manufacturing
Safety Alliance of BC

Mobile Equipment

PROGRAM MODEL

Manufacturing Safety Alliance of BC

The Manufacturing Safety Alliance of BC, formerly known as FIOSA-MIOSA Safety Alliance of BC, was established in December 2007 to reduce the high injury rate in the food and manufacturing industries. Our mission is to foster commitment among employers to reduce the injury rate in all applicable areas. Our vision is to promote industry leadership in health and safety.

The Manufacturing Safety Alliance of BC strives to accomplish our mission and vision through the delivery of a variety of core services including:

- Training in areas such as occupational health and safety (OHS) leadership, program building, and auditing
- Consultation and Advisory Services
- The certifying partner for the Occupational Safety Standard of Excellence (OSSE) in partnership with WorkSafeBC

For further information, visit: www.safetyalliancebc.com

Disclaimer

This course manual is intended solely for internal use as an awareness and information guide. It is not intended as a statement of the standards required in any particular situation, nor is it intended that this workbook should in any way advise anyone concerning legal authority to perform any activities or procedures.

Every effort was made to ensure the accuracy and relevance of this information; however, this material may be subject to change due to various factors. These factors may include regulatory or interpretive changes, and a need to adapt the material to unique situations or procedures.

Nothing in this package and the course program absolve participants from using their sound judgment in the appropriate application of the material learned.

Prepared by the MSABC Safety Alliance of BC

Purpose of This Document

This document will provide explanations and samples of policies and procedures for each required component of a Mobile Equipment program. It is the user's responsibility to modify the samples to reflect the company's workplace, the equipment being used, and the operating processes and procedures.

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Part 1: Program Overview

1. Introduction

Mobile equipment is defined as "a wheeled or tracked vehicle which is engine or motor powered, together with attached or towed equipment, but not a vehicle operated on fixed rails or tracks". This type of equipment normally operates within the boundaries of a workplace property and it is the responsibility of the employer to develop a program that ensures the health and safety of equipment operators or workers carrying out tasks in the vicinity of mobile equipment.

In regards to the manufacturing sector including food and beverage processing this primarily refers to forklifts and motorized pallets jacks. However, it also applies to agricultural tractors, front end loaders and all-terrain cycles or all-terrain vehicles (ATV), as well as licenced trucks and semi-trailer units while operating in the workplace.

Employers must be concerned with the safe operation of mobile equipment because of the interaction between the equipment, pedestrians and other equipment and structures. Pedestrians especially are at a higher risk of injury because in many cases they have to work or walk in close proximity to mobile equipment.

2. Legislation

When any piece of mobile equipment, including a motor vehicle, is present in a workplace which is not considered a public highway or industrial road then the requirements of Part 16 of the OHSR (Occupational Health and Safety Regulation) and accompanying guidelines must be complied with. If a piece of mobile equipment is used to transport workers then Part 17 of the OHSR will also apply. Scissor lifts and boom trucks which can be considered mobile equipment must comply with requirements of Part 13 as well as sections of Part 16.

The most important requirements of the regulation are those that deal with

- regular inspection and maintenance of equipment
- training and competency of operators
- rollover protective structures, seating and use of seatbelts

Employers can review the entire regulations by going to www.worksafebc.ca. In addition to provincial regulations, there are several CSA (Canadian Standards Association), ANSI (American National Standards Institute) and WCB (Workers Compensation Board) standards that are referenced in Part 16 and must be

complied with as required. The referenced CSA standards include the following titles and several of them can be viewed on the CSA website:

- CSA Standard Z150-1974, Safety Code for Mobile Cranes
- CSA Standard CAN/CSA-C225-M88, Vehicle Mounted Aerial Devices
- CSA Standard B335-94, Industrial Lift Truck Operator Training
- CSA Standard B335-04, Safety Standard for Lift Trucks

3. Program Elements

A mobile equipment program developed for a workplace should contain the following elements:

1. Mobile Equipment Design and Procurement

Mobile equipment must be purchased with consideration to what it needs to accomplished and where it is intended to work. Criteria will include capacity, manoeuvring ability, size and dimensions, electric or fuel powered, optional equipment and compliance with applicable standards.

2. Inventory of Mobile Equipment

All mobile equipment in the workplace should be identified and listed in an equipment inventory. The intent of the inventory is to identify mobile equipment through serial numbers and track maintenance, incidents and eventually disposal of each piece of equipment.

3. General Operating Requirements

General operating requirements for mobile equipment can include issues such as worker supervision, fueling or recharging equipment, requirements for seating and operator restraint, equipment speed limits, unattended equipment and loading of trucks or railcars.

4. Site Specific Safety Requirements

Every employer that uses mobile equipment in a workplace must identify the hazards associated with the use of that equipment and ensure that specific controls are implemented to control those hazards. Site specific issues to be considered include width of travel lanes, material storage within workplace and traffic patterns in workplace.

5. Operator Qualifications

Ensure that mobile equipment operators are trained and regularly re-evaluated in accordance with regulatory requirements, applicable standards and industry standards. In addition operator evaluations and/or re-training should be carried out on a regular basis. All training and operator evaluations must be documented.

