DEPARTMENT OF THE ARMY
U.S. ARMY MEDICAL DEPARTMENT CENTER AND SCHOOL
AND FORT SAM HOUSTON
Fort Sam Houston, Texas 78234-5014

FSH Memorandum
No. 385-3

30 December 1998

Safety
Materials Handling Equipment

1. PURPOSE.

a. To provide Fort Sam Houston (FSH) and contractor personnel with guidance and an overview of the Occupational Safety and Health Administration (OSHA) Materials Handling Equipment (MHE) requirements.

b. To define MHE as it applies to FSH.

c. To establish the policy on the use of MHE.

d. To establish the training requirements for MHE operators.

2. APPLICABILITY. This memorandum applies to all military, civilian and contractor personnel assigned or attached to FSH.

3. REFERENCES.

a. FSH Regulation 385-10, Occupational Safety and Health Program.

b. OSHA Standard 29 CFR §1910.178, Powered Industrial Trucks (Forklifts).

c. TB 43-0142, Testing and Inspection of Lifting Devices.

4. EXPLANATION OF TERMS.

a. Material Handling Equipment (MHE). Refers to various materials handling equipment, to include but not limited to forklifts, shelf pickers, motorized pallet jacks (hand trucks), tractors, and other specialized industrial trucks powered by electric motors or internal combustion engines.

b. Forklift. A piece of MHE specifically designed to lift cargo that is either stacked or palletized.

c. Shelf Picker. A small lifting platform that the operator stands in, to be raised to the level of a shelf for selecting small items of stored merchandize.

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d. Motorized Pallet Jack. A hand operated motorized jack specifically designed for lifting pallets.

e. Tractor. A small motorized piece of equipment designed to tow small cargo trailers. It is also known as a tug, a mule, or a donkey.

5. POLICY.

a. Only approved MHE will be acquired and used. Approved shall mean a piece of MHE either built specifically for the military or one that meets American National Standards Institute (ANSI) B56.1.

b. Only trained operators will operate MHE.

c. Battery powered MHE will be the equipment of choice when operating indoors.

d. Material handling equipment will not be altered or modified as to affect capacity or safe operation.

e. Battery charging areas will be designated for that purpose, will be provided with personal protective equipment (PPE), will have facilities for flushing the eyes and drenching the body, and will have ventilation adequate to dissipate the gas and mists generated during battery charging.

f. Material handling equipment will not be used for purposes that they were not designed for, e.g., using a forklift as a hoist or crane.

g. If drums are moved, they will either be secured on a pallet or they will be moved with the use of a drum attachment.

h. Personnel will not be lifted on a MHE without a proper lifting platform, that includes, securing mechanisms to the forks or lifting rack, railings (mid and top), and protection from the lifting mechanism.

6. BACKGROUND.

a. Each year it is estimated that more than 40,000 MHE related injuries occur in the U.S. Injuries involve employees being struck by lift trucks or falling while standing or working from elevated pallets or forks. Many employees are injured when lift trucks are inadvertently driven off loading docks or when the lift falls between a dock and an unchocked trailer. For each employee injured, there are probably numerous incidents that are unreported to supervision. All mishaps cost. Most incidents also involve property damage, such as damage to overhead sprinklers, racks, pipes, walls, machinery, doors, and merchandise. Unfortunately, the majority of employee injuries and property damage can be attributed to lack of procedures, insufficient or inadequate training, and lack of safety-rule enforcement.

b. Also, OSHA has reviewed several studies that compared the driving experience of trained and untrained MHE operators. Those studies suggested that when operators received detailed training, and got feedback from the trainers and supervisors, the number of dangerous maneuvers linked to accidents was reduced. Appendix A contains examples of unsafe acts and unsafe conditions.

7. RESPONSIBILITIES.

a. The Installation Safety Office (ISO) will:

(1) Serve as the proponent for the MHE program.

(2) Assist in the training of the operators of MHE.

(3) Conduct spot checks of contractor operations.

(4) Perform an annual review and periodic audits of the MHE program. (See appendix B.)

b. Preventive Medicine will:

(1) Perform air monitoring where internal combustion engine powered MHE is used indoors or under unusual outdoor situations.

