Environmental Health & Safety Muncie, IN 47306	**Powered Industrial Truck Program**

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Section

A. Statement of Policy

Ball State University is committed to the responsibility of providing a work environment that is free from recognized hazards for its employees. Consistent with this duty is the Standard for Powered Industrial Trucks (Fork-lift Trucks, 29 CFR 1910.178), promulgated by the Occupational Safety and Health Administration (OSHA).

Ball State University is required by OSHA's Powered Industrial Truck Standard to develop and carry out the provisions of a Powered Industrial Truck Program. The Powered Industrial Truck Program establishes safety requirements relating to design, maintenance, fork trucks, tractors, platform lift trucks, motorized hand trucks, and other specialized industrial trucks powered by electric motors or internal combustion engines in order to prevent injury to employees.

The Ball State University Powered Industrial Truck Program will be evaluated annually and updated on an as needed basis. This program will be made readily available to employees, union representatives, and individuals representing OSHA.

Section

B. Purpose and Objections

This procedure establishes the minimum standards for powered industrial trucks at Ball State University. It is designed to:

1. Ensure that the employees who follow the procedure will be protected from the safety and health hazards that are recognized to be present while operating, servicing, or in the area of operation of powered industrial trucks;

2. Comply with the OSHA Powered Industrial Trucks Standard, 29 CFR 1910.178;

3. Provide a uniform approach to the control of powered industrial trucks at Ball State University while still providing flexibility;

4. Ensure that the most appropriate powered industrial truck equipment is purchased and used.

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Section

C. Scope

This program applies to all powered industrial trucks, operators, and maintenance activities at Ball State University operations and facilities collectively referred to throughout this document as the "University."

This program contains safety requirements relating to fire protection, design, maintenance, and use of fork trucks, tractors, platform lift trucks, motorized hand trucks, and other specialized industrial trucks powered by electric motors or internal combustion engines.

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D. Exemptions

This program does not apply to compressed air or nonflammable compressed gas-operated industrial trucks, or to farm vehicles, or to vehicles intended primarily for earth moving or over-the-road hauling.

Section

E. Definitions

Approved truck or **approved industrial truck:** means a truck that is listed or approved for fire safety purposes for the intended use by a nationally recognized testing laboratory, using nationally recognized testing standards such as the American National Standards Institute (ANSI).

Attachment: means a device, other than conventional forks or load backrest extension, fixed or removable on the elevating mechanism of a truck for handling the load. Examples of attachments are fork extensions, clamps, rotating devices, side shifters, load stabilizers, rams and booms.

Cantilever truck: means a self-loading counter-balanced or non-counter-balanced truck equipped with cantilever load engaging means.

Capacity, when referring to trucks, means:

(a) The capacity of a truck equipped with a load carriage and forks, or with attachments, is the maximum weight in pounds, at a specific load center which the truck, based on the strength of its various components and applicable stability, can lift to the maximum elevation of the load engaging means. Alternate capacities may be established at the same specified load center and at less than maximum elevation of the load engaging means.

(b) The capacity of a truck equipped with a platform is the maximum weight in pounds, at a specified load center which the truck, based on the strength of its various components, can lift to the maximum elevation of the load engaging means.

Carriage: means a support structure for forks or attachment, generally roller mounted, traveling vertically within the mast or a cantilever truck.

Center-control truck: means a truck in which the operator's control position is located near the longitudinal center of the truck.

Counter-balanced truck: means a truck equipped with load engaging means wherein all the load during normal transportation is external to the polygon (a plane figure with at least three (3) straight sides and angles) formed by the wheel contacts.

Department of Transportation type LP cylinder: means a fuel container for liquefied petroleum gas made and inspected under the Department of Transportation regulations.

Drift: means to move without control.

Electric truck: means a truck in which the principle energy is transmitted to motors in the form of electricity from a power source such as, but not limited to, a battery or motor generator.

End-control truck: Means a truck in which the operator's position is located at the end opposite the load.

Fixed platform truck: means a truck equipped with a load platform which is non-elevating.

Forks: means horizontal tine-like projections, normally suspended from the carriage for engaging and supporting loads.

