North Carolina Department of Labor
Division of Occupational Safety and Health

Raleigh, North Carolina

Field Information System Standards Notice 52A

Subject: Conversion of, Modification of, and Additions to Industrial Trucks

A. <u>Standards</u>.

1. **29 CFR 1910.178(a)(3)** - Approved trucks shall bear a label or some other identifying mark indicating approval by the testing laboratory. See subparagraph (7) of this paragraph and paragraph 405 of "American National Standard for Powered Industrial Trucks, Part II, ANSI B56.1-1969", which is incorporated by reference in subparagraph (2) of this paragraph and which provides that if the powered industrial truck is accepted by a nationally recognized testing laboratory it should be so marked.

2. **29 CFR 1910.178(a)(4)** - Modifications and additions which affect capacity and safe operation shall not be performed by the customer or user without manufacturer's prior written approval. Capacity, operation, and maintenance instruction plates, tags, or decals shall be changed accordingly.

3. **29 CFR 1910.178(a)(5)** - If the truck is equipped with front-end attachments other than factory installed attachments, the user shall request that the truck be marked to identify the attachments and show the approximate weight of the truck and attachment combination at maximum elevation with load laterally centered.

4. **29 CFR 1910.178(a)(6)** - The user shall see that all nameplates and markings are in place and are maintained in a legible condition.

5. **29 CFR 1910.178(a)(7)** - As used in this section, the term "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; e.g., Underwriters' Laboratories, Inc.; Factory Mutual Engineering Corporation, using nationally recognized testing standards.

6. **29 CFR 1910.178(d)** - Power-operated industrial trucks that have been originally approved for the use of gasoline for fuel, when converted to the use of liquefied petroleum gas fuel in accordance with paragraph (q) of 29 CFR 1910.178 may be used in those location where G, GS or LP, and LPS designated trucks have been specified in the preceding paragraphs.

7. **29 CFR 1910.178(o)(4)** - Trucks equipped with attachments shall be operated as partially loaded trucks when not handling a load.

8. **29 CFR 1910.178(q)(6)** - 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 extra parts not provided by the manufacturer or by the elimination of any parts,

except as provided in subparagraph (q)(12) of this paragraph. Additional counter-weighting of fork trucks shall not be done unless approved by the truck manufacturer.

9. **29 CFR 1910.178(q)(12)** - Industrial trucks originally approved for the use of gasoline for fuel may be converted to liquefied petroleum gas fuel provided the complete conversion results in a truck which embodies the features specified for LP or LPS designated trucks. Such conversion equipment shall be approved. The description of the component parts of this conversion system and the recommended method of installation on specific trucks are contained in the "Listed by Report".

B. **Other Standards and Sources.**

1. CPL 2-1.28A - Compliance Assistance for the Powered Industrial Truck Operator Training Standards

2. American National Standards Institute

   a. ANSI B56.1 - Safety Standard for Powered Industrial Trucks
   b. ANSI B56.3 - Electric Battery-Powered Industrial Trucks (UL583)
   c. ANSI B56.4 - Internal Combustion Engine-Powered Industrial Trucks (UL 558)

3. National Fire Protection Association

   a. NFPA 30 - Flammable and Combustible Liquids Code
   b. NFPA 505 - Powered Industrial Trucks
   c. NFPA 58 - Storage and Handling of Liquefied Petroleum Gas
   d. NFPA 70 - National Electrical Code

4. Factory Mutual System - Approval Standards

   a. 7811 and 7813 - Gasoline or Diesel Engine Powered Industrial Trucks, Types G, GS, D and DS
   b. 7812 - LP Gas Engine Powered Industrial Trucks, Types LP and LPS
   c. 781 - Gasoline/LP Gas Engine Powered Dual Fuel, Industrial Trucks, Types G/LP and GS/LPS
   d. 7620 - Electric Battery Powered Industrial Trucks, Types E, ES, and EE**]**

C. **Definitions.**

1. "Conversion" means changing an industrial truck from one type to another type having a higher level fire and explosion protection rating. Conversion normally required modification of existing truck components and the addition of other components to provide a desired level of fire and explosion protection.

2. "Modification" is the slight alteration or changing of a pre-existing part of an industrial truck which may affect the truck's safe operation or capacity.

3. "Addition" is the temporary or permanent attachment of material or equipment to an industrial truck which may affect its safe operation or capacity.

D. **Discussion.**

The following information must be considered in evaluating conversions, modifications, and additions to industrial trucks.

