

Lift Truck Safety

A systematic approach based on OSHA 1910.178

By James P. Kaletta

LIFT TRUCKS, commonly referred to as forklifts, are used in a greater variety of industrial and commercial settings than nearly any other type of industrial vehicle. Anywhere materials must be moved—in warehouses, industrial shops, construction sites and beyond—lift trucks are a common sight.

Their utility and familiarity, combined with their relatively small size and nonthreatening appearance, can give operators and nearby workers a false sense of security. They may believe (incorrectly) that driving a lift truck is no more complicated than driving a car.

Contrary to these perceptions, each year in the U.S., nearly 100 workers are killed and approximately 12,000 are injured in lift-truck-related incidents, according to the Bureau of Labor Statistics (BLS) (a, b). The biggest concerns are workers being struck by falling objects, caught between or in parts of the vehicle, falling from elevated platforms, being struck by a lift truck, and lift trucks colliding or overturning. Crushing and amputations are the most worrisome types of injuries.

These fatality rates have been borne out in at least one region of OSHA—Region 5, which consists of Indiana, Illinois and Wisconsin. The author discussed lift truck fatalities with an OSHA official who shared Region 5's official but unpublished lift-truck-related fatality data for 2005 and 2006 (Table 1).

Of these 28 fatalities, as many as 24 involved some element of crushing; the rest involved fall protection issues. The official emphasized two key points:

1) There is no reason to believe that the Region 5 numbers are not representative of the U.S. as a whole.

2) OSHA has made lift truck safety an area of emphasis in enforcement and training.

NIOSH (2001) makes the causes for this problem clear.

NIOSH investigations of forklift-related deaths indicate that many workers and employers 1) may

not be aware of the risks of operating or working near forklifts and 2) are not following the procedures set forth in OSHA standards, consensus standards or equipment manufacturers' guidelines.

This statement hints at another challenge: Companies must adhere to a wide range of standards—from OSHA's performance-based standard (CFR 29 1910.178, Powered Industrial Trucks) to mandatory standards from EPA, the Department of Transportation, the Nuclear Regulatory Commission and the Department of Labor (DOL).

One example is DOL's Fair Labor Standards Act, which is the primary law governing employment of those under age 18. Hazardous Order No. 7 prohibits workers under age 18 from using lift trucks and similar equipment in nonagricultural industries. In agricultural industries, minors under age 16 are prohibited from using lift trucks.

Many voluntary consensus standards—from groups such as American Society of Mechanical Engineers, National Fire Protection Association and International Organization for Standardization—apply as well. Additionally, employers must follow all applicable guidelines and operating instructions from the lift truck manufacturer. Given the magnitude of information, even conscientious employers may feel confused.

OSHA 1910.178: A Good Start

Of all these standards, 29 CFR 1910.178 offers the most direct guidance to help employers protect those who work with and/or near lift trucks. It is essential for employers to become familiar with the nuances of the standard and to design their lift truck safety and training with it in mind.

Even companies that approach the standard with the best intentions as they design a lift truck safety program may find themselves in a quandary. The standard mandates that all employees who drive a lift truck receive proper training. However, although the standard lists topics to be covered, it offers limited guidance regarding training formats or material

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specifics. As a result, in the author's opinion, a company's lift truck program can be in compliance with 1910.178, yet not provide adequate protection for employees. For example, consider 1910.178(l)(3):

Training shall consist of a combination of formal instruction (e.g., lecture, discussion, interactive computer learning, videotape, written material), practical training (demonstrations performed by the trainer and practical exercises performed by the trainee) and evaluation of the operator's performance in the workplace.

Companies that want to interpret minimally the standard believe they can be in compliance by certifying a worker who has watched a 30-minute safety video, driven a lift truck once through a 20-ft practical application course and been evaluated using a two- or three-question pass/fail checklist. Then, if this employee avoids lift truck accidents, these companies may believe s/he need only repeat these steps 3 years later to satisfy the standard's retraining requirement.

It's impossible to know how most companies handle lift truck training

(unless and until OSHA inspectors visit the premises), but one point is clear: Many companies are deficient in their training. This fact is shown by OSHA's willingness to cite 1910.178(l)(i) when assessing lift truck violations, according to the OSHA official from Region 5.

