CHAPTER 5 PORTABLE LADDERS, PLATFORMS, AND SCAFFOLDS

5.1 INTRODUCTION

Many operations at the Laboratory involve work at elevations above floor or ground level. The safety of these operations is dependent on the strength, design, type, and condition of the ladder, platform, or scaffold used.

5.2 SCOPE

This chapter applies to any employees engaged in work above floor or ground level.

5.3 DEFINITIONS

Ladder - A structure for climbing up or down that consists essentially of two long-sided pieces joined at intervals by cross-pieces on which one may step.

Scaffold - A temporary, elevated working platform for supporting both workers and materials. Scaffolding includes the necessary vertical, diagonal and horizontal members that support the working-surface platform.

Platform - A working space for persons, elevated above the surrounding floor or ground, such as a balcony or working surface above the operation of machinery and equipment.

5.4 RESPONSIBILITIES

5.4.1 Department or Division Heads are responsible for ensuring this chapter is implemented.

5.4.2 Supervisors are responsible for ensuring that work above floor or ground level is conducted in accordance with this chapter; that ladders, platforms, and scaffolds in use are in good condition; that the proper equipment is used on each job; and that personnel receive proper ladder safety training.

5.4.3 Purchasing is responsible for insuring that all ladders are ordered in accordance with the specification listed in section 5.5.1, below.

5.4.4 Human Resources and Training shall provide ladder safety training.

5.5 REQUIREMENTS

5.5.1 Scaffolds shall be designed to support at least four times the anticipated weight of workers and materials and must never be overloaded. To determine a components load capability, the person requesting the parts shall determine the capacity from the manufacturer's literature (specification sheet) and specify that the components have permanent markings identifying the manufacturer. These markings will allow load rating to be verified in the future and help prevent unintended intermixing.

5.5.2 Guardrails and toeboards shall be installed on all open sides and ends of scaffold platforms more than 10 feet above the ground or floor.

5.5.3 Open-sided floors, platforms, and runways 4 feet or more above floor or ground level shall be guarded by a standard railing on all open sides with toeboard to prevent falling materials. Where work is being performed in close proximity to dangerous equipment, tanks, or pits containing dangerous chemicals, these open-sided floors shall be guarded with railing and toeboards regardless of height. It is

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recommended that such guards always be provided regardless of height. Overhead protection shall be provided when needed.

5.5.4 OSHA Regulations, 29 CFR 1910 Subpart D, "Walking-Working Surfaces", including 1910.21 through 1910.30 shall be followed.

5.6 PRACTICES/PROCEDURES

5.6.1 Use of Ladders

A. Ladders must be kept in good condition. Each ladder shall be inspected before use for defects including splinters, splits, rail warp, rungs or steps loose enough to be moved by hand, insecure stepladder spreading devices, and lack of or defective safety feet.

B. Anyone using ladders, including stepladders, shall stay at least two steps below the top. If this causes excessive reaching, use a longer ladder.

C. Fiberglass ladders are recommended for use at PPPL. The use of metal and wood ladders is discouraged. Metal ladders shall not be used for work on electrical equipment or where they may come in contact with electrical equipment. Metal ladders shall have an appropriate warning clearly indicated on them.

D. When a straight ladder extends above its support, it should extend at least three rungs above the upper support.

E. The minimum overlap of sections on extension ladders is three rungs.

F. If the top of an extension or straight ladder does not extend above its support, the ladder shall be placed so that both rails lean squarely against a solid stationary structure.

G. Straight ladders shall be placed with the distance of the base of the ladder from the wall equal to one-quarter the length of the ladder. Tying the ladder off at or near the top adds extra stability.

H. If a ladder cannot be placed securely, it must be tied in position and/or held by another employee in a safe manner.

I. If the ladder must be placed in front of a door, at a blind corner, or other such location, the door must be locked or blocked, or an employee must be stationed to ensure safety, and a sign or caution tape placed to warn employees.

J. Ladders shall be faced when ascending or descending and both hands should be used. Anyone using ladders should keep hips between the rails, stay in close to the rungs, and limit reach to a comfortable arm's length.

K. Tools and materials must never be hand-carried up or down a ladder. They shall be carried in proper pouches or raised and lowered by a handline.

L. Unless the ladder is otherwise designed, only one worker at a time is permitted on a ladder.

M. Work from a ladder in high wind (>25 mph) is not permitted except in extreme emergency, and then only after appropriate precautions are taken.

N. Ladder surface shall be kept free of slip-trip-fall hazards.

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O. Ladders shall be stored properly in such a way as to prevent sagging. They shall be protected from the weather, excessive heat, and dampness and other damage; and stored where they are readily accessible.

P. If there are any questions about the safe condition and use of ladders, contact Industrial Hygiene.

5.6.2 Use of Scaffolding

A. All scaffolding accessories shall be used and installed in accordance with the manufacturer's recommended procedure. Accessories shall not be altered or intermixed between manufacturers without approval of IH (in consultation with a structural engineer). (Ref. ESHD 5008, Section 1).

B. Scaffold planking:

1. Use only properly graded and inspected lumber.

2. Provide at least 12 inches overlap and 6 inches extension beyond centerline of support, and cleat both ends to prevent sliding.

3. Unsupported ends of planking shall extend not less than 6 inches or more than 18 inches beyond their end supports.

4. Secure plank to scaffold when necessary.

C. Scaffolding and platform supports shall be regularly inspected during use for deterioration.

D Use scaffolding properly; improper use causes many more accidents than defective parts.

E. Choose the correct scaffold to suit the job.

F. Do not climb across braces.

G. Use caution when working near power lines. Consult AC Power and ES&H Division prior to beginning work.

H. Do not use ladders or makeshift devices on top of scaffolds.

I. Do not work on scaffolds in high wind or when covered with ice or snow except in extreme emergency, and then only after taking necessary precautions.

5.7 REFERENCES

- American National Standards Institute A10.8, "Safety Requirements for Scaffolding," current edition.
- American National Standards Institute A12.1, "Safety Requirements for Floor and Wall Openings, and Toeboards," current edition.
- American National Standards Institute A14.3, "Safety Code for Fixed Ladders," current edition.
- American National Standards Institute A5.81, "Minimum Design Loads in Buildings and Other Structures," current edition.
- 29 CFR 1910.28, "Safety Requirements for Scaffolding."
- American National Standards Institute A14.1, "Safety Code for Portable Wood Ladders," current edition.
- American National Standards Institute A14.2, "Portable Metal Ladders," current edition.
- 29 CFR Part 1926, Subpart X, "Stairways and Ladders." 29 CFR Part 1910.25, "Portable Wood Ladders."
- 29 CFR Part 1910.26, "Portable Metal Ladders." 29 CFR Part 1910.27, "Fixed Ladders."

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