HO 7: Power-Driven Hoisting Apparatus Operations

Recommendation — 1) Expand the HO to cover repairing, servicing, disassembling, and assisting in tasks being performed by the machine. This recommendation applies to all machinery covered under this HO. 2) Expand the HO to prohibit youth from riding on any part of a forklift as a passenger (including the forks), and from working from forks, platforms, buckets, or cages attached to a moving or stationary forklift. 3) Expand the HO to prohibit work from truck-mounted bucket or basket hoists commonly termed "bucket trucks" or "cherry pickers." 4) Expand the HO to cover commonly used manlifts that do not meet the current definition, specifically aerial platforms. 5) Remove the exception that currently permits youth to operate an electric or air-operated hoist of less than one ton capacity.

Rationale — 1) Substantial numbers of deaths and injuries are associated with operating and assisting in tasks performed by power-driven hoisting apparatus, including deaths of youth. Although HO 7 prohibits youth from assisting in operation of cranes and derricks, similar prohibitions do not exist for other machines covered under this HO. Additionally, a considerable number of deaths were associated with activities not directly related to operation of the hoisting apparatus, notably servicing, repairing, and disassembling. 2) Substantial numbers of fatalities occur among workers who are passengers on forklifts, riding on the forks, or working from raised forklifts and attachments. None of these activities is currently prohibited for youth. 3) Worker fatalities are associated with work from truck-mounted basket and bucket hoists. The associated risk of falls and electrocution support expansion of HO 7 to prohibit work from truckmounted hoists. 4) The current definition of manlifts in HO 7 specifies that youth are prohibited from riding on manlifts driven through pulleys, sheaves, and sprockets. Many other types of manlifts now in use, particularly aerial platforms now excluded from HO 7, appear to pose more significant injury risk. 5) Surveillance systems for fatal and nonfatal injuries do not provide sufficient detail to justify the current exception that allows youth to operate hoists of less than one ton capacity. A hoisted load weighing less than one ton has the potential to cause injury or death as a result of falling, or being improperly rigged or handled. Hoist-related fatalities of young workers have been reported, including a recent case in which a youth was killed while operating a half-ton capacity hoist. Power-Driven Hoisting Apparatus Are Associated with High Numbers of Deaths and Serious Injuries and Illnesses Among Workers of All Ages, and Youth Specifically Workers of all ages are killed and seriously injured in incidents associated with the machinery covered by this HO: cranes, forklifts, hoists, manlifts and derricks. Table 12 includes data on fatal and nonfatal injuries associated with selected types of hoisting machines that are clearly identifiable from occupational injury statistics. With the exception of truck-mounted bucket and basket hoists, all are at least partially addressed by HO 7. These selected types of machines contributed to over 1,300 deaths of workers during the 6-year period, 1992-97 [NIOSH 2001c], and over 22,000 serious injuries and illnesses in 1997 [BLS 1999b]. Injuries and illnesses associated with this type of apparatus, with the exception of derricks, had more median days away from work than injuries in general.

Table 12. Deaths and Nonfatal Injuries and Illnesses Requiring Days Away from Work Associated with Hoisting Apparatus, United States.

Type of Hoisting Apparatus [OIICS Code]	**1N or 2N Source of Death, 1992-1997**	**Nonfatal Injuries and Illnesses (1N Source), 1997**	**Median Days Away from Work, 1997**
Cranes [343]	479	1,355	10
Overhead hoists [344]	64	961	7
Derricks [345]	31	140	2
Bucket or basket hoist – truck mounted [3461]	99	189	5
Manlifts [3466]	69	1,227	10
Forklifts [851]	613	18,754	8
Total	1,355	22,437	---

Source: Census of Fatal Occupational Injuries (Deaths) [NIOSH 2001c] and Survey of Occupational Injuries and Illnesses (Nonfatal injuries), Bureau of Labor Statistics [BLS 1999b]. The dashes indicate that BLS reporting requirements were not met.

CFOI data for 1992-1997 showed that 290 of the 613 forklift-related fatalities (47.3%) were associated with work activities other than operating the forklift. Many of the non-operator fatalities were related to working around the machine: being run over, struck by, or pinned by a forklift (97 fatalities); or being struck by a load that fell from a forklift (74 fatalities). In other instances, workers died when they fell from a work surface elevated by a forklift (65 fatalities), while repairing or servicing a forklift (26 fatalities), or while riding as a passenger on the forklift or forks (21 fatalities) [NIOSH 2001c].