Abstract: This article provides guidance for creating an effective lift truck safety program. Such a program relies on carefully selected and trained employees as trainers; includes formal instruction based on a written, uniform curriculum; requires continual reinforcement of safe behaviors via individual coaching sessions; includes frequent operator sign-off on forms that specify consequences if safe working behaviors are not followed; and specifies periodic recertification for all operators regardless of their safety records.

Table 1

OSHA Region 5 Lift Truck Fatalities, 2005-06

Cause	Fatalities
Struck by falling objects	9
Fall from elevated platform	4
Caught between	6
Caught in	3
Struck against	3
Overtum	2
Collision	1
Total	28

Note. OSHA Region 5 covers Indiana, Illinois and Wisconsin. These data for a 2-year period were received from an OSHA official and use OSHA's exact classification language. These data suggest that extra attention should be paid to preventing falling loads and improving maintenance operations.

Table 2 summarizes OSHA's official but unpublished list of the top 20 lift truck violations for 2002-06. Note that 9 of 20 violation codes reference operator training, totaling 14,715 violations for which initial penalties were levied at \$8,901,612. Nearly half of that dollar amount (\$4,191,675) was levied under 1910.178(l)(i): "The employer shall ensure that each powered industrial truck operator is competent to operate a powered industrial truck safely, as demonstrated by the successful completion of the training and evaluation specified in this paragraph (l)."

Indeed, SH&E professionals know that far more rigorous and consistent training than the hypothetical example is required to make the workplace safe for lift truck operators and their coworkers. But what form should that training take? Who should deliver it? Who should determine the content? How long should the training last? What records should be kept and by whom? How should incidents be investigated? How much routine retraining is ideal?

The following discussion addresses these questions, focusing specifically on the warehouse (or dis-

Table 2

OSHA's Top 20 Lift Truck Violations, 2002-06*

1910.178 paragraph	Description	Serious violations	Total violations	Initial penalty
1 (a)(4)	Modifications shall not be made without manufacturer approval, nameplate changed accordingly.	468	638	\$755,487
2 (a)(5)	Other than factory installed front-end attachments—provide new load center information.	151	206	\$113,763
3 (a)(6)	Legible nameplates and markings.	311	787	\$277,089
4 (g)(2)	Charging stations must have facilities for flushing/neutralizing electrolyte, fire protection, protected chargers and proper ventilation.	211	363	\$211,270
5 (k)(1)	Brakes set on highway trucks, rear wheels chocked to prevent rolling when boarded by lift truck.	142	241	\$189,473
6 (l)	Operator training.	1,340	2,271	\$1,355,011
7 (l)(1)	Operator training/safe operation.	162	208	\$190,115
8 (l)(1)(i)	Operator properly trained and evaluated.	3,334	4,836	\$4,191,675
9 (l)(1)(ii)	Operator successfully trained before operating lift truck (except during training).	783	1,076	\$1,291,451
10 (l)(2)(ii)	Training consists of formal instruction, practical and evaluation.	343	554	\$402,348
11 (l)(3)	Training program content: training must be trained in applicable topics from list.	95	149	\$110,526
12 (l)(4)(i)	Refresher training—evaluation of refresher, knowledge and skills done at proper time.	109	186	\$171,250
13 (l)(4)(iii)	Operator's performance evaluated at least every 3 years.	622	1,634	\$539,666
14 (l)(6)	Certification: employer-certified operator was trained and evaluated, tracking operator name/training date/evaluation date/trainer name.	1,316	3,801	\$649,570
15 (m)(3)	Ridealongs by unauthorized person, safe place to ride must be provided when authorized.	161	181	\$293,100
16 (m)(5)(i)	Unattended vehicle must have forks down, power off and brakes set (and blocked wheels on incline).	254	447	\$298,657
17 (n)(4)	Slow down and sound horn at cross aisles and blindspots.	215	282	\$441,486
18 (p)(1)	Vehicle in need of repair, defective or unsafe should be taken out of service.	1,590	2,497	\$2,251,950
19 (q)(1)	Unsafe vehicles removed from service, repaired by authorized personnel.	332	469	\$361,399
20 (q)(7)	Inspected before a shift/daily, defects reported/corrected immediately.	1,085	2,114	\$709,039

Note. *Includes federal and state data.

tribution center) environment because lift trucks are common in this setting. Large numbers of distribution center employees must operate lift trucks and all employees at these sites—especially pedestrians—must know how to work safely around lift trucks. That said, these ideas are equally applicable to lift truck operations in manufacturing plants and other industrial settings.

