SCISSOR LIFT AWARENESS
STAND DOWN
TRAINING

MAY 4-10, 2014

New England Safety Training Alliance is a sub-committee of the Construction Safety Roundtable of Eastern Massachusetts OSHA Alliance dedicated to providing quality training products free of charge.
Statistics

• In December 2013 the New England Construction Industry experienced two crushing deaths of workers in scissor lifts and one in an aerial lift
• On average, 8 scissor lift fatalities each year in the US
• 10 year study conducted:
  – Showed 40% of accidents occurred due to tip-over
• Many trades involved:
  – Painters
  – Drywallers
  – Electricians
  – Others
SCISSOR LIFTS ACCIDENTS

The most common types of accidents involving a scissor lift:

• Tip-Over
  • Caused by misapplication of the machine, obstacles
  • Lack of operator training
  • Lack of work area inspections
• Misuse of the Equipment
  • Machines marked "Use on level surface only"
  • Used outdoors for the sake of economy or availability, often resulting in tip-overs
• Crushing between machine and structure
  • Unintentional operation of controls
  • Operating wrong control
• Lack of Maintenance/Structural Failure
A worker on a self-propelled scissor lift was installing bolts to connect two large overhead steel beams. The platform controls were not protected against inadvertent operation.

The worker inadvertently activated the lever for controlling elevation.

The platform elevated. The worker was pushed firmly onto the control lever when he was caught between an overhead beam and the elevating platform’s guard rail.

The platform continued to rise, fatally crushing the worker.

What should be done to prevent a similar incident?

- Use only elevating work platforms with controls that are protected against inadvertent operation!
MOBILE SCAFFOLDING ACCIDENTS

A window washer was killed when the elevated scissor lift he was operating flopped sideways, throwing him to the pavement below. He died shortly afterward from massive head and back injuries.

At the time of the accident, the window washer was repositioning the self-propelled scissor lift. The lift was equipped with an operational tilt sensor that automatically lowers the operator's lift platform when the tilt exceeds **three degrees** to any side.

He was operating the lift on an eight-degree slope, exceeding the slope capacity by five degrees. However, the wires leading to the tilt sensor had been intentionally disconnected, leaving the window washer without any tilt protection.

What should be done to prevent a similar incident?

- Conduct routine equipment inspections
- Verify functionality of all safety devices
- **Do not** override safety devices
SCISSOR LIFTS

Classified by OSHA as Scaffolding

Guidelines addressed in OSHA §1926.452(w) - Mobile Scaffolds

• Must meet requirements of this section

See OSHA’s letter of Interpretation on next slide
OSHA requirements are set by statute, standards and regulations. Our interpretation letters explain these requirements and how they apply to particular circumstances, but they cannot create additional employer obligations. This letter constitutes OSHA’s interpretation of the requirements discussed. Note that our enforcement guidance may be affected by changes to OSHA rules. Also, from time to time we update our guidance in response to new information. To keep apprised of such developments, you can consult OSHA’s website at http://www.osha.gov.

August 1, 2000
W. Shaun Rainey
Safety Officer
Kokosing Construction Company Inc.
P.O. Box 226
Fredericktown, Ohio 43019-0226

RE: Subpart L - Scissor Lifts

Dear Mr. Rainey:

This is in response to your letter of September 1, 1999, which you asked several questions relating to how the requirements in 29 CFR Part Subpart L (Scaffolds Used in Construction) apply to scissor lifts with platforms that can extend beyond the equipment’s wheelbase, specifically with respect to fall protection. We apologize for the lateness of this response.

Question 1: What standards cover scissor lifts that have extendable platforms?

Answer: There has been some confusion as to which OSHA standards apply to the use of scissor lifts. The aerial lift requirements (§1926.453) incorporate by reference the definition of aerial lifts used in the American National Standards Institute (ANSI) A92.2-1969 standard. Therefore, the requirements in §1926.453 apply to equipment identified in that 1969 ANSI consensus standard as aerial lifts. The ANSI standard definition includes the following vehicle-mounted elevating and rotating work platforms: “extensible boom platforms,” “aerial ladders,” “articulating boom platforms,” “vertical towers,” and “a combination of any of the above.”

