off devices are working.</td>
</tr>
</tbody>
</table>
Precaution  
Shut down equipment and install a lock out device BEFORE reaching in or around moving parts.

Hazard  
Loading and unloading curing tanks.

Danger  
Slipping, sliding, bending or lifting and repetitive movements.

Precaution  
Use caution when climbing in or out of curing tanks. The loose salt and water causes the floors and tanks to be slippery.

Precaution  
When loading, unloading and salting the fish in the tanks, turn with your whole body to avoid twisting.

Hazard  
Hand gutting and splitting of fish.

Danger  
Cuts from knives, bone punctures and carpal tunnel syndrome.

Precaution  
Wear metal re-enforced gloves.

Precaution  
Keep your knife sharp and re-steel often.

Precaution  
Immediately treat all knife cuts or bone punctures with basic first aid. If severe, seek medical assistance.

Precaution  
Exercise wrists and hands to reduce tension.
<table>
<thead>
<tr>
<th><strong>Hazard</strong></th>
<th><strong>Loading and unloading dryer racks.</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Danger</strong></td>
<td>Back injuries.</td>
</tr>
<tr>
<td><strong>Precaution</strong></td>
<td>Use proper procedures when lifting objects.</td>
</tr>
<tr>
<td><strong>Precaution</strong></td>
<td>Work with a partner when loading the rack into the dryer. Share the load.</td>
</tr>
</tbody>
</table>

**Safe Lifting Tips**

- Get as close to the object as possible before lifting
- Clear all obstacles then slide the object towards you
- Avoid twisting
- Get help carrying or pulling heavy or awkward objects
- Place heavy objects on surfaces that are knee high to avoid lifting from the floor or forklift to the processing lines
- Stack or lift heavy objects no higher than shoulder level, when possible
Pelagics - Herring, Mackerel, Capelin

Preparation and processing of pelagics usually involves handling and moving large volumes of fish. The use of conveyors to move the fish along the processing line presents hazards specific to this type of operation. As with most fish processing, there are repetitive work activities that require that the workers remain alert at all times.

**Hazard**

Hand gutting and splitting of fish.

**Danger**

Cuts and bone punctures; carpal tunnel syndrome.

**Precaution**

Wear metal re-enforced gloves.

**Precaution**

Exercise wrists and hands to reduce tension.

**Precaution**

Keep your knife sharp and re-steel often.

**Precaution**

Immediately treat all knife cuts or bone punctures with basic first aid. If severe, seek medical assistance.
<table>
<thead>
<tr>
<th>Hazard</th>
<th>Loading and unloading curing tanks.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Danger</td>
<td>Physical - Slipping, sliding, bending or lifting and repetitive movements.</td>
</tr>
<tr>
<td>Precaution</td>
<td>Use caution when climbing in or out of curing tanks. The loose salt and water causes the floors and tanks to be slippery.</td>
</tr>
<tr>
<td>Precaution</td>
<td>When loading, unloading and salting the fish in the tanks, turn with your whole body to avoid twisting.</td>
</tr>
<tr>
<td>Precaution</td>
<td>Use mechanical aids when stacking pans or trays to heights above your waist.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Hazard</th>
<th>Working on catwalks and over conveyor belts.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Danger</td>
<td>Physical injury from falls or collisions.</td>
</tr>
<tr>
<td>Precaution</td>
<td>Wear footwear with proper treads.</td>
</tr>
<tr>
<td>Precaution</td>
<td>Maintain a secure 3-point contact when climbing ladders or climbing steep stairs.</td>
</tr>
<tr>
<td>Precaution</td>
<td>Check that walkways and ladders are clear of debris or equipment (hoses, ropes).</td>
</tr>
<tr>
<td>Precaution</td>
<td>Wear a hard hat when working or climbing between equipment and conveyors.</td>
</tr>
</tbody>
</table>

Pelagics - Herring, Mackerel, Capelin.
Canned

Canning of fish products requires the use of specialized equipment which should be operated by trained personnel. Trained and certified retort operators are the only personnel permitted to operate the pressurized retorting equipment.

Canning also requires workers to perform repetitive tasks in a timely fashion. Workers must be aware of the hazards associated with the hand packing and movement of large quantities of cans.