6. Operator Medical and Physical Fitness Requirement

CSA standard B335-04 references basic requirements in regards to medical and physical fitness for lift truck operators that could be reasonably applied to any mobile equipment operator. The assessment or

evaluation to determine compliance with these requirements must be carried out by a doctor, nurse or other person who by training has the ability to carry out such a determination.

7. Inspection and Maintenance

Mobile equipment must be inspected on a regular basis in accordance with manufacturer recommendations, regulatory requirements, applicable standards and industry best practices. This may include a requirement for regular re-certification of the equipment or specific components. Inspections should be carried out on a shift basis by equipment operators or other identified individuals. Inspections must be documented and maintained as required documentation for a determined period of time.

8. Safe Work Procedures

SWPs must be developed for the operation of mobile equipment based on general operating requirements, site specific requirements and the identified hazards of the equipment operation.

9. Pedestrian Safety

Pedestrian safety must be ensured whenever there is a risk of being struck by mobile equipment. The employer is responsible to carry out a risk assessment and implement appropriate controls to minimize any risk to pedestrians in the workplace.

10. Program Review

The mobile equipment program should be reviewed on an annual basis and revised as necessary by the operations of the workplace.

Part 2: Mobile Equipment Program - a sample

Sample policy statement

The Company recognizes the hazards associated with the operation of heavy equipment/mobile equipment. This policy has been developed to establish guidelines to eliminate injuries or fatalities related to this type of equipment.

This policy applies to all free moving mobile equipment that may be propelled by gasoline, propane, diesel or electricity. Only competent personnel may operate heavy equipment/mobile equipment. An individual's competency must be demonstrated by successful completion of the training and evaluation process specified in this policy. This policy establishes requirements to work in or around all types of mobile equipment. Company employees are required to comply with the procedures outlined in this document.

1. Mobile Equipment Design and Procurement

The following individuals / groups will be involved in evaluating the procurement criteria for each piece of mobile equipment - Joint Health & Safety Committee, equipment operators, maintenance personnel, specific department supervisors and managers. The following criteria must be evaluated:

- Effectiveness of equipment – does it meet the work-related needs and functions of the department ordering it (or needs of the user) and operational goals
- Technological advances in equipment design and operation
- Efficiency of use
- Acceptance by intended users of the equipment
- Comfort associated with the operator's use of the equipment
- Potential safety or ergonomics related hazards
- Risk of error during operation of the equipment
- Needs related to support processes/systems e.g. training, maintenance, etc.
- Integration with other equipment and overall operational systems
- Indoor or outdoor use or combination
- Power source – gas, propane, electricity
- Equipment attachments – include with initial purchase from manufacturer or have manufactured at a later date and then certified by a professional engineer
- Working loads required for operations
- After sales costs – service, maintenance, and warranty / replacement parts

Whenever possible try to arrange a test period for the equipment to assess its suitability. Conduct structured trials of equipment with the users before purchase to determine if the equipment is the best fit for operators, other workers and the physical work environment.

2. Mobile Equipment Inventory

All mobile equipment in the workplace must be identified and listed in the Company's equipment inventory. The inventory will be maintained in hard copy (see example below). The inventory should identify each piece of mobile equipment by make, model and serial number and should be used to track equipment inspection, maintenance, incident history and finally disposal of the equipment.

Mobile Equipment Inventory Form

Organization: _____ Location: _____

Person Completing Form:_____ Position: _____

Date Purchased	Make	Type or Description	Model #	Serial#	Purchase Price	Disposition Date

Purchasing Department must be notified when an addition or deletion is made. At a minimum this form must be completed on an annual basis by an individual assigned the responsibility.

Mobile Equipment refers to equipment or machinery such as forklifts, motorized pallet jacks, front end loaders, riding mowers, golf and utility carts, forklifts, tractors or other farm machinery, diggers, shredders, scissor lifts, cherry pickers and similar devices.

NOTES:

1. Utilizing an electronic inventory which identifies each piece of equipment through a bar-code is also appropriate
2. The inventory can be used for insurance and tax purposes

3. General Operating Requirements

All employees must follow the general operating requirements for mobile equipment such as: worker supervision, fueling or recharging equipment, requirements for seating and operator restraint, equipment speed limits, unattended equipment, loading of trucks or railcars and using mobile equipment to raise or lower personnel.

Supervision

- Supervisors must have the required combination of education, training and experience necessary to prevent the development of hazards that could result in damage or injury.
- Section 117 of the Workers Compensation Act requires that all workplaces have supervisors who:
  - ensure the health and safety of all workers under their direct supervision,
  - are knowledgeable about the regulations applicable to the work being supervised,
  - comply with the Act, regulations and any applicable orders

Fueling & Recharging

- Fuel powered mobile equipment whether gasoline, diesel or propane will be in a dedicated outdoors location that is physically separated from any buildings or structures.
- Fuelling facilities will comply with the requirements of the applicable fire code and environmental regulations.
- Anyone who is required to fuel propane powered mobile equipment must be in possession of a propane handlers certificate, however this certificate is not required to replace empty propane cylinder with full ones on mobile equipment.
- Mobile equipment which operates on rechargeable batteries must have a dedicated battery charging station for recharging batteries. This station should be capable of effectively handling the volume of equipment.
- Charging stations will not be located in high-traffic areas or along fire exit routes.
- Hydrogen can be off-gassed during battery charging so each charging station will have a ventilation system capable of exhausting such gas, preferably directly outside.
- When batteries are removed from the equipment to be charged then they should be removed be removed using a dedicated cart or machine capable of handing the weight of the battery.
- Fueling and recharging stations must have adequate and appropriate fire extinguishers in place and should have emergency eyewash and shower facilities available as required by regulation.
- Personal protective equipment appropriate to the hazards is also required at these locations.

