

CRANE ACCIDENTS 1997 - 1999:

A REPORT OF THE CRANE UNIT OF THE DIVISION OF OCCUPATIONAL SAFETY AND HEALTH

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I. Data Sources

- A. Data for the Crane Report was gathered from Federal OSHA's Office of Management Data Services (OMDS) Website. Searches were made on the OMDS website by:
- Various keywords, e.g. "crane," "mobile crane," "hydraulic crane," "load"
 - 2, 3, and 4 Digit Standard Industrial Classification (SIC) Codes, e.g., 15xx, 16