(2) Assist in the evaluation of the PPE used at battery charging sites.

(3) Determine the ventilation requirements and/or evaluate the existing ventilation.

c. Installation Fire Department will:

(1) Inspect the areas where MHE are used to determine fire protection requirements.

(2) Assist in the development of Standing Operating Procedures (SOPs) for fueling.

d. Commanders/Organization Chiefs will:

(1) Select the proper MHE (size, load capacity, type, etc.), for the location and materials to be handled.

(2) Provide resources for training MHE operators.

(3) Report all incidents involving MHE on FSH Form 96-E, Accident/Incident/Near Miss Report.

(4) Establish local procedures for the use of MHE (see paragraph 9).

e. Supervisors will:

(1) Conduct job hazard analysis on the specific tasks required for the operation of the MHE.

(2) Provide the training for MHE operators, with assistance from the ISO, to include on-the-job (OJT) training under the direction of a trained operator.

(3) Ensure that only trained operators operate MHE.

(4) Evaluate driving performance of each operator at least annually.

(5) Enforce safe driving practices.

(6) Establish safe conditions within the operating area (mirrors for blind corners, maintenance of MHE, etc.).

(7) Develop SOPs for fueling and/or battery charging.

f. Material Handling Equipment operators will:

(1) Only operate MHE if they have been trained on that particular type of equipment.

(2) Participate in both, OJT and formal training, as required.

(3) Follow all safety rules and safe operating procedures.

(4) Conduct a visual safety inspection of the MHE each day prior to use.

(5) Conduct a weekly formal inspection in accordance with (IAW) the Technical Manual or the Weekly Checklist, (appendix C), as appropriate.

(6) Use PPE when performing specific operations, such as battery charging and maintenance, banding or unbanding of cargo, filling fuel tanks, or exchanging liquid petroleum gas tanks.

(7) Report all incidents involving MHE to supervisor.

g. The Directorate of Contracting will ensure that all contracts that require the use of MHE have approved equipment, and trained personnel.

h. Operations and maintenance contractors must fully implement a MHE program that is at least as stringent as the FSH program, as contained herein.

8. TRAINING.

a. Prior to training, the supervisor must determine the operator requirements/qualifications for the particular operations through the use of a job hazard analysis or risk assessment. These may include the ability of an acceptable vision, hearing, the ability to work in excessive heat, or the ability of lifting material.

b. The training will consist, at a minimum, of the following (see appendix D):

(1) Features of the MHE.

(2) Unsafe acts.

(3) Unsafe conditions.

(4) Workplace specific procedures and practices.

(5) General operation.

(6) Load handling.

(7) Use of attachments, such as personnel lift cages.

(8) Fire extinguisher use.

(9) Spill clean up.

Note: A table is included in appendix D that expands on the above listed topics, and should be used as a basis for establishing an internal program.

c. All training will be documented on FSH Form 98-E, Employee Safety and Health Training Record.

9. OPERATING PROCEDURES. The following represent the minimum requirements. The organization should add to these procedures to reflect the local situation.

a. Material Handling Equipment operation:

(1) Unsafe MHE will not be operated.

(2) The MHE will not be operated in an unsafe manner.

(a) If the MHE is provided with seat belts, they must be used.

(b) Passengers will not be carried on MHE, unless the seating is designed for such.

(c) All lifting of personnel will be done in an authorized cage.

(d) All loads will be carried with the load facing up the incline.

(e) If the load obstructs the forward view, the travel must be with the load trailing.

(f) No part of a load must pass over any worker.

(g) The rated capacity of the lift will never be exceeded.

(h) Idling with an internal combustion engine powered MHE should be avoided indoors.

(i) If MHE is left unattended, greater than 25 feet away and/or not within sight, it will be shut off, neutralized, brake set, and load lowered to the surface.

(j) If MHE is left unattended, less than 25 feet away and within sight, it will be neutralized, brake set, and load lowered to the surface.

(k) The MHE will not be left unattended and running on an incline. If on an incline and parking is required, the wheels must be chocked.

(3) Pedestrians will have the right of way.

b. Loading/Unloading Trailers or Trucks. Prior to entering a trailer or the bed of a truck the following must be checked:

(1) The trailer is chocked, whether connected to the tractor or not.