Scissor lifts, including those with platforms that extend beyond the equipment’s wheelbase, do not fall within any of these categories. Therefore, scissor lifts are not addressed by the aerial lift provisions of Subpart L. While there are no OSHA provisions that specifically address scissor lifts, they do meet the definition of a scaffold (§1926.451 - general requirements for scaffolds). Employers must therefore comply with the other applicable provisions of Subpart L when using scissor lifts. For example, since scissor lifts are mobile, the specific requirements for mobile scaffolds in the scaffold standard (§1926.452(w) - mobile scaffolds) must be met.

NOTE: On January 7, 1997, OSHA issued a Directive (CPL 02-01-023 (formerly CPL 2-1.23]) titled “Inspection procedures for Enforcing Subpart L Scaffolds Used in Construction - 29 CFR 1926.450-454.” In that directive, OSHA erroneously stated that “scissor lifts are addressed by §1926.453.” This letter revokes and supersedes that statement; we are in the process of marking the 1997 directive that is on the Internet accordingly.

Question 2: Are employees required to be tied-off when working on a guardrail-equipped scissor lift platform that extends beyond the wheelbase of the lift?

Answer: No, neither §1926.451 or §1926.452(w) require employees to be tied-off when working from scissor lifts that have properly maintained guardrails.

If you need additional information, please contact us by fax at U.S. Department of Labor, OSHA, Directorate of Construction, Office of Construction Standards and Guidance, fax # 202-693-1689. You can also contact us by mail at the above office, Room N3468, 200 Constitution Avenue, N.W., Washington, D.C. 20210, although there will be a delay in our receiving correspondence by mail.

Sincerely,

Russell B. Swanson, Director
Directorate of Construction

[Corrected 6/2/2005]
UNSAFE CONDITIONS

Workplace Inspection
Before and during using the scissor platform, the operator shall check the area in which the lift is to be used for possible hazards such as, but not limited to:

1. Drop offs or holes.
2. Slopes., Bumps or floor obstructions.
3. Debris.
4. Overhead obstructions and electrical conductors.
5. Hazardous locations.
6. Inadequate surface and support to withstand all load forces imposed by the scissor lift in all operating configurations.
7. Wind and weather conditions.
8. Contact with ceiling and overhead objects.
WORK AREA INSPECTION

The surface of the scissor lift being moved shall be within 3 degrees of level.

Speed of scissor lift shall not exceed 1 foot per second.
WORK AREA INSPECTIONS

Look for:

- Untamped earth fills
- Ditches, drop-offs, or holes
- Bumps and floor obstructions
- Debris
- Overhead obstructions and high-voltage conductors
- Outrigger extensions used if applicable
SAFE WORK PRACTICES

• Keep at least 10 feet away from power lines
• Report defects or malfunctions immediately
• Never disable a safety device or interlock
• Prevent ropes, cords, and hoses from entangling with lift
• Before lowering the lift make sure the area underneath is clear
• Never engage in stunt driving or horseplay
FALL HAZARDS

- Leaning or climbing over scaffold guardrails could result in a fall off the scaffolding.

- Horseplay on a scaffold could have serious consequences.

- Ice, snow, rain and liquids on platform can cause slips/possible fall....keep as clear/dry as possible.

- Slips or trips on equipment, tools, etc., used on the scaffold platform. Keep it tidy!

- Do not stand on stacked material to get additional height/reach.
**FATAL SCISSOR LIFT ACCIDENT – MA**

The guardrails on this machine are designed to be lowered/stowed to fit through a standard size door opening. The rails were lowered/stowed to move the lift into the next room and not raised to the specified height before being put into service.

**Notice the height and angle of the scissor lift’s guardrail at the entrance end.** The guardrail is at 40" from the toprail to the platform which is the specification height. A visual indicator is the area between the mid-rail and the toeboard. This dimension is approximately 5.5" less than the extension end of the platform.