Components of an Effective Lift Truck Program

The author's experience, as well as general industry standards, have shown that the ideal solution for creating an environment in which lift truck safety is valued and attained each day is to introduce a thorough in-house training program that:

- enables managers to select only well-qualified employees to operate lift trucks;
- relies on carefully selected and trained employees as trainers;
- includes a brief but concentrated period of formal instruction based on a written, uniform curriculum;
- differentiates novice operators by a readily recognizable item of apparel;
- outlines exactly what driving skills each operator should demonstrate and when;
- requires continual reinforcement in the form of brief, individual coaching sessions for several weeks following the initial training period;
- includes frequent operator sign-offs on forms that include clear statements of consequence if safe working behaviors are not followed;
- specifies periodic recertification for all operators, regardless of their safety records.

The author has designed and implemented such a program for several large companies, including a leading pharmacy retailer that employs 1,300 lift trucks and 5,000 operators in 14 distribution centers located throughout the U.S. and Puerto Rico.

As always, management plays a key role in creating and maintaining a successful safety culture. A key management decision involving a lift truck safety program is to designate one or two members of management to assume the role of master trainer(s) for each distribution center. The master trainer trains all certified trainers on the use of approved materials (maintaining the ratio of one certified trainer for every 15 lift truck operators within a facility) and reviews the certified trainers' qualifications annually.

The master trainer must also manage the training function so that new team members are properly trained and experienced team members receive recertification or additional training as needed; submit training documentation for each lift truck operator to the human resources department; and audit the lift truck program annually with the safety manager and/or safety team.

Accordingly, the master trainer should have a good performance and safety record, be familiar with all applicable equipment and have good interpersonal skills. S/he also needs presentation skills to train certified trainers, evaluation skills to assess cer-

OCR Method

Step 1 Prepare for observation

Step 2 Assess the behavior

Step 3 Provide feedback

Step 4 Allow operator to respond

Step 5 Summarize

Step 6 Reinforce and recognize

tified trainers and organizational skills to manage the training program. While good technical skills are vital, the master trainer's responsibilities require a clear understanding of the "big picture" of certifying lift truck operators.

In contrast, safe driving skills are a critical criterion for selecting certified trainers. They must also be able to understand the approved training materials, coach employees during and after training, and administer equipment recertification training to experienced lift truck operators. As such, presentation, interpersonal, communications and evaluation skills are all necessary components of a successful certified trainer.

Master trainers and certified trainers must continue to perform their regular jobs even while completing their training responsibilities. Therefore, employers must be willing to grant time away from regular tasks as needed; equally, all trainers must be able to plan their training time carefully and use it wisely. Fortunately, the total time trainers must be away from their primary duties can be reasonable. Plan on 60 to 90 minutes per week for 6 to 9 weeks for one certified trainer to train and coach one to three drivers.

Observe, Coach & Reinforce

In the author's experience, it is possible to achieve thorough lift truck training by following the observe, coach and reinforce (OCR) method, which is a simple tool to help companies manage complicated processes safely. As the sidebar above ("OCR Method") shows, the OCR method consists of six steps for changing unsafe behaviors in the workplace. Furthermore, by engaging trainees in regular one-on-one discussions about their own performance, management signals that it will accept nothing less than safe behavior at all times. Also, OCR provides an opportunity for management to have regular quick but meaningful safety-focused interactions with each employee.

Figure 1 (p. 34) provides a template for certified trainers to use when they conduct OCRs with trainees. Each observation takes 5 to 10 minutes; with experience, the method becomes condensed to the three crucial functions captured in the OCR acronym. For training purposes, OCR is a formal observation process that involves asking a trainee to perform a specific task, then giving feedback on how

well s/he performs that task. OCR also can be used to perform observations on an informal basis. This means that the observer may look for safe and unsafe behaviors in order to gather and track data.