(2) The tractor or truck must have the emergency brake applied.

(3) The bed of the trailer or truck must be inspected to determine soundness (holes, rusted supports, integrity, hanging supports, etc.).

(4) If the trailer or bed is enclosed, idling of a internal combustion engine powered MHE inside is prohibited.

(5) The dock plate (loading ramp) must be secured to the trailer or bed unless it is of the automatic type.

c. Traveling on the Public Road.

(1) Traveling on the public road should be avoided when possible.

(2) Traveling on the public road during the hours of darkness is prohibited without front and trailing traveling road guards using their flashers.

(3) A highly reflective orange Danger/Warning Triangle is required to be secured to the rear of the MHE while traveling on a public road. If the MHE is a tractor with trailers, the last trailer will contain the Danger/Warning Triangle.

(4) Railroad tracks and other road obstacles must be approached cautiously and traversed at a slight angle. (Hard tires do not provide the control as associated with pneumatic tires when crossing small obstacles.)

(5) Travel will be at the far right of the roadway.

(6) The speed of the MHE will be as to commensurate with the vehicle, road conditions and traffic. Under no circumstances will the speed limit be exceeded.

(7) Hand signals will be used since most MHE do not have turn signals.

10. SPECIALIZED EQUIPMENT.

a. Pallet Jacks. Pallet jacks are available as both motorized and manual.

(1) Pallet jacks will not be used to transport personnel.

(2) The user never places her/his body between the load and a wall or down incline from the load.

(3) Care must be taken when going around corners with pallet jacks.

(4) The brakes will be of the "dead-man" type (automatic on, with a lever engaged and maintained for release).

b. Shelf Pickers. Shelf pickers are MHE specifically designed for warehousing operations and associated with vertical storage. They are used to select small and light-weight items from shelving units. Normally, the MHE is narrow and may have a limited center of gravity.

(1) If the MHE does not have a totally enclosed working platform, fall protection is required. The only allowable fall protection consists of a lanyard and full body harness.

(2) Do not relocate (move) unless the platform is at ground level.

(3) Do not disembark from the lift while in a raised position.

(4) Do not carry passengers.

c. Tractors. A tractor is a small motorized piece of equipment designed to tow small cargo trailers. It is also known as a tug, a mule, or a donkey.

(1) Tractors will be used to tow the intended cargo trailers only.

(2) Tractors with trailers will not be backed without a ground guide.

(3) Passengers will not be carried on or in the trailers, and only on the tractor if the seat is specifically designed for two people.

Appendix A

EXAMPLES OF UNSAFE ACTS AND UNSAFE CONDITIONS

1. Unsafe Acts include but are not limited to:

    a. Inadequately trained maintenance personnel, supervisors, and operators.

    b. Wrong truck selected for the job (too large, too small, inadequate height, etc.).

    c. Hurrying, taking shortcuts, not paying attention, fatigue, boredom, not following the SOPs/rules.

    d. Overloading.

    e. Improper selection or securing of dock plates.

    f. Lack of chocking cargo trailers and trucks.

    g. Stunt driving and horseplay.

    h. Lifting passengers without an authorized cage.

    i. Lack of good safety practice enforcement.

2. Unsafe conditions include but are not limited to:

    a. Forks or other load-handling attachments cracked or bent.

    b. Gouges or large chunks missing from solid tires.

    c. Blind corners.

    d. Leaky connectors and hydraulic cyclinders.

    e. Too much free play in the steering.

    f. Unsafe refueling or recharging practices.

    g. Lack of documentation of inspections and maintenance records.