Seating & Operator Restraint

- Mobile equipment that is designed to be operated from a sitting position must be equipped with a seat that is safely located and securely mounted.
- Mobile equipment that lifts personnel e.g. boom lift and scissor lifts must be equipped with engineered anchor points for clipping fall restraint PPE to. All employees must wearing the appropriate PPE and attached to the anchor point before the equipment is turned on.

- A seat belt meeting applicable standards and maintained in good condition must be available for the operator and must be used in the equipment is in motion.
- Passengers are not permitted on mobile equipment unless the equipment is intended for the transportation of workers.

Equipment Speed Limits

- Speed limits must be set for mobile equipment which ensures that the operator can safely control the equipment under the given circumstances. Among the issues to be considered:
  - Is the equipment being operated outdoors or inside
  - If outside; what are the weather and travel surface conditions?
  - If inside what are the travel surface conditions, is the equipment traveling from the outside into a building?
  - Is the other equipment operating in the area or pedestrians present in the vicinity?
  - Is the visibility of the operator restricted by the configuration of the equipment and the load or by environmental conditions?
- As a rule of thumb mobile equipment should be operated at a walking speed (8 kph) or less while inside buildings or structures, on loading docks or loading areas, and anywhere there are pedestrians present.

Unattended Equipment

- Mobile equipment should be parked out of traffic lanes
- Mobile equipment must be shut off
- The parking brake applied if the operator has to leave the equipment

Loading and Unloading

Trucks or rail cars being loaded or unloaded by mobile equipment must always be secured by dock plates, wheel chocks or brake systems engaged to prevent accidental movement.

Using Mobile Equipment to Raise or Lower Employees

- Some mobile equipment such as scissor lifts and boom lifts are specifically designed to elevate personnel to a working level.
- Other equipment such as a forklift can be used to raise personnel if used in conjunction with an engineered work platform designed for use with a forklift in certain circumstances.
- Under no circumstances should mobile equipment be used to raise, lower or be used as a work platform unless designed to do so and complying with regulatory requirements and manufacturer's instructions.

4. Site Specific Safety Requirements

Every workplace/ work area has its own unique hazards that can impact the safe operation of mobile equipment that must be identified, assessed and controlled to minimize the risk of damage or injury. Among the issues to be considered are:

- The width of travel lanes which must be capable of handling the mobile equipment and the load being transported. This is especially important when dealing with forklifts, order pickers and pallet jacks which are often operating between industrial storage racking.
- The height of mobile equipment and loads that can be safely carried
- The clearance height of overhead conveyor systems, pipelines and doors must be known and considered in both the selection and use of mobile equipment.
- Doors are often damaged by mobile equipment or the load because the operator does not ensure that the door is fully raised or opened before moving the equipment through the opening.
- The materials being stored within the workplace must be stable and not pose a risk of collapse or tipping over.
- The safe storage height of materials will be determined by many things including weight, packaging, dimensions and whether the stack is supported by a wall or other stacks.
- Traffic patterns within the workplace must also be considered.
- Do travel lanes allow for two way traffic or are they restricted to one way travel
- Is pedestrian traffic restricted to dedicated pedestrian walkway
- Are pedestrian walkways simply identified by painted lines
- Are there protective physical barriers such as guardrails

5. Operator Training and Evaluation

General Training Requirements

- Ensure that mobile equipment operators are trained in accordance with regulatory requirements, applicable standards and industry standards.
- Training requirements referenced in OHSR 16.4(1)(a) specify that “a person must not operate mobile equipment unless the person has received adequate instruction in the safe use of the equipment.”
- Operator evaluations and/or re-training should be carried out as required.
- All training and operator evaluations must be documented.
- OHSR 16.4(1)(b) requires that the person “has demonstrated to a qualified supervisor or instructor competency in operating the equipment.”

Scope of Training

A training program will include classroom/theory elements, practical (hands-on) training, and testing. The following summarizes the CSA Standard B335-94 criteria.