**Notice the height and angle of the scissor lift’s guardrail at the platform end.** The guardrail is at 34.5" which is the specification height when it is in the stowed position.

The victim fell over the guardrail near the middle of the extension platform where the guardrail was at 34.5”. The victim struck the ground near OSHA evidence cone # 3.
Fall Protection is normally not required for scissor lifts but many local general contractors go above and beyond the OSHA regulations and do require it.

1. Guardrails must remain up.
2. Do not lower or stand on guardrails
3. Do not use ladder or any other object to gain height.
CAN I EXIT AN ELEVATED SCISSOR LIFT?

- CFR 1926 - Subpart “L” has a 10’ Fall protection trigger height. Scissor lifts are scaffolds and can be exited as long as “100% Fall Protection” is maintained at all time over 10’.
  - After employee has exited the equipment the 6’ fall rule may apply.
The 6’ fall requirement under CFR 1926 Subpart M applies after you have exited the lift. The employee is exposed to fall hazards.
Standing on the rails to gain extra height is NOT allowed.
FALLING OBJECT HAZARDS

Tools, equipment, materials, ice, etc. can fall from work activities on platform, potentially injuring personnel below.

Hardhat required for all users on, and persons working below, scaffold.

Place tools and other equipment or materials away from edge of platform.

Protective zones below scaffold also protect workers from falling objects.
ELECTRICAL HAZARDS

- Electricity has the power to shock, burn, and kill; not to mention cause fires or explosions

- Electrical hazards encountered on a scaffold can be from power tools and equipment

- Misused or damaged extension cords

- Contacting overhead power lines
  - Always stay at least 10 feet away!
ELECTRICAL SAFETY

Because the metal frame of scissor lifts are conductive, power tools, cords, etc., that suffer insulation failure can electrify the entire lift. This poses a risk of electrocution not just to the worker holding the tool, but also to everyone who contacts the scaffold.

GFCI (ground-fault circuit interrupters) are required work using electrically powered equipment on construction sites and outside or in wet or damp locations.
POWER CORDS

All power cords used on scaffolding will be properly grounded and inspected prior to and during work, and will be approved for outdoor or wet conditions when applicable.

Do not tie cords to lifts, a snagged cord can cause the lift to tip over.

Do not hang equipment on power cords/lines.

Never mix/match 2 prong power/extension cords with 3 prong tools/equipment.

Do not set equipment on power cords where they could cut/abrade them.

Do not place cords where they could become a tripping hazard.
ELECTRICAL HAZARDS

If a fellow worker does come in contact with an energized power source, do not rush to assist them. Immediately call 911, try to shut off the main power source, and follow the directions of the emergency rescue medical personnel.
Wind Hazards

Wind is an additional concern of any aerial/scissor lift operator who operates outdoors. How does wind effect the lift?

1. Creates additional force on the platform.
2. Does not actually add any additional weight, only applied force, however your machine does not know the difference.
3. Wind can be different above roof levels.
4. Additional force caused by the wind can cause tip over.
5. Follow the manufacturer’s rules for operating in wind.
6. See OSHA Hazard Alert regarding Notre Dame accident
OTHER SCAFFOLD HAZARDS:

Getting Crushed/Pinched

• A dangerous aspect of working with a scissor lift is having a limb or other body part pinched or crushed in the scissor arms or between the top rail and overhead structure.

• These arms collapse down upon each other at multiple joint locations when the platform is lowered, all of which serve as entryways for potential injury.

• Ensure command of platform controls at all times to avoid “over-lifting”.

• NEVER put your hands or feet under the platform of the scissor lift unless you need to perform maintenance. In which case, you will need to disconnect the power and insert safety bars, which prevent the platform from collapsing.
OTHER SCAFFOLD HAZARDS:

UNSTABLE ADJACENT ACTIVITY

Overloading and tying tools and material to lift
SCISSOR LIFT OPERATOR
SAFETY TRAINING

Before Operation

Before operation *the operator shall*:

1. Read and *understand the manufacturer’s operating instructions and user’s safety rules*.

2. *Understand all labels, warnings and instructions*.