Figure 2 provides a weekly summary of the train-

ing schedule that might be followed when training order picker operators. Below the weekly summaries of content to be learned, the figure also indicates how many OCRs should occur. Each driver should receive one OCR by the end of Week 3, another by the end of Week 5 and, finally, two OCRs in Weeks 7 through 9. In addition, each trainer should allot 60 to 90 minutes per week to train up to three drivers, and s/he should spend about 5 minutes per OCR per driver.

Figure 1

Sample Observation Sheet Using OCR Method

ADMIN			
DEPT	OBSERVATION	<input type="checkbox"/>	OCR DATA
DATE	TIME		
TASK	VEHICLE TYPE		

ASSESS THE BEHAVIOR	targeted?	BEHAVIOR	safe	at-risk
ICONtrol My Safety <i>What is the operator doing to control his/her own safety?</i>	<input type="checkbox"/> YES <input type="checkbox"/> NO			
ICONtrol My Vehicle <i>What is the operator doing to control his/her vehicle?</i>	<input type="checkbox"/> YES <input type="checkbox"/> NO			
ICONtrol My Load <i>What is the operator doing to control his/her load?</i>	<input type="checkbox"/> YES <input type="checkbox"/> NO			
ICONtrol the Safety of Others <i>What is the operator doing to control the safety of others?</i>	<input type="checkbox"/> YES <input type="checkbox"/> NO			

COACHING FEEDBACK – any details related to the behavior or situation

OPERATOR RESPONSE – restate operator's message for understanding

FOLLOW-UP REQUIRED – any promised follow-up or anything needing an expert

AT-RISK LIST: OBSERVED BEHAVIORS	
ICONtrol My Safety 1. Seatbelts 2. Fall Protection 3. Operator Safe Zone	ICONtrol the Safety of Others 12. Looking in Direction of Travel (Scan Path 180° / 45°) 13. Fork Height (approx 4") 14. Braking and Plugging 15. Stopping Distance 16. Following Distance 17. No Passing (Moving Same Direction) 18. Passing an Elevated Vehicle 19. AGVs (Operating Near) 20. Corners / Intersections 21. Entering / Exiting Trailers 22. Pedestrians (Operating Near) 23. Pedestrians (Walkways) 24. No Passengers
ICONtrol My Vehicle 4. Daily Vehicle Checklist 5. Housekeeping (Warehouse/Trailers) 6. Housekeeping (Vehicle) 7. Reporting Hazards 8. Secure / Release Trailer	
ICONtrol My Load 9. Stable / Secure Load 10. Maximum 15/15 Empties Rule (Totes and Pallets) 11. Load Height / Weight / Overhang	

Certified Trainer	Team Member
PRINT	PRINT
SIGN	SIGN

Four Key Principles

SH&E professionals need to recognize the crucial importance of teaching novice lift truck operators that even in an optimally safe workplace they must always assume some responsibility for their own safety. Of course, instilling this attitude in all workers is a large component of attaining an optimally safe workplace in the first place. In other words, all workers must realize that each worker controls his/her own behavior and only the safest behaviors will be tolerated, leading to a safer workplace for everyone.

To this end, consider the ICON safety principles:

- 1) I CONtrol my safety.
- 2) I CONtrol my vehicle.
- 3) I CONtrol my load.
- 4) I CONtrol the safety of others.

Successful lift truck training programs begin imparting this concept immediately. Regardless of the type of lift truck to be learned, certain general safety rules apply, divided into four categories—personal safety, vehicle safety, load safety and coworker safety. Since these rules apply to all types of lift trucks, it is best to group them under an all-inclusive title such as “rules of the road” and introduce them on the first day of training.

Note that these principles are intended to be a shorthand device to help operators remember specific techniques for operating lift trucks safely. The specific rules of the road should be thoroughly covered during

the initial training. For example, Figure 3 (p. 36) shows the detail behind the principle for load safety. After covering all of these principles in the class, trainees should sign the detailed rules of the road document to acknowledge their understanding of the principles.