Classroom/Theory Portion

Background

- Relevant legislation and fundamental safety guidelines, rules, and safety codes applicable to the job
- Basic principles of lift truck operation, including a focus on lift types, reach, and stability
- Main components of lift trucks
- Manufacturer's operating manual for the equipment to be used

Basic Principles of Operation

- Start-of-shift checks
- Shutdown and parking procedures
- Safe practices for starting, stopping, and turning
- Lift truck stability factors including speed, cornering, load security, centre of gravity, and grade
- Capacity plate and its location
- Safe procedures for operating on ramps and grades
- Forward and reverse driving
- Correct use of lift trucks
- Driving hazards such as slippery surfaces, restricted visibility, and exhaust emissions
- Lift truck safety including generic safety procedures in accordance with the manufacturer's operating manual
- Lifting, lowering, or supporting people

Load Handling

- General safe methods and procedures for pickup, conveyance, and depositing
- Selection of loads and assessing mass distribution for capacity, security, and integrity
- Preparation for load pickup and placement
- Assessing the safety of load-supporting structures
- Loading trucks, trailers, and railway cars
- Inclines or ramps
- Safety equipment and devices
- Hazards in the operating environment

Operational Maintenance

- Maintenance to be performed by the operator
- Refueling a permanently mounted propane fuel tank
- Changing a removable propane cylinder
- Propane cylinder inspection
- Charging batteries on electric trucks
- Refueling with other fuels
- Reporting unsafe operating conditions of vehicles

Hands-on Training

The classroom/theory elements covered are to be followed with practical demonstration and supervised practice.

Knowledge Verification

An operator must demonstrate adequate comprehension of classroom/theory information by way of a written or oral test.

Practical Evaluation

An operator must demonstrate proficiency through a hands-on evaluation of operating skill and safe operation of the equipment.

Evaluation and Refresher Training

- Re-certification of lift truck operators must take place on a 2 year cycle as per CSA B335-94 or on a 3 year cycle with an 18 month practical evaluation as per CSA B335-04.
- Mobile equipment operators should be regularly evaluated on the operation of the mobile equipment they use and retrained as required by legislation and applicable standards or by company policy.
- Other mobile equipment does not have legislated re-training requirements but it is the Company's intention to have all operators complete a practical competency every 2 years to ensure they are competent as required by the regulations and legislation.

Forklift Operator Performance Check

Equipment Make/Model:	Date:	
Task	**Yes**	**No**
Conducted pre-operational check.		
Showed familiarity with the controls.		
Properly used seat belt or other restraining device.		
Started and stopped smoothly.		
Slowed down and sounded horn at intersections.		
Obeyed all traffic signals.		
Planned route keeping clear view of direction of travel.		
Turned corners correctly. Aware of rear end swing.		
Drove under control and within proper traffic aisles.		
Yielded to pedestrians.		
Checked doorways and corners		
Drove straight up and straight down inclined surfaces, with and without loads.		
Properly drove backwards when required.		
Sounded horn before reversing (unless if forklift equipped with backup alarm).		
Approached load properly. Forks under load all the way, and centered.		
Lifted load properly. Load balanced properly and secured.		
Lowered load smoothly and slowly.		
Maneuvered with load properly.		
Travelled with load at proper height (approximately 10 cm above surface).		
Inspected bridge plates and dock boards.		
Made sure truck/trailer wheels were chocked/wedged.		
Placed load within marked area. Stacked load evenly and neatly.		
Parked properly, lowered forks to ground, set the brake, and turned off the engine.		
Operator Name: _____	**Signature:** _____	
Evaluator Name: _____	**Signature:** _____	

6. Operator Medical and Physical Evaluation

All mobile equipment operators must be medically and physically capable of handling the equipment they are authorized to operate. The Company will:

- Complete an assessment of the workplace and identify the level of fitness, vision and hearing required to ensure the health and safety of workers.
- Ensure all potential operators (trainees) successfully complete an appropriate physical examination conducted by a medical practitioner before being authorized to operate equipment as specified in CSA B335-04:
  - Vision of not less than 20/40 in the better eye and good judgment of space including height and distance. If corrective eyewear is required to comply with the above, the operator must use it while operating a lift truck
  - Ability to distinguish colour, if colour differentiation is required on the assigned job
  - Ability to hear warning signals. If the operator requires a hearing aid to comply with the above, it must be worn while operating a lift truck
  - Full movement of trunk, neck, and upper and lower limbs, and the strength, endurance, agility, and coordination to meet the demands of the job
- This physical-fitness requirement should be maintained throughout the career of a mobile-equipment operator and medical re-evaluations should be scheduled on a pre-determined cycle.
- The company requires that trainees /new operators have their physician provide a statement confirming that the above physical criteria have been met.

7. Inspection and Maintenance Requirements

The Company understands that keeping all mobile equipment in safe working condition is critical to providing employees with a safe work environment. All equipment requires daily inspections, regular maintenance and period repairs. The following are the requirements all employees must abide by:

- The operator must inspect the mobile equipment prior to start of shift using the Pre-Operation Checklist. The checklist must be dated, signed, and equipment hours and any deficiencies noted.
- The completed Pre-Operation Checklist must be given to the supervisor on a daily basis
- Supervisors are responsible for reviewing the Checklists, arranging for any deficiencies identified to be resolved and comparing operating hours against maintenance hour requirements.
- Records
- Maintenance, service and modification records will be kept for the lifetime of the equipment.
- Pre-Operation Checklists will be kept with the equipment for one month and then maintained by the Company in the Administrative Offices for the period of 2 years.