Fork height: means the vertical distance from the floor to the load carrying surface adjacent to the heel of the forks with mast vertical, and in the case of a reach truck, with the forks extended.

Fork-lift truck: means a high-lift self-loading truck equipped with load carriage and forks for transporting and tiering loads.

Free Play: means an uncontrolled movement.

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High-lift truck: means a self-loading truck equipped with an elevating mechanism designed to permit tiering. Popular types are high-lift fork trucks, high-lift ram trucks, high-lift boom trucks, high-lift clamp trucks and high-lift platform trucks.

High-lift platform truck: means a self-loading truck equipped with a load platform, intended primarily for transporting and tiering loaded skid platforms.

Industrial tractor: means a truck designed primarily to draw one or more non-powered trucks, trailers or other mobile loads.

Internal combustion engine: means a truck in which the power source is a gas, LP gas, gasoline or diesel type engine.

Issuing authority: means an employer or employer's designated representative who instructed and trained the operator.

Liquefied petroleum gas (LP gas): means a fuel which is composed predominantly of any of the following hydrocarbons, or mixtures of them: propane, propylene, butanes (normal butane or iso-butane) and butylene's.

Load axle: means the truck axle nearest the load.

Load backrest extension: means a device extending vertically from the fork carriage frame.

Load center: means the horizontal longitudinal distance from the intersection of the horizontal load-carrying surfaces and the vertical load-engaging faces of the forks, or equivalent load positioning structure, to the center of gravity of the load.

Load engaging: means a load handling device attached to a powered industrial truck for the purpose of handling a load.

Low-lift truck: means a self-loading truck equipped with an elevating mechanism designed to raise the load sufficiently to permit horizontal movement.

Mast: means a support member providing the guide ways permitting vertical movement of the carriage. It is usually constructed in the form of channels or similar sections providing the supporting pathway for the carriage rollers.

Motorized hand or rider truck: means a truck designed to be controlled by a walking operator and used to lift, tow, carry, and stock and tier materials.

Narrow aisle truck: means a self-loading truck primarily intended for right angle stacking in aisles narrower than those normally required by counterbalanced trucks of the same capacity.

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Non-elevating truck: means a non-counterbalanced truck designed primarily for burden- carrying and not capable of self-loading.

Operator: means an employee who has been trained and tested and authorized by their employer to operate a powered industrial truck.

Order picker truck, high-lift: means a high-lift truck controlled by the operator stationed on a movable platform with the load engaging means and intended for manual stock selection. The truck may be capable of self-loading or tiering or both.

Overhead guard: means a framework fitted to a truck over the head of a riding operator.

Overall lowered mast height: means the maximum vertical dimension from the ground to the floor to the extreme top point of the mast with the fork carriage in the fully lowered position and unloaded.

Pallet truck: means a self-loading low-lift truck equipped with wheeled forks of dimensions to go under a single faced pallet or between the top and bottom boards of a double faced pallet and having wheels capable of lowering into spaces between the bottom boards so as to raise the pallet off the floor for transporting.

Parking brake: means a device to prevent the movement of a stationary truck.

Powered industrial truck or truck: means a mobile, power driven vehicle used to carry push, pull, lift, stack, or tier material.

Reach truck: means a self-loading truck, generally high-lift, having load engaging means mounted so the means can be extended forward under control to permit a load to be picked up and deposited in the extended position and transported in the retracted position.

Self-loading: means the capability of a truck to pick-up, carry, set down and, in the case of high-lift types to stack or tier its load without the aid of external means.

Service brake: means a device designed to bring a moving truck to a halt.

Side loader: means a self-loading truck, generally high-lift, having load engaging means mounted in such a manner that the means can be extended laterally under control to permit a load to be picked up and deposited in the extended position and transported in the retracted position.

Straddle truck: means a general class of cantilever truck with horizontal structural wheel supported members extending forward from the main body of the truck, generally high-lift for picking up and hauling loads between its outrigger arms.

Tire: means a tire which may be standard solid cushion solid, pneumatic or solid pneumatic style.