- **Hazard**: Packing product into can.
  - **Danger**: Soft tissue injuries such as tendonitis or carpal tunnel syndrome.
  - **Precaution**: Adjust work methods or work station to avoid bending.
  - **Precaution**: Stand on rubber or anti-fatigue mats.
  - **Precaution**: Exercise wrists.

- **Hazard**: Handling cans and baskets.
  - **Danger**: Physical - Slipping, sliding, bending or lifting.
**Precaution**

Check that the wheels of the retort baskets are operating smoothly.

Push retort basket using your legs. Do not try to pull or move the baskets with your upper body.

Check that your route is clear of debris or obstructions.

**Hazard**

**Loading and unloading retorts.**

**Danger**

Bending or Twisting.

**Precaution**

When loading or unloading a retort use a hoist to lift and move baskets.

**Hazard**

**Retort pressure.**

**Danger**

Explosion, steam release.

**Precaution**

Only certified retort operators should use equipment.

**Precaution**

Pressurized equipment should be metered and have automatic shutoffs or bleed valves when target pressure is exceeded.

**Hazard**

**Noise.**

**Danger**

Hearing injury or loss.

**Precaution**

Wear earplugs in noisy areas.

**Precaution**

Wear ear covers in areas such as high-pressure washing.
Value-added

In preparing Value-added fish products, raw materials are processed into consumer and institutional portions. Ingredients may be added to enhance the presentation and, in some cases, partial or full cooking takes place.

Workers are required to operate equipment that cuts the product into portions and cook using heat or oils. The repetitive nature of fish processing along with the use of specialized equipment presents specific hazards for workers.

Hazard  Working near cooking oils.

**Danger**  Burns and scalding from hot oil; fat fires.

**Precaution**  Wear protective clothing and eye wear when working around cooking oils.

**Precaution**  Use caution when opening any cooking vats. Contents may be under pressure and steam or oils may escape.

**Precaution**  Immediately report any suspected malfunctions of the cooking vats or lines.

**Precaution**  Be aware of the locations and operations of any fire extinguishers for the control of fat fires.

**Precaution**  Have adequate hooded and vent areas to remove steam and fumes from the process area.
**Hazard**

**Using block cutting machines (saws, slicers, presses).**

- **Danger**
  - Physical injury to hands and arms.

- **Precaution**
  - Keep hands away from the cutting blades.

- **Precaution**
  - Make sure all guards are in place and properly working.

- **Precaution**
  - Wear properly fitted clothing to avoid getting caught in the machinery.

- **Precaution**
  - Lift with your legs when loading blocks onto the cutting tables or lines.

- **Precaution**
  - Maintain your balance at all times when operating block cutting machines and saws. Do not over-extend or stretch when cutting the blocks.

- **Precaution**
  - Know the location of the automatic shut off cords, bars or buttons, and test them.

**Value-added**
**Precaution**

Physical injury; burns to hands or arms; breathing problems.

**Precaution**

Keep hands away from the hot elements of the sealing mechanism.

**Precaution**

Make sure all guards are in place and properly working.

**Precaution**

Wear proper fitting clothing to avoid it being caught in the machinery.

**Precaution**

Be familiar with the location of all automatic shut-off switches or buttons, and test them.

**Precaution**

Vent fumes from sealing equipment away from workers’ breathing zones.

**Hazard**

Automatic packing and sealing equipment.
Shellfish processing can take many forms—live, cooked whole, cooked portions and minced. In some cases, such as lobster, the live product is held in holding tanks or pounds until it is ready to be distributed.

The equipment used for cooking or extraction of meats from shellfish varies with the specific species and the final product form. The equipment and environment in some of these operations may present hazards that need to be addressed to ensure the workers are protected from incidents and illness.

**Hazard**  
Loading and unloading holding tanks.

**Danger**  
Drowning, slipping, sliding, bending or lifting.

**Precaution**  
Wear approved flotation devices where there is a risk of drowning.

**Precaution**  
Use caution when climbing in or around holding tanks. Excessive water causes the floors and tanks to be slippery.

**Precaution**  
Use footwear that has proper grips.

**Precaution**  
When loading and unloading the holding tanks, turn with your whole body to avoid twisting.

**Hazard**  
Working around open holding pounds.

**Danger**  
Drowning; slipping, sliding, bending or lifting.
**Precaution**
When boarding a skiff use a three point boarding procedure.