Forklift – Pre-Operation Inspection Checklist

Make and Model			Fleet #				Serial #		
			Mon	Tue	Wed	Thu	Fri	Sat	Sun
Mileage/Hours:									
Before Engine Start	1	Forks/Attachment							
	2	Carriage Plate							
	3	Load Guard							
	4	Mast							
	5	Mast Rollers/Slides							
	6	Lift Chains/Pulleys							
	7	Hydraulics							
	8	Wheels & Tires							
	9	External Condition							
	10	Oil Level							
	11	Coolant/Water							
	12	Controls & Rating Plate							
	13	Seat & Restraint							
Engine Running	14	Warning Indicators							
	15	Lights & Beacons							
	16	Audible Devices							
	17	Hydraulic Function							
	18	Drive & Braking							
	19	Steering							
		Operator Initials							
Deficiencies									
Form to be completed on daily basis and turned in to Supervisor at the end of the week									
Any deficiencies to be reported immediately to Supervisor									

Forklift – Pre-Operation Checklist

Overhead and hand guard	• No broken welds, missing bolts, or other damage
Hydraulic cylinders	• No leaks or damage
Mast assembly	• No broken welds, cracked or bent areas, or worn or missing stops
Lift chains and rollers	• No excessive wear, damage, kinks, rust • Adequate lubrication
Tow hook	• Engage and release smoothly • Safety catch works properly
Forks	• No cracks, gouges, holes, excessive wear • No mismatching
Tires	• No gouges, chunking or bond failure • Adequate tread • Proper inflation • No missing lugs
Battery	• Properly installed and secured • Adequately charged • No leakage • Covers and caps in place • Cables in good condition
Hydraulic fluid	• Proper level
Gauges	• Working properly
Steering	• Smooth, without binding or excess play • Power steering operates properly
Brakes	• Pedal moves freely without binding and does not go to the floor • Parking brake works correctly (vehicle does not move when engaged)
Lights	• All warning and working lights function properly
Horn	• Sounds
Control lever	• Moves smoothly
Safety seat, belt,	• Operate as intended
Propane tank/hose	• No apparent cracks, checking, kinking, fraying of the hoses • • Tank secured and connector properly seated
Engine oil	• Proper level
Engine coolant	• Proper level
Transmission fluid	• Proper level
Windshield wipers	• Work properly
Attachments	• Operate smoothly with no hesitation

Aerial Lift - Pre-Operation Inspection Checklist

Instructions: The operator shall inspect aerial lifts prior to placing the machine in service at the beginning of each work shift. Deficiencies noted on the inspection form shall be corrected prior to operation. If the deficiencies cannot be corrected, the aerial lift shall not be used and lockout/tag out procedures initiated according to the Aerial Lift Policy.

Aerial Lift Make: Model:

Date Completed: Inspected By:

Inspection Item	OK	Repair	Comments
Operating & Emergency Controls			
Safety Devices			
Structural and other critical components present and all associated fasteners and pins in place			
Personal protective devices (harness, lanyard, etc.)			
Fluid levels checked (hydraulic oil, engine oil, coolant, etc.)			
Hydraulic power unit, reservoir, hoses, fittings, cylinders, and manifolds			
Electrical components, wiring harness, and electrical cables			
Loose or missing parts			
Tires and wheels			
Placards, warnings and control markings			
Owner's manual legible and stored inside container located on platform			
Outriggers, stabilizers and other structures			
Guardrail system			
Cracks in welds or structural components			
Dents or damage to machine			
Other items specified by manufacturer			

8. Safe Work Procedures

The Company has taken the steps to develop the following Safe Work Procedures (SWPs) and they include hazard identification, risk assessment, identification and implementation of appropriate controls and finally re-evaluation of the process.

These SWPs will be reviewed on an annual basis or if there is an incident, near miss or accident involving any mobile equipment owned or rented by the Company.

All SWPs have been developed to assist and guide employees in the safe operation of the Company's mobile equipment. The following criteria and guidelines were used to ensure the SWPs are accurate, effective and reflect the workplace hazards.

- Use positive language (ie. Words such as "ensure" or "always" instead of "don't" or "never")
- Summarize the information gathered in your JHA
- Identify the specific job that the procedure applies to
- Identify who wrote and/or approved the SWP
- Identify the original date it was produced and the latest revision date
- Identify specific hazards you may encounter while performing this job
- Identify Personal Protective Equipment (PPE) or Devices required to perform this job safely
- Identify any special equipment or controls that are required
- Describe the step-by-step procedures to perform the task safely
- Refer to or describe the steps to follow in an emergency or during an equipment malfunction
- Refer to guidance documents, standards or legislation that applies to the specific task

SWP – Safe Fueling/Charging

Gasoline or Diesel

- Fueling station has been designed and constructed in accordance with applicable acts, regulations and codes (i.e. BC Fire Code)
- No ignition sources or smoking are permitted in vicinity of fueling station
- Always shut machine off and allow the engine to cool before fueling

Propane

- Anyone dispensing propane from a propane fueling station must have completed an approved propane fueling course and be in possession of a valid propane fueling certificate
- Position the tank so the liquid propane does not come into contact with the relief valve
- Make sure the locking pin engages into the cylinder.
- Make sure the valve is closed tightly.
- Avoid contact with liquid propane, as it can cause frostbite. Wear thermal protective gloves while making or breaking connections
- Close the valve before breaking connections.