Other helpful components of the initial lift truck training include presenting each trainee with an orange vest or other trainee-specific apparel that must be worn on the job at all times until the entire training program has been successfully completed. The initial training should also include an orientation to the specific type of lift truck each trainee will drive; the specifics of the daily predriving inspection process; and hands-on, practical application exercises that reflect actual job tasks and the work environment. Simply put, initial training should teach the trainee all s/he needs to know about how to be productive and safe on the job. This training can be delivered over 2 or more days or delivered in one full-day session.

Then, over the next 4 to 5 weeks, the certified trainer conducts weekly coaching sessions for small groups of trainees. These sessions, which last about 60 minutes, delve into the specifics of the trainee's assigned vehicle. The coaching sessions are coupled with individual OCR sessions until the completion of the orange vest period at which time the trainee becomes a fully trained operator.

The Evolution of an Order Picker Operator

Returning to the earlier example of the order picker trainee, s/he, like all other lift truck operators, learns the ICON principles in the first training session, as well as equipment-specific safe operating principles. During the 45-day introductory period, the trainee should repeatedly receive individual reinforcement from the certified trainer on all aspects of on-the-job safety as well as learn vehicle-specific material.

In Week 2, the certified trainer should review fall protection elements, including harness, retractable and anchor point. S/he addresses the proper procedure for passing a raised lift, and demonstrates proper eye contact and horn usage to avoid brushing. Again, trainees should focus on general driving in the warehouse, including intersections, passing and pedestrians. They should demonstrate all of these safe driving behaviors.

In Week 3, the certified trainer demonstrates how

Figure 2

Sample Training Schedule: Order Picker

Coincides with the standard 45 workday introduction period for trainee

Initial Training	Week 2 Activity	Week 3 Activity	Week 4 Activity	Week 5 Activity	Week 6 Activity	Week 7 8 9
Orientation to Vehicle and Inspection	Passing Other Vehicles that are raised	Passing other lift trucks in the same aisle	Picking & raising Put-aways	Passing & being passed by other vehicles	Trainer reviews and has driver sign off on driver acknowledgment.	Driver is now in the final phase of the introductory period.
Classroom Training	Fall Protection	Inspection Checklist	General Driving in DC	Review of any special issues with each driver prior to the final exam.	Trainer states that driver has 2-3 weeks of driving on his/her own and the final review will be in Week 9.	1. Driver takes final test with a certified trainer from the department during week 8-9. (not the one who trained the driver).
Slalom Course Training	General Driving in DC	Offloading Totes		Work on any problems.		2. Orange vest comes off at the end of Week 9.
Receives "Orange Vest"						3. Formally congratulate in a startup meeting after successful completion of Week 9.
	1 OCR of each driver over the 2 week period.		1 OCR of each driver over the 2 week period.			2 OCRs of each driver over the next 3 weeks
	60-90 minutes for 1-3 drivers	60-90 minutes for 1-3 drivers	60-90 minutes for 1-3 drivers	60-90 minutes for 1-3 drivers	60-90 minutes for 1-3 drivers	5 minutes per driver per OCR

to pass other lift trucks in the same aisle, including using proper speed, eye contact and the horn to avoid brushing. New content would include how to off-load totes and boxes. During this time, trainees learn and demonstrate the proper safety techniques of not walking off the vehicle's elevated platform, being properly tethered and keeping at least one foot on the vehicle at all times.

Each group also reviews the inspection checklist. In some cases, the physical checklist is replaced by an automated system that is enabled by the swipe of an employee's ID card. Whether the checklist is paper or electronic, the standard requires that the vehicle be inspected at the start of each shift and that it include checking brakes, horn and lifting mechanism.

In Week 4, trainees refine their mastery of picking, including how to approach racks, how to raise the lift safely and the finer points of actual picking procedures. Proper methods for putaways are also addressed, including how to approach racks, how to raise the lift safely and how to replace product. Again, general warehouse driving, including intersections, passing and pedestrians, should be reviewed.

During Week 5, trainees and trainers should review the proper procedure for passing a raised lift, and address any behaviors that need improvement or clarification.