3. Understand ANSI standards
Trained and Authorized Operators

• Only operate scissor lifts if you are trained and authorized
• Understand operating instructions and safety rules
• Receive hands-on training from a qualified person
• Know how to inspect equipment and work area
• Demonstrate how to safely operate equipment
SCISSOR LIFT OPERATOR
SAFETY TRAINING

Full Functional Test

Prior to the beginning of each shift the operator shall perform a full functional test on all machine controls starting with the lower controls first.

Problems or Malfunctions

Any problems or malfunctions noted that affect safety and/or operation shall be repaired prior to use of the lift platform.
PRE-INSPECTION

Pre-Start Inspection

*Before each day or at the beginning of each shift,* the scissor lift shall be given a *visual inspection* including but not limited to the following:

1. Operating and emergency controls
2. Safety devices
3. Personal protective devices
4. Air, hydraulic, and fuel systems leaks
5. Cables and wiring harnesses
6. Loose or missing parts
7. Tires and wheels
8. Placards, warnings, control markings, and operating manuals (must be legible)
9. Outriggers, stabilizers and other structures
10. Guardrail system
11. Other items specified by the manufacturer
EQUIPMENT INSPECTIONS

- Look for:
  - Cracked welds
  - Hydraulic leaks
  - Damaged control cables
  - Loose wire connections
  - Tire damage

- Check electrically insulated items

- Perform a control check and lift test

- Correct unsafe items before using lift
YouTube is a very good resource for a lot of basic training needs.

This video reviews a Scissor Lift Pre-Start Inspection and includes instructions on how to Free Wheel the machine and Emergency Lowering Procedures.

Note: See specific machine manual for more details.

https://www.youtube.com/watch?v=aGlPoGqplGY&feature=youtu.be

Or Keyword search AWPT.org on YouTube
FIELD EXERCISE WITH EQUIPMENT

Trainer should demonstrate how to:

• Pre-Start Inspection
• Free Wheel the Machine
• Lower the machine as if in an emergency situation from ground controls
EQUIPMENT INSPECTION – EQUIPMENT FAILURE
KNOWLEDGE CHECK - QUESTIONS

1) When should you inspect the equipment?
2) Is it okay to use equipment found to be defective during an inspection?  T/F
3) OSHA requires you to wear Personal Fall Arrest while working in scissor lifts?  T/F
4) Crushing hazards are only associated with Aerial Lifts and not Scissor Lifts?  T/F
5) Tip over, crushing, electrical, misuse of equipment and lack of _____________ are common hazards with scissor lifts?
1) When should you inspect the equipment?  
   Before each use

2) Is it okay to use equipment found to be defective during an inspection?  
   T/F  False – report all defective equipment to your supervisor

3) OSHA requires you to wear Personal Fall Arrest while working in scissor lifts?  
   T/F  False but GCs might

4) Crushing hazards are only associated with Aerial Lifts and not Scissor Lifts?  
   T/F  False – Crushing hazards must be addressed

5) Tip over, crushing, electrical, misuse of equipment and lack of Maintenance are common hazards with scissor lifts?
COURSE EVALUATION

“Scissor Lift Awareness Training Day” participating organizations are asked to document training and inspections via their own internal attendance sheets and complete the online course evaluation to assist in determining of the effectiveness of this event.

Please coordinate the totals for your facility/location or site and have one course evaluation completed per facility/location or site: https://www.surveymonkey.com/s/9JFYRWN
THANK YOU FOR PARTICIPATING!!
The NEST Alliance would like to thank Don Ebert of ESD 101, Bob Kunz of Dimeo Construction, Bill Cuddeback of Shawnlee Construction, and Jamie Hebert of RELCO for allowing us to share some of their work. Also a special thank you to the training sub-committee for all the work and effort put into this program.

QUESTIONS?