Changing propane cylinder

- Wear eye protection and thermal gloves.
- Close the valve on the cylinder.
- Shut off the engine. Engage the parking brake.
- Disconnect the hose.
- Disconnect the holding straps.
- Remove the empty cylinder.
- Replace with a full cylinder in the proper position.
- Connect the holding straps.
- Connect the hose.
- Open the valve on the cylinder slowly and check for leaks. Use solution of soap and water. Smell – listen – look.
- Slowly open the valve to its fully open position while checking for leaks using a solution of soap and water.
- Secure the hose in an inward and downward direction.
- Secure the cylinder
- Start the engine and resume operation.

Battery Charging

- Set the parking brake.
- Use a battery stand and puller if the battery is to be removed.
- Ensure that the battery is secured when installed in the vehicle.
- No ignition sources in vicinity of battery charging station.
- Keep metal objects away from the battery.
- Keep open flames away from the battery. Use a flashlight to check fluid level.
- Keep battery caps on and the vent holes clear.
- Battery charging areas should be mechanically ventilated.
- Battery charging station must have spill containment kit.
- Wear a face shield, goggles, apron, and rubber gloves when servicing the battery.
- Battery charging stations require the installation of an emergency shower/eyewash station in the immediate vicinity
- In the event that battery acid contacts the skin or eyes, flush with water for at least 15 minutes and seek medical attention.

SWP - Short Forklift Safe Work Procedure (Sample)

Preshift

- Perform a pre-shift inspection once per day prior to use, and complete an inspection checklist which is handed in to the Supervisor.
- Do not operate a forklift that has a maintenance problem, or is not safe to operate. Remove the key from the ignition switch and put an "Out of Service" tag on the forklift.
- WorkSafeBC regulations require all forklift operators to wear seat belts when forklift is in operation.

Loading

1. Check the rating capacity on the forklift nameplate.
2. Determine if the load weight is within the capacity of the forklift. Note that for every one inch further away from the carriage that the load is placed, there is a loss of approximately 100 pounds carrying capacity.
3. The forklift should be started with the forks down.
4. Lift the forks to 3 inches.

Lifting a Palletized Load

1. Drive to the pallet. This applies to either a pallet on a lower or upper shelf. Stop with the fork 3 inches from the load.
2. Level the mast. The mast must be at right angles to the load.
3. Raise the forks to 1 inch below the slot on the pallet.
4. Drive forward into the pallet.
5. Lift forks 4 inches.
6. Tilt back load until secured for travel. If load will obscure vision drive the lift in reverse taking care while turning as the extra swing may cause load instability.
7. Look back. Honk. Drive back so that load clears the pallets below.
8. Lower the load to 3 inches above ground. Do not drag forks on the ground.
9. Materials and equipment are to be loaded on the forklift in a manner that prevents any movement of the load that could create a hazard to workers or others.
10. All loads that could be subject to shifting during transport are to be restrained if shifting would result in the forklift becoming unstable.

Picking Up Drums

1. Place drums securely on a pallet. If there is any possibility of shifting of the drums, have drums strapped together to minimize movement.
2. Tilt mast forward, slide fork tips along floor to position forks under object, raise forks and tilt back slightly to prevent shifting of the drums.
3. If drums are filled with a liquid, be careful to drive slowly as the fluid in the drums may cause shifting during transportation.

Traveling

1. Do not drive with arms, head or legs outside the confines of the forklift
2. Always wear your seatbelt while operating a forklift.
3. Turn forklift only when the forks are lowered to a safe travelling height.
4. Drive only on smooth surfaces such as cement or asphalt, this vehicle is not designed to operate on rough terrain.
5. Ensure that the operating (road) surface is free from ice. Use tire chains if required.
6. Avoid operating forklift in high volumes of pedestrians. Wait for a quieter time to deliver to busy congested areas.
7. When operating in area of pedestrian traffic minimize risk to others by cordoning off areas with signage and/or traffic cones to prevent walk through traffic.
8. Use horn as a warning device for oncoming pedestrians.
9. Drive to point of deposit. Position the forklift in front of deposit area.

Unloading Pallets

1. Raise load 5-10 inches above the unloading point (space permitting).
2. Drive forward stopping 3-4 inches in front of deposit point.
3. Tilt mast forward to a right angle position so load is level.
4. Drive forward until load is aligned with corners of the stack.
5. Stop. Lower load to resting-place. Stack pallets loaded with cases, cartons straight and square. Stagger the top tier to "tie-in place".

Unloading Round Objects

1. Stack round objects together tight and straight.
2. Hold securely in place with wedges.
3. To nest round objects - place the bottom tier tightly together and secure with wedges. Place wedges against each roll in the bottom for a more secure stack.
4. Look behind you. Back up so that forks clear other pallets.
5. Lower forks to 3 inches from the ground.

Parking

1. Tilt the upright forward until the forks are level or flat on the floor.
2. Apply the parking brake place transmission in neutral; chock the wheels if you have any doubt about the forklift moving.

Operations on Grades and Ramps

1. Never turn on an angled grade.
2. Keep unloaded forks facing downgrade.
3. When driving a loaded forklift up a grade, ensure that forklift is driven forwards
4. When driving a loaded forklift down a grade, the forklift must be driven in reverse.