Figure 3

Lift Truck "Rules of the Road" Excerpt

ICONTrol my Load	Safe Behavior
1 Stable/Secure Load	With non-standard loads, always maintain stability by securing load with a band or strap, or seek assistance on the best way to handle the load.
2 15/15 Empties Rule (Totes and Pallets)	a. Transport stacks of pallets only 15 high. b. Load totes only 15 high when removing from trailers and loading for operations.
3 Load Height/Weight/Overhang	a. Be aware of the maximum height of loads for your vehicle. Check pallet weight is within the limitations of the vehicle (weight). b. Re-stack merchandise on any pallet with overhang.
4 Slotting Loads	a. Do not try to force a pallet into a slot. Straighten other pallets if over the line. b. Be sure pallet is setting firmly on both sides of beams and pallet rails, taking up only one space before backing from under pallet. Watch opposite side so freight is not pushed out. If pallet moves while backing out, reposition it before leaving the area.

Note: Excerpted from a two-page form that also contains sections related to personal safety, vehicle safety and coworker safety. Each trainee signs this form as part of initial lift truck training. It is kept on file by the Human Resources department. (c) SMS; www.safetymgmtsolutions.com.

Effective training programs develop an in-house corps of master and certified trainers to manage and deliver the training. They also provide opportunities for meaningful evaluations of operator performance.

Throughout all coaching sessions, the certified trainer should maintain a separate sheet for each trainee that lists all the necessary skills and provides a sign-off area for the trainer's initials and date accomplished. During Week 6, the trainee reviews and signs a driver acknowledgement form pledging to always follow the safe driving practices just learned. The trainer then informs the trainee that s/he will drive independently over the next 2 to 3 weeks, with OCRs being conducted periodically.

The final review and exam occur in Week 9. At that time, the driver takes the test with a certified trainer other than the one who trained him/her. After passing the test, the driver removes the orange vest, is formally congratulated for completing the training and becomes a full-fledged team member.

Similar training cycles can occur concurrently as needed throughout the distribution center for trainees assigned to other types of equipment. Each type of lift truck used requires its own list of weekly coaching activities, including the single/double transporter, sit-down lift, stand-up/pacer lift truck, clamp truck, reach truck, gofer and turret truck. Operators designated to drive multiple types of equipment should first complete coaching on their primary type of lift truck, with training on additional types to follow at a later date.

Recordkeeping & Incident Investigation

As might be expected, running an effective lift truck training program creates large volumes of training records to be maintained. Fortunately, the

requirements are comparable to the recordkeeping rules involved in other types of safety training. OSHA 1910.178 requires record retention of initial certification, equipment repairs and recertification.

Various job functions must maintain certain records. The certified trainer creates and holds training records for all trainees during the training period. Trainees' managers verify and review their final training records. The human resources department maintains operators' training records as part of their permanent personnel file. Maintenance personnel maintain the records of all equipment repairs and maintenance.

Likewise, incident investigation procedures relating to lift trucks are comparable to any other recognized investigation techniques. OSHA 1910.178 states that accidents must be investigated and corrective action taken, including operator recertification. Companies can use any recognized investigation technique, but one principle is clear: Effective lift truck operations require operator accountability when preventable accidents occur. An important step in creating a culture of safety is to impart the expectation of accountability as part of initial training and later retraining.

If the driver is found to have been a cause of the incident, corrective action will be necessary. Key to this process is ensuring that the consequences are clearly understood and communicated in advance of any accidents. Following is a sample corrective action process.

1) For the first documented incident, the operator receives documented verbal coaching and may not operate the vehicle until s/he is recertified. This retraining includes a written test and observation by a certified trainer or the operator's manager.

2) For a second incident within a 3-year period, the operator receives a written warning and may not operate the vehicle for 15 workdays and until completing recertification. As with the first incident, retraining includes a written test and observation by a certified trainer or the operator's manager.

3) A third incident in the same period triggers a written warning. In such a case, the operator is banned from operating the vehicle for 90 calendar days and must be recertified. Retraining includes a written test provided by the certified trainer and three scheduled observations to be conducted by the operator's manager over a 4-week period.