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Appendix B
PROGRAM REVIEW

Item	OK	Needs Improvement
A. General.		
Have local procedures been established for the use of MHE?	____	_____
Are all MHE incidents reported on FSH Form 96-E?	___	_____
Do all MHE have readable data plates?	___	_____
B. Training.		
Is there a policy that requires training prior to the operation of a piece of MHE?	___	_____
Have all MHE operators been trained in the past 12 months and documented on FSH Form 98-E?	___	_____
Does the training include hands-on?	___	_____
Is the passing of a written examination required?	___	_____
Are the operators evaluated on their driving skills and are results filed in their records?	___	_____
Are procedures available for fueling and/or battery charging?	___	_____
Is PPE provided at the fueling and/or battery charging location?	___	_____
Is a deluge shower/eye wash available at the fueling and/or battery charging location?	___	_____
Has specialized training (i.e., hazardous material handling been conducted and documented as appropriate?	___	_____

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C. Inspection.		
Do the operators conduct daily visual inspections?	___	_____
Do the operators conduct weekly written inspections?	___	_____

Are the inspection records maintained? ___ _____

If something is found wrong with an MHE, is it taken out of service? ___ _____

D. Dockboards/Chocks.

Are portable and/or automatic dockboards strong enough to carry the imposed load? ___ _____

Are portable dockboards secured in position? ___ _____

Are handholds or other effective means provided to ensure safe handling? ___ _____

Are chocks available and used for blocking trailers and trucks? ___ _____

E. Observations.

Did the MHE operators know about their piece of equipment? (capacity, turning radius, etc.) ___ _____

Was horseplay or stunt driving observed? ___ _____

Were loads carried 6 inches or less off of the floor? ___ _____

Were MHE left unattended while running? ___ _____

Other ___ _____

Comments:
_____

Organization _____Contact Person_____

Telephone Number _____Date _____

Reviewer _____

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Appendix C
WEEKLY CHECKLIST

MHE Identification: _____ Date:

Item	**OK**	**Needs Action**	**Action Needed**
Tires and/or Wheels			
Oil Leaks			
Tilt and Lift Cylinders Leaking			
Brake Cylinders Leaking			

Item	**OK**	**Needs Action**	**Action Needed**
Brakes			
Steering			
Lift and Tilt			
Horn			
Mirror			
Warning Device			
Lights			
Gauges			
Forks			
Data Plate Present and Readable			
Cage and Overhead Protection In-Tact			
Fuel Cap Secure (if applicable)			
LPG Tank Secure (if applicable)			
Batteries Secure (if applicable)			
Fire Extinguisher Present			
Fire Extinguisher Serviceable			
Inspection and Maintenance Current			

Appendix D
EXAMPLES OF TRAINING

Topic	**Objectives**	**Training Point**
Features of the MHE	Principles of Operation and Features	1. MHE classification and designations 2. Components 3. Capacities - data plate 4. Pre-operation safety check 5. MHE stability triangle 6. Center of gravity 7. Effects of speed, sharp cornering, lifting height, attachments, grades, ramps, etc.
Unsafe Acts	Dangerous Activities	1. Operating with restricted visibility 2. Parking a vehicle - level, incline 3. Traveling over uneven surfaces 4. Passengers 5. Lifting personnel 6. Traveling with the load - height, incline 7. Stunt driving and horseplay 8. Entering a trailer without secured dockplate 9. Not chocking trailers 10. Driving up to someone in front of a fixed object 11. Allowing someone to walk under a

Topic	Objectives	Training Point
		load 12. Using the forks as a crane boom
Unsafe Conditions	Dangerous Conditions	1. Explosive atmosphere 2. Exhaust emissions indoors 3. Operating on slippery floors 4. Operating with restrictions (height, width, etc.) 5. Pedestrian traffic 6. Workplace noise 7. Inadequate lighting 8. Other vehicular traffic
Workplace Specific Procedures and Practices	Emergency Procedures	1. Call for assistance (Emergency Numbers) 2. Fires 3. Accidents 4. Spills
	Workplace Specific Rules	1. Pedestrians - right of way 2. Maintenance and repair - when something is wrong 3. Docks 4. Chocks 5. Enforcement of Safety Practices
General Operation	Pre-operational Check	1. Daily Visual Inspection 2. Weekly Formal Inspection 3. Annual Load/Lifting Certification 4.

The proponent of this memorandum is the Directorate of Public Safety. Users are invited to send comments and suggested Improvements on DA Form 2028 (Recommended Changes to Publications and Blank Forms) to the Commander, U.S. Army Medical Department Center and School and Fort Sam Houston, ATTN: MCGA-DPS, Fort Sam Houston, Texas 78234-5014.

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