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Tiering: means a process of placing a load on or above another load.

Unattended truck: means one which is beyond the vision of the operator or more than 25 feet from the operator, whichever is less.

Section

F. Program Elements

General requirements

A. All new powered industrial trucks acquired and used by an employer shall meet the design and construction requirements for powered industrial trucks established in the "American National Standard for Powered Industrial Trucks, Part II, ANSI B56.1-1969", which is incorporated by reference as specified in 29 CFR 1910.6.

B. Approved trucks shall bear a label or some other identifying mark indicating approval by the testing laboratory.

Designations

a. For the purpose of 29 CFR 1910.178 there are eleven (11) different designations of industrial trucks or tractors. The following are the current powered industrial trucks at the University:

   i. The E designated units are electrically powered units that have minimum acceptable safeguards against inherent fire hazards.

   ii. The LP designated units are liquefied petroleum gas powered units that have minimum acceptable safeguards against inherent fire hazards.

b. For specific areas of use see table N-1, which tabulates the information contained in this section.

c. Powered-operated industrial trucks shall not be used in atmospheres containing hazardous concentrations of metal dust, including aluminum, magnesium and their commercial alloys other metals of similarly hazardous characteristics or in atmospheres containing carbon black, coal or coke dust except approved power-operated industrial trucks designated as EX may be used in such atmospheres.

Safety Guards

a. High Lift Rider trucks shall be fitted with an overhead guard manufactured in accordance with paragraph (a) (2) 29 CFR 1910.178 or the "American National Standard of Powered Industrial Trucks, Part II, ANSI B56.1-1969".

b. If the type of load presents a hazard the user shall equip fork trucks with a vertical load backrest extension manufactured in accordance with paragraph (a) (2) of 29 CFR 1910.178.

Fuel Handling and Storage

a. The storage and handling of liquefied petroleum gas (LP-gas) fuel shall be in accordance with NFPA Storage and Handling of Liquefied Petroleum Gases (NFPA 58-1969 and NFPA 505-1996).

b. Refillable LP-Gas containers shall be removed from equipment and refilled by an approved and/or licensed LP-gas container refill station. (The University does not have a LP-gas container refilling facility).

c. LP-gas containers shall not be dropped, thrown, rolled, or dragged.

d. The engine of the forklift shall be shut-off and the operator shall not be on or inside the truck during the LP-gas container exchange.

e. University trained industrial truck operators shall exchange LP-gas containers.

f. A soap solution shall be used to check for leaks. A match or open flame shall not be used.

g. LP-gas containers shall not be exchanged or stored near sources of heat, open flames, or similar sources of ignition. Trucks shall not be parked near any of the a-fore mentioned above sources of ignition.

h. Means shall be provided in the fuel system to minimize the escape of fuel when the containers are exchanged. This shall be accomplished by:

    1. Closing the value on the LP-gas container.

    2. Using an approved automatic quick closing coupling (type that closes in both directions when uncoupled) in the fuel line. Where such an automatic quick-closing coupling is not

used, the fuel line shall be emptied by allowing the engine to run until the fuel in the line is consumed.

i. All LP-gas containers shall be examined before recharging for the following defects or damage:
   1. Dents, scrapes, and gouges of the pressure vessel;
   2. Damage to the various valves and liquid level gauge;
   3. Debris in the relief valve;
   4. Damage to or loss of the relief valve cap;
   5. Indications of leakage at the valves or threaded connections;
   6. Deterioration, damage or loss of flexible seals in the filling or servicing connections.

   Where examination reveals physical damage that materially weakens the structure of the LP-gas container and render it unsafe for use, it shall be removed from service. Where examination reveals damage specified above other than physical damage to the container, appropriate repairs shall be made before the container is recharged.

j. Smoking shall be prohibited in the container exchange area during the exchange of LP-gas containers.

k. The service valve of the LP-gas container shall be closed whenever vehicles are parked overnight or stored in-doors for a prolonged time.