SWP - Long Forklift Safe Work Procedure (Sample)

Employer

- Ensure that forklifts and attachments purchased are appropriate for the working conditions and maintained in safe operating condition.
- Ensure adequate forklift training as specified by regulation or standard.
- Conduct formal hazard assessments for forklift operations.
- Develop procedures for operation of forklifts that address any potential health & safety issues

Supervisors

- Ensure that all who are designated to operate a forklift are trained prior to operation of the equipment and are evaluated as required by regulation or company requirements
- Ensure that operator certification is kept current.
- Identify and minimize potential hazards presented by the operational requirements of the equipment.
- Report to employer and investigate any forklift incident that results in injury, property damage or had the potential to do so
- Remove defective equipment immediately from service until repaired or replaced.

Workers

- Do not operate forklift unless trained and authorized to do so.
- Read and be aware of requirements of operator's manual and developed procedures.
- Conduct pre-start inspections prior to start of each shift (See Attachment A).
- Report any forklift that fails inspection or develops problems during operation immediately to supervisor.
- Report to supervisor any forklift incident that results in injury, property damage or had the potential to do so.

General

- All forklifts in operation should be equipped with a seatbelt. Older equipment should be retrofitted with a seatbelt or removed from service.
- Forklifts must meet design and construction requirements of the relevant CSA or ANSI standard and should bear a label or other identifying mark indicating approval by a nationally recognized testing laboratory.
- Forklift modifications are not allowed without documented manufacturer's approval which must be retained in records
- Forklifts must have the correct designation (D, DS, DY, E, ES, EE, EX, G, GS, LP, or LPS) for the location of operation, rated for the intended loads, used with approved attachments, and compatible with operating surface load limits.
- Only workers who have completed an approved training course consisting of both theory and practical components shall be permitted to operate forklifts.

- Operators must keep all parts of their body within the frame of the forklift.
- Never stand or walk under elevated forks.
- Passengers are not permitted on the forklift or any load.
- An approved forklift cage is the only accepted means to raise workers to carry out work at height
- Pedestrians always have the right-of-way.

Pre-Operation Activities

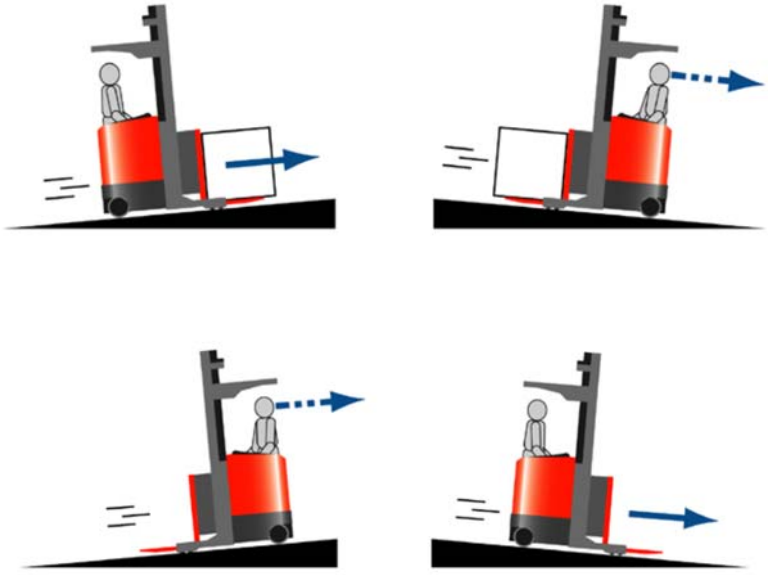
- The operator must conduct a visual inspection of the forklift, attachments and the work area at the start of each shift. Deficiencies should be reported to the supervisor. See Attachment A to this SOP.
- Fueling and battery charging must be conducted in the designated location and in compliance with regulatory and employer requirements. See Attachment B.

Loading

- Never exceed the safe load capacity of a forklift at any time. The rated load must be reduced to compensate for distance from mast and height to be raised.
- Always position loads so the distance from the front wheels to the load center is minimized, and the heaviest portion of the load is closest to the mast.
- Position the load in a way that will shorten the load center distance.
- Approach the load squarely, position the forks under the load as far as possible and lift between 6-12 inches for transporting. Never move a forklift before load is clear of ground.
- Loads must be secure and stable before transporting.
- When loading or unloading trucks or trailers, the vehicle brakes must be engaged and the wheels chocked.

Travel

- Always operate at a safe speed with due regard for traffic and physical or environmental conditions
- Avoid jerky or jackrabbit starts, quick turns, or sudden stops.
- The operator must always face in the direction of travel and have an unobstructed view. If their field of vision is obstructed by the load the operator must turn and drive in reverse.
- Operators must not overtake and pass another moving forklift.
- The forks must always be kept as low as possible when a forklift is in motion (normally 15-30 cm).
- The load should be kept level or slightly tilted back.
- Always keep the heavy end uphill when traveling up a ramp and the forklift should be driven in reverse with the forks only raised 15cm above the surface when traveling down a ramp.