**Precaution**
Use caution when reaching over the sides of the skiff. Establish a good balance and do not reach too far.

**Precaution**
Inspect the hoisting system for operational problems and condition of equipment before use.

**Precaution**
Whenever possible, work in pairs or groups.

**Hazard**
Butchering table.

**Danger**
Soft tissue injuries such as tendonitis or carpal tunnel syndrome.

**Precaution**
Ensure cleaning brushes spin away from the breathing zone of workers.

**Precaution**
When butchering shellfish, keep your fingers and hands to the sides of the brushes.

**Precaution**
Exercise your wrists regularly to relieve any tension that may develop.
Exposure to shellfish allergen.

**Hazard**  Exposure to shellfish allergen.

**Danger**  Occupational asthma.

**Precaution**  Ensure that all ventilation systems are operating and in good repair. All components of the system, cookers, crushers, and other related items should be hooded, vented away from the workers, and routinely maintained.

**Precaution**  Advise your supervisor if you have allergies to shellfish proteins.

**Precaution**  Wear safety glasses to protect your eyes from flying debris.

**Precaution**  Use any respirators that are provided for the exposure in your specific work area.

**Precaution**  Wear earplugs or ear muffs in noisy areas.

**Precaution**  Wear ear covers in areas such as butchering and high-pressure washing.

**Hazard**  Noise.

**Danger**  Hearing injury or loss.

**Precaution**  Wear earplugs or ear muffs in noisy areas.

**Precaution**  Wear ear covers in areas such as butchering and high-pressure washing.
**Hazard** | **Precaution**
---|---
**Brine freezer.** |  
**Danger** | Skin damage from freezing; physical injury.  
**Precaution** | Do not climb on the edges of the brine tank.  
**Precaution** | Wear MSDS approved protective clothing, gloves and eye protection when working in the area.  
**Precaution** | Use lifting devices or obtain assistance if adding salt to brine tank.  

**Hazard** | **Precaution**
---|---
**Mincing machine.** |  
**Danger** | Physical injury to hands; bending or lifting.  
**Precaution** | Keep hands clear of the blades and mincing augers of the machine. Do not reach around any guards that are in place.  
**Precaution** | Know the location of all emergency shut-off buttons or devices for the specific machine.
Precaution | Wear properly fitted clothing to avoid getting caught in the machinery.
Precaution | Use anti-fatigue mats when standing for long periods of time at the machine.
Precaution | Use proper lifting procedures when loading materials into the machine.

Danger | Broken or crushed fingers or hands.
Precaution | Install guards near rollers to restrict the ability to place fingers in rollers.
Precaution | Be alert when putting product into the leg rollers. Keep hands as far from the rollers as possible.
Precaution | Know the location of the emergency shut-off buttons or devices for the leg-rolling machine.
Precaution | The emergency shut-off must be within reach of the operator.

Precaution | Wear properly fitted clothing to avoid getting caught in the machinery.
Workplace safety is a shared responsibility. All companies and individuals in the sector share the personal and financial cost of accidents and injuries. By using this handbook and working together to improve safety, everyone will benefit.
This handbook, **Process Safe**, has given an overview of how we can work together to improve safety.

If you would like additional copies of this handbook, please contact;

**Nova Scotia Fisheries Sector Council**
Tel: 1-902-742-6167
www.nsfsc.ca

For more information on occupational health and safety laws, regulations and safety prevention, please contact;

**Workers Compensation Board of Nova Scotia**
Tel: 1-902-491-8002
www.wcb.ns.ca

**Nova Scotia Department of Labour & Workforce Development**
**Occupational Health & Safety Division**
Tel: 1-902-424-5400 or
Toll Free: 1-800-952-2687
www.gov.ns.ca/lwd/healthandsafety

**SafetyNet Centre for Occupational Health and Safety Research**
Tel: 1-709-737-7233
Toll Free: 1-866-6SAFETY (672-3389)
www.safetynet.mun.ca

For more information on occupational safety laws, regulations and safety prevention, please contact;

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Tel: 1-902-491-8002
www.wcb.ns.ca

For information regarding shellfish OH&S, visit
www.shellfishohs.ca

For copies of the knife sharpening video and manual used for reference in this handbook please call 1-866-6 SAFETY