NIOSH analysis of CFOI data for 1992-1997 demonstrated that most crane-related fatalities were among workers other than operators [NIOSH 2001c]. Only 99 of the 479 fatalities (21%) were operating the crane. Thirty-six percent were engaged in construction, repair, and cleaning work; 12% were operating other vehicles or equipment, and 13% were performing material handling tasks. In 58 of the crane-related fatalities, the case narrative stated that the worker was repairing or disassembling the crane.

In 2001, a 14-year-old youth working at a rental equipment company was fatally injured by a electric chain hoist. The youth was employed to assist customers with loading and unloading rental equipment from customer vehicles and preparing the rental equipment for use by the next customer. After using a half-ton electric hoist to remove a vibratory plate tamper from a customer's truck, the youth attached himself to the hoist and was seen raising and lowering himself using the hoist. When he had not returned to the office several minutes later, his coworkers found him suspended by the chain around his neck [NIOSH 2001g]. In 1999, a 16 year-old youth and 2 adults fell 1200 feet to their death when the winch operator lost control of the hoist line they were "riding." The three workers, who were standing in loops tied into the hoist line, were being hoisted up to paint a section of a 1500- foot telecommunications tower. The hoist mechanism consisted of a portable capstan hoist at the base of the tower and a pulley at

the top. At about the 1200-foot level, the hoist line began to slip off the capstan, and the operator was unable to regain control [NIOSH 2000b]. HO 7 now prohibits youth from operating various types of hoists, including overhead hoists, which were associated with 64 deaths between 1992 and 1997. Over this 6-year period, CFOI also identified 99 fatalities involving truckmounted bucket or basket hoists commonly referred to as “cherry pickers” or “bucket trucks,” machinery not currently prohibited for youth under HO 7 [NIOSH 2001c]. Deaths associated with work from truck-mounted hoists were due primarily to falls (49 fatalities) and electrocution (31 fatalities). HO 7's definition of “manlift,” limited to machines suspended by belts, cables, or chains and driven through pulleys, sheaves, and sprockets, also does not reflect all types of these machines currently in use. CFOI narratives indicate that the majority of the 69 manlift-related deaths between 1992 and 1997 fell outside the definition of “manlift” provided in HO 7 in that the machine was not used as a means of conveyance but as an aerial platform. Aerial platforms may be described as manually-operated, powered, or boom-supported [Equipment Manufacturers Institute 1995]. Analysis of a special CFOI research file that includes detailed data such as age, but excludes data from New York City, identified 11 fatalities of youth less than 18 years of age associated with hoisting equipment for the years 1992 to 1997. Forklifts accounted for 6 fatalities [NIOSH 2001d]. The forklift fatalities involved youth operating the forklift, as well as working in the vicinity of the forklift. Crane fatalities all involved youth assisting in the operations of the crane, such as adjusting outriggers, or hooking or stabilizing a load.

Jim Collins says:

> On May 20, the Department of Labor announced final child labor rules that went into effect on July 19, 2010. DOL is describing these new rules as the "...most ambitious and far-reaching revisions to the child labor regulations in the last thirty years."
>
> The new rules include numerous recommendations made by NIOSH, including a change that now prohibits 16- and 17-year-olds from operating or assisting in the operation of powered hoists of less than one ton capacity. NIOSH made this recommendation based on the potential for hoisted loads less than one ton to cause injury as a result of the load falling or being improperly rigged or handled, and reports of young worker fatalities associated with hoists, including a fatality of a youth using a half-ton electric hoist in an industrial setting. At the time NIOSH made this recommendation to the Department of Labor, NIOSH did not consider the potential application of this recommendation to patient lifting devices which have since been proven to be very effective in reducing worker injuries associated with patient handling when used as a part of a comprehensive program including worker training and employer policies.
>
> The Department Of Labor is aware of stakeholder concerns about this aspect of the new child labor laws, and is currently examining the issue. NIOSH will provide technical assistance to the Department of Labor to help them in their consideration of risks to 16- and 17-year-olds associated with power-driven patient hoist/lifts, and the most appropriate means of providing meaningful opportunities for youth work in health care settings, while ensuring such work is safe.
>
> For more information on the new child labor rules see the federal register notice and Department of Labor fact sheet. NIOSH recommendations to the Department of Labor for changes to child labor laws are available at http://www.cdc.gov/niosh/docs/NIOSHRecsDOLHaz/default.html