- The following must be applied at blind intersections not equipped with parabolic mirrors or equivalent devices: Stop, Check Both Ways, Sound Horn and Proceed Slowly.
- Operators must cross railroad tracks only at designated appropriate crossings.
- If operating on a loading dock always ensure that the dockboard is secured in place and with an adequate load capacity.
- Prior to using a service elevator, the operator must verify the load capacity and dimensions of the elevator as well as the load weight and dimensions of the forklift and load. While the elevator is in motion the forklift must be shut off and the brakes applied.
- Special precautions must be used when transporting drums of hazardous materials, compressed gas cylinders and long lengths of piping or other material.

Parking

- A forklift not in use must be parked in a designated area. The power must be shut off, key removed, brakes set, and forks lowered to rest on the ground or floor. No part of the forklift must obstruct a walkway or aisle.
- A parked forklift must not block designated fire exits, stairways, or any emergency equipment.

Work at Height

- A forklift may not be used to elevate a platform or pallet with persons on it, except work platforms specifically designed and marked for this purpose.
- Work platforms must have standard guard rails and toe boards; and must be securely fastened to the forks. Personal fall protection (e.g., belt, harness, lanyard, etc.) is typically required.
- A lift truck must be used only to raise and lower a person- it shall not travel with a person on the platform.

Pedestrians

- Pedestrians always have the right of way
- Always establish eye contact pedestrians before traveling through an intersection
- Always travel at a speed that will allow for stopping in your range of visibility

9. Pedestrian Safety

Pedestrian safety must always be a priority when mobile equipment operates in the vicinity of workers, contractors or visitors who are on foot. Many of the injuries and fatalities resulting from mobile equipment incidents are pedestrians who have been struck by the equipment.

The common causes of these incidents include the following

- Equipment operator did not see the pedestrian or pedestrian did not see mobile equipment because of blocked visibility due to equipment size, the load being carried, restricted vision due to blind corners or stored materials and environmental conditions such as rain or dust.
- Pedestrian did not hear mobile equipment because of high noise levels in the workplace, low noise levels of many types of mobile equipment or due to the fact that the pedestrian was wearing a personal music device which blocked out surrounding sounds.
- Operator or pedestrian is distracted by the use of a personal communication device. Many workplaces have banned their use except in designated areas.
- Pedestrian came into the operating zone of the mobile equipment. Many pedestrians are not aware of the amount of room required by mobile equipment to turn or otherwise maneuver especially if they are carrying a load.

There are several ways to minimize the risk to pedestrians and the Company has implemented the following solutions and guidelines:

- Traffic flow in the workplace has been designed to minimize conflict between mobile equipment and pedestrians. This includes one way traffic lanes for mobile equipment and prohibiting the entry of mobile equipment into areas where there are large numbers of pedestrians.
- Parabolic mirrors and stop signs at intersections and blind corners have been installed
- Physical barriers such as guard rails that separate pedestrian walkways or work areas from mobile equipment traffic have been installed.
- Speed restrictors have been installed on all mobile equipment.
- Back-up alarms and flashing warning lights are on all mobile equipment.
- Signs and painted lines identify traffic lanes and pedestrian walkways.
- Personal protective equipment includes high visibility vests must be worn by all employees when in areas where mobile equipment is operating.

Operators are required to:

- Always obey speed limits and only operate equipment at a walking speed while inside the building or in the proximity of pedestrians

- Have the equipment under their control
- Yield to right of way for other mobile equipment and pedestrians in walkways
- Keep a safe following distance from other mobile equipment
- When approaching an intersection with obstructed view, slow down, sound the horn, use fixed convex mirrors to check for cross traffic and pedestrians
- Stay within floor markings and out of pedestrian walkways
- Establish eye contact with pedestrians near the equipment

10. Program Review

The Company will review all aspects of the mobile equipment program:

- At a minimum every 2 years and if possible annually
- When new equipment is purchased
- When an injury or incident has occurred

The review of the program will be done a team of managers, supervisors responsible for mobile equipment, experienced equipment operators and other workers who have to work in the vicinity of mobile equipment.

Any revisions made to the mobile equipment program will be approved by the joint health and safety committee.

Any changes to the program will be communicated to the workers in the workplace within two weeks of being approved. This communication will take the form of discussions at toolbox meetings and posting of the revisions on the Health & Safety board.

Notes:

manufacturing
Safety Alliance of BC

About us

The Manufacturing Safety Alliance of BC, formerly known as FIOSA-MIOSA Safety Alliance of BC, was established in December 2007 to reduce the high injury rate in the food and manufacturing industries.

Our mission

We are catalysts for improving workplace health and safety within the BC Manufacturing Industry. Our leading edge health and safety programs, services and tools enable companies to make a difference in the lives of their employees – every day.

Our vision

Partnering with BC's industry leaders to achieve cultural change that ensures safe workplaces for all employees. The Manufacturing Safety Alliance of BC strives to accomplish our mission and vision through the delivery of a variety of core services including:

- Training in areas such as occupational health and safety (OHS) leadership, program building, and auditing.
- Consultation and advisory services.
- The certifying partner for the Occupational Safety Standard of Excellence (OSSE) in partnership with WorkSafeBC.

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