Changing and Charging Storage Batteries

a. Battery charging installations shall be located in areas designated for that purpose.

b. Facilities shall be provided for flushing and neutralizing spilled electrolyte, fire protection, protecting charging apparatus from damage by trucks, and for adequate ventilation of dispersal of fumes from gassing batteries.

c. A conveyer, overhead hoist, or equivalent material handling equipment shall be provided for handling batteries.

d. Reinstalled batteries shall be properly positioned and secured in the truck.

e. Trucks shall be properly positioned and brake applied before attempting to change or charge batteries.

f. Care shall be taken to assure that vent caps are functioning. The battery (or battery compartment) cover(s) shall be open to dissipate heat.

g. Precautions shall be taken to prevent open flames, sparks, or electric arcs in battery charging areas.

h. Tools and other metallic objects shall be kept away from the top of uncovered batteries.

Changing and Charging Storage Batteries

Where general lighting is less than 2 lumens per square foot, auxiliary directional lighting shall be provided on the truck.

Control of Noxious Gases and Fumes

Concentration levels of carbon monoxide (CO) gas created by powered industrial truck operations shall not exceed the levels specified in 29 CFR 1910.1000 of 50 ppm or 55 mg/m^3.

Highway Trucks

a. The brakes of highway trucks shall be set and wheel chocks placed under both sides of the rear wheels to prevent the trucks from rolling while they are boarded with powered industrial trucks.

b. Fixed jacks may be necessary to support a semi-trailer and prevent upending during the loading or un-loading when the trailer is not coupled to a tractor.

Operator Training Requirements

a. Only trained and University certified operators shall be permitted to operate a powered industrial truck.

b. A qualified designated trainer will conduct comprehensive training or evaluation and remedial training for University operators at least every three (3) years.

c. University trained operators will be issued a University Forklift Operator's Certification after completing the training program and the Certification shall be good for three (3) years. Operators will also be issued a wallet size Certification and should be carried by the operator.

d. The University Forklift Operator's Certificate shall be available for inspection by University and OSHA representatives.

Truck Related Topics

a. University Industrial Powered Trucks training shall consist of:

b. All operating instructions, warning and precautions of the types of trucks the operator will be authorized to operate;

c. Similarities to and differences from an automobile;

d. Controls and instrumentation locations, how to work and the function each;

e. Power plant operation and maintenance;

f. Visibility (including restrictions due to loading);

g. Fork and attachment adaptation, operation and limitations of their utilization;

h. Vehicle capacity;

i. Vehicle stability;

j. Vehicle inspection and maintenance;

k. Refueling, charging or recharging batteries;

l. Operating limitations including steering and maneuvering;

m. Any other operating instruction, warning or precaution listed in the operator's manual for the type of vehicle, which the employee is being trained to operate.

Workplace Related Topics

a. Surface conditions where vehicle will be operated;

b. Composition of probable loads and load stability;

c. Load manipulation, stacking, un-stacking;

d. Pedestrian traffic;

e. Narrow aisles and other restricted places of operation;

f. Operating in hazardous classified locations;

g. Operating the truck on ramps and other sloped surfaces that could affect the stability of the vehicle;

h. Other unique or potentially hazardous environmental conditions that exist or may exist in the workplace;

i. Operating a vehicle in closed environments and other areas where insufficient ventilation could cause a build-up of CO or diesel exhaust.

Evaluation and Refresher or Remedial Training

a. Sufficient evaluation and remedial training shall be conducted so that the employee retains and uses the knowledge, skills and ability needed to operate the powered industrial truck safely.

b. An evaluation of the performance of each powered industrial truck operator shall be conducted at least every three (3) years by a qualified designated person.

c. Refresher or remedial training shall be provided when there is reason to believe that there has been unsafe operation or when an accident or a near miss occurs or when an evaluation indicates that the operator is not capable of performing the assigned duties.

Certification Program

a. The University shall certify that each operator has received the training and has been evaluated and has demonstrated competency in the performance of the operator's duties. The certification shall include the name of the trainee, date of training and the signature of the person performing the training and evaluation.

b. The University shall retain the current training materials and course outline or the address of the person who conducted the training if it was conducted by an outside trainer.