4) For a fourth incident within 3 years, the operator receives a final written warning with one of two consequences. Depending on the severity and overall accident history, the operator may be banned from operating the vehicle for 1 year and then must

“rebid” to be allowed into the job again. Vehicle recertification is required as well. Alternatively, the operator may be banned permanently from operating vehicles in the warehouse for his/her employment tenure, which may necessitate a transfer if driving is an essential part of the job.

Recertification: Completing the Puzzle

OSHA 1910.178 states that recertification shall take place after an accident, when an operator has received an evaluation that reveals unsafe driving behaviors and for all operators every 3 years. Again, however, the standard raises as many questions as it answers. Who will conduct the training? What specifically should it cover? How can operators demonstrate proficiency?

As with initial training, recertification training should include ample review of key concepts and consist of classroom lectures, written testing and practical application exercises. Scheduling, timing and implementation can be done many different ways. For example, some companies train operators in all types of equipment over a single period of time, while others train operators by equipment type on a monthly basis. Still others may recertify all operators every 2 years to ensure that even with absences and make-up testing everyone meets the 3-year cycle.

For classroom training, all operators must sign in (legibly) on a sign-in sheet that identifies topic, date and instructor. Class size should be limited to 25 operators to ensure sufficient personal attention from the instructor. The class should include a review of the ICON principles and specific situations, such as approaching an elevated vehicle and the proper entry and exit of an aisle and/or trailer.

Classroom training should also include a review of any necessary fall-protection equipment, including having operators don and doff their harnesses, complete written tests and sign off on forms indicating their acceptance of company safety rules. This portion of the training can be accomplished in about an hour (2 hours if fall protection is involved).

Once operators have been recertified in the classroom, formal floor exercises should be conducted within 2 weeks. These generally consist of operators performing job tasks that typically use a lift truck. A certified trainer can oversee these exercises, but the operator’s manager must perform the formal sign off for recordkeeping purposes.

Again, the ICON principles provide an effective framework for this process:

- **Personal safety.** Demonstrates proper use of safety devices, including seatbelts and fall protection gear. Operator keeps all body parts within the vehicle.

- **Vehicle safety.** Reviews daily checklists. Understands controls. Performs plugging, deadman braking, proper use of horn, and knows how to enter and exit aisles and trailers.

- **Load safety.** Demonstrates knowledge of the definition of a secure load. Demonstrates knowledge of load height and maximum 15-15 pallet/tote

requirements. Understands fully loaded vehicle dynamics. Demonstrates proper load placement or picking in a safe, effective manner.

- **Coworker safety.** Exhibits visual scanning when driving. Adheres to proper following distance. Demonstrates knowledge of standard for safe passing of an elevated vehicle. Negotiates intersections and automatic-guided vehicles safely and maneuvers around pedestrians and other vehicles effectively.

As with the accident investigation process, informing operators during their initial training that all operators must be recertified according to a predetermined schedule will help prepare them for the process.

Conclusion

Given the widespread use of lift trucks, companies should place a high priority on lift truck operator training. OSHA 1910.178 lays out the key components—including training and retraining requirements—but the standard’s nonspecific language can present challenges to companies that want to exceed the minimum requirements of the standard.

Key to this effort is the realization that training is not a finite event, but rather an ongoing dialogue between the company and the lift truck operator. Effective training programs select and develop an in-house corps of master and certified trainers to manage and deliver the training. They also build in numerous opportunities for quick but meaningful evaluations of lift truck operator performance by observing, coaching and reinforcing desired safety behaviors.

Equally important is the realization that operators are also responsible and accountable and, in fact, control their own safety, their vehicles, their loads and the safety of others within a supportive workplace. Developing this sense of responsibility may seem daunting but it is a natural outgrowth of a training program that structures its technical lessons around these key points. In this way, the operators come to realize their true importance in the safety function. ■

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¹To generate these data, select “Safety & Health” from the home page, then “Profiles,” then “Case & Demographic Numbers.” Next, press the “continue” button. Select “2003-2005,” then “Source of injury/illness.” Next, select “Forklift 851XXX” as the subcharacteristic and generate the table as either Excel or HTML.