1. Conversion of industrial trucks from one type to another.

   a. OSHA regulations under paragraph 29 CFR 1910.178(a)(4) do not prohibit conversion of industrial trucks from one type to another, but do require prior written approval by the manufacturer.

   b. Paragraph 29 CFR 1910.178(d) and 1910.178(q)(12) of the OSHA standards permit the conversion of type G trucks to type LP or LPS and the use of such converted trucks in any area requiring type G, GS, LP, or LPS trucks. The conversion must be made through the use of approved equipment and recommended installation procedures, and must meet the appropriate standard requirements for the converted truck.

   c. In many cases there is little difference in the basic truck unit for type G and GS, LP and LPS, G/LP and GS/LPS, or D and DS trucks; therefore, conversion from type G to GS, LP to LPS, G/LP to GS/LPS, and D to DS trucks often is carried out by industrial truck dealers, service shops or large user companies with parts and instructions provided by the manufacturer.

   d. 2002 NFPA 505 4.2.14.3 states, "Power operated industrial trucks that previously have been approved for, or that conform to, the requirements for Type CN, Type G, Type LP, Type G/CN, or Type G/LP shall not be converted to a type designation for use in hazardous (classified) locations, such as a conversion of LP to LPS, G to GS, and CN to CNS".

   e. Some types of industrial trucks are not capable of being converted without complete remanufacture. An example is conversion from type E to EX.

   f. When an industrial truck acceptable for a specific location is obtained, it may still pose a hazard due to normal wear, improper operation, inadequate maintenance, or other physical damage. As an example, a type EX truck generally cannot be safely maintained by anyone other than the manufacturer, and service of any of the specifically required fire protection items on type EX or lesser type trucks for hazardous locations may void the testing laboratory approval.

2. Modification or Addition to Industrial Trucks

   a. Paragraph 29 CFR 1910.178(a)(4) does not prohibit modification or addition to industrial trucks as long as prior written approval is obtained from the manufacturer. This paragraph also requires the operation,

maintenance, and capacity labels, decals, and plates to be appropriately changed to indicated the truck's altered condition.

b. Paragraph 29 CFR 1910.178(a)(5) requires the user to request that modifications and additions, other than factory installed, be identified and the weight of the truck and attachment combination be marked on the truck. The source standard for this paragraph, ANSI B56.1, requires the capacity of the truck and attachment combination be marked on the truck.

E. **Interpretation.**

1. In determining what type of industrial truck is required, first classify the truck operating areas involved and determine if these area classifications can be reduced by process changes, equipment repair or modifications, or by improved housekeeping. If such changes in the classification of the truck's operating area can be made, then the CSHO will inform the employer of these facts and the type of industrial truck required with and without the changes. The type of truck required is based on the most hazardous conditions to which the truck may be exposed.

2. Once the type of industrial truck required has been determined, the employer must decide whether a new industrial truck must be purchased or an existing truck may be converted.

3. Prior to undertaking the conversion of an industrial truck from one explosion protection type to another, the manufacturer's approval and recommendations for accomplishing the conversion must be sought. In the absence of the manufacturer's approval, a licensed professional engineer with knowledge of the safety and engineering principles involved must certify that the design of the modified truck complies with the requirements of applicable, nationally recognized standards for such equipment. In order to make a certification of conversion, testing must be conducted in accordance with applicable standards. Testing may be conducted by a nationally recognized testing laboratory or the certifying engineer in accordance with procedures set forth in applicable Underwriters Laboratories, Factory Mutual Research, and American National Standards Institute standards. The engineer must also establish guidelines for safe application, operation, and maintenance of the converted machine. Appropriate label, tag, and decal changes must be made to the converted truck. A written record of certification and procedures, verified by the employer, must be maintained at the work site and be available to the CSHO upon request.

4. Prior to modifying or adding to an industrial truck, the manufacturer's approval and recommendations must be sought. As with conversion of industrial trucks, if the manufacturer of the truck or the attachment will not provide an appropriate approval as to the safe modification or addition to the basic truck, then a licensed professional engineer, familiar with the principles and safety requirements involved, must certify the change in accordance with ANSI B56.1 or other recognized equipment standards. A copy of this certification and applicable test data on the altered equipment must be verified by the employer and available to the CSHO inspector upon request.

5. All industrial trucks which have been converted, modified, or added to must be operated and maintained in accordance with the requirements of the OSHA standards for the specific truck type, configuration, and conditions of use.

6. Any conversion, modification, or addition to an industrial truck may be carried out by the manufacturer, the dealer, the authorized service shop, the user, or a qualified service contractor, as long as the requirements of this standards notice are met.

7. Certification of proper conversion modification or addition to an industrial truck does not preclude citation of an employer for improper use, maintenance, or operation.

F. **Effective Date.**

SN 52 is canceled. This SN is effective on the date of signature. It will remain in effect until revised or canceled by the Director.

Signed on Original
Kevin O'Barr
Safety Standards Officer

Signed on Original
Allen McNeely
Director

8/09/05
Date of Signature