Training Duplication

a. Each current forklift operator who has received training in any of the elements specified in the above training process for the types of trucks the employee is authorized to operate and the type of workplace the trucks are being operated in need not be retained in those elements if the University certifies that the operator has been evaluated to be competent to perform those duties.

b. Each new truck operator who has received training in any of the elements specified in the above training process for the types of trucks the employee will be authorized to operate and the type of workplace in which the trucks will be operated need not be retained in those elements before initial assignment in the workplace if the University has written documentation of training and if the employee is evaluated to be competent.

Truck Operations

a. Trucks shall not be driven up to anyone standing in-front of a bench or other fixed object.

b. No person shall be allowed to stand or pass under the elevated portion of any truck, whether loaded or empty.

c. Unauthorized personnel shall not be permitted to ride on industrial trucks. A safe place to ride shall be provided where riding of trucks is authorized.

d. The employer shall prohibit arms or legs from being placed between the uprights of the mast or outside the running lines of the truck.

e. When a powered industrial truck is left unattended, load engaging means shall be fully lowered, controls shall be neutralized, power shall be shut off and brakes set. The wheels shall be blocked if the truck is parked on an incline.

f. A powered industrial truck is unattended when the operator is twenty-five (25) feet or more away from the vehicle, which remains in his/her view or whenever the operator leaves the vehicle and it is not in their sight.

g. When the operator of an industrial truck is dismounted and with twenty-five (25) feet of the truck still in their view, the load engaging means shall be fully lowered, controls neutralized and the brakes set to prevent movement.

h. A safe distance shall be maintained from the edge of ramps or platforms while on any elevated dock, or platform or freight car. Trucks shall not be used for opening or closing freight doors.

i. Brakes shall be set and wheel blocks shall be in place to prevent movement of trucks or trailers while loading or un-loading. Fixed jacks may be necessary to support a semi-trailer during loading or un-loading when the trailer is not coupled to a tractor. The flooring of the trucks and trailers shall be checked for breaks and weakness before they are driven on.

j. There shall be sufficient headroom under overhead installations, lights pipes and sprinkler systems.

k. An overhead guard shall be used for protection against falling objects. It should be noted that an overhead guard is intended to offer protection from the impact of small packages, boxes, bagged material, etc., representative of the job application but not to withstand the impact of a falling capacity load.

l. A load backrest extension shall be used whenever necessary to minimize the possibility of the load or part of it from falling rearward.

m. Only approved industrial trucks shall be used in hazardous locations.

n. University industrial powered trucks shall not be used as a man-lift. Refer to man-lift portion of the program for specific functions and operations. Raising or lifting any person(s) is prohibited.

o. Fire aisles, access to stairways and fire equipment shall be kept clear.

Traveling

a. All traffic regulations shall be observed, including authorized plant speed limits. A safe distance shall be maintained approximately three (3) truck lengths from the truck ahead and the truck shall be kept under control at all times.

b. The right of way shall be yielded to ambulances, fire trucks or other vehicles in emergency situations.

c. Other trucks traveling in the same direction at intersections, blind spots or other dangerous locations shall not be passed.

d. The driver shall be required to slow down and sound the horn at cross aisles and other locations where vision is obstructed. If the load being carried obstructs forward view, the driver shall be required to travel with the load trailing.

e. The driver shall be required to look in the direction of and keep a clear view of the path of travel.

f. Grades shall be ascended or descended slowly.

1. When ascending or descending grades in excess of ten (10) percent loaded trucks shall be driven with the load upgrade.

2. On all grades the load engaging means shall be tilted back if applicable and raised only as far as necessary to clear the road surface.

g. Under all travel conditions the truck shall be operated at a speed that will permit it to be brought to a stop in a safe manner.

h. Stunt driving and horseplay shall not be permitted.

i. The driver shall be required to slow down for wet and slippery floors.

j. Dock-boards or bridge-plates shall be properly secured before they are driven over. Dock-boards or bridge-plates shall be driven over carefully and slowly and their rated capacity never exceeded.

k. Elevators shall be approached slowly and then entered squarely after the elevator car is properly leveled. Once on the elevator the controls shall be neutralized, power shut off and the brakes set.

l. Motorized hand trucks must enter elevator or other confined areas with load end forward.

m. Running over loose objects on the roadway surface shall be avoided.

n. While negotiating turns, speed shall be reduced to a safe level by means of turning the hand steering wheel in smooth sweeping motions. Except when maneuvering at a very low speed, the hand steering wheel shall be turned at a moderate even rate.

Loading

a. Only stable or safely arranged loads shall be handled. Caution shall be exercised when handling off-center loads, which cannot be centered.

b. Only loads within the rated capacity of the truck shall be handled.

c. The long or high (including multiple-tiered) loads, which may affect capacity shall be adjusted.

d. Trucks equipped with attachments shall be operated as partially loaded trucks when not handling a load.

e. The forks of the truck shall be under the load as far as possible. The mast shall be carefully tilted backward to stabilize the load.

f. Extreme care shall be used when tilting the load backward or forward particularly when high tiering. Tilting forward with load engaging means elevated shall be prohibited except to pick up a load. An elevated load shall not be tilted forward except when the load is in a deposit position over a rack or stack. When stacking or tiering only enough backward tilt to stabilize the load shall be used.

Operation of the Truck

a. If at any time a powered industrial truck is found to be in need of repair, defective or in any way un-safe the truck shall be taken out of service and tagged accordingly until it has been restored to safe operating condition.

b. Fuel tanks shall not be filled while the engine is running. Spillage shall be avoided.

c. Spillage of oil or fuel shall be carefully wiped up or completely evaporated and the fuel tank cap replaced before restarting the engine.

d. No truck shall be operated with a leak in the fuel system until the leak has been corrected.

e. Open flames shall not be used for checking the electrolyte level in storage batteries or gasoline level in fuel tanks.

f. All fork-lift truck manuals shall be kept on the truck at all times.

Maintenance

a. Any powered industrial truck not in safe operating condition shall be removed from service. All repairs shall be made by authorized personnel.

b. A scheduled preventative maintenance, lubrication and inspection shall be followed according to the manufacturer's recommendation.

c. All industrial trucks will be inspected on an annual basis and serviced by designated representative.

d. No repairs shall be made in Class I, II, and III locations (See attachment B, Table N-1 from 29 CFR 1910.178).

e. Those repairs to the fuel and ignition systems of industrial trucks, which involve fire hazards, shall be conducted only in locations designated for such repairs.

f. Trucks in need of repairs to the electrical system shall have the battery disconnected prior to such repairs.

g. All parts of any such industrial truck requiring replacement shall be replaced only by parts equivalent as to safety with those used in the original design.

h. Industrial trucks shall not be altered so that the relative positions of the various parts are different from what they were when originally received from the manufacturer, nor shall they be altered either by the addition of the extra parts not provided by the manufacturer or by the elimination of any parts, except as provided in paragraph (q) (12) of 29 CFR 1910.178. Additional counter-weighting of fork trucks shall not be done unless approved by the truck manufacturer.

i. Industrial trucks shall be examined before being placed in service and shall not be placed in service if the examination shows any condition adversely affecting the safety of the vehicle. Operator examination shall be made at least daily or before use when not used daily. Where industrial trucks are used on a round-the-clock basis they shall be examined after each shift. Defects when found shall be immediately reported on the Pre-Use Inspection Checklist form. The defects

should be corrected as soon as possible. Operator's Checklist shall be maintained by the department.

j. Any vehicle that emits hazardous sparks or flames from the exhaust system shall immediately be removed from service and not returned until the cause of the emission of such sparks and flames has been eliminated.

k. When the temperature of any part of any truck is found to be in excess of its normal operating temperature thus creating a hazardous condition, the truck shall

be removed from service and not returned until the cause for such overheating has been eliminated.

l. Industrial trucks shall be kept in a clean condition, free of lint, excess oil and grease. Non-combustible agents should be used for cleaning trucks. Low flash point (below 100^{o}F.) solvents may be used. Precautions regarding toxicity, ventilation and fire hazard shall be consonant with the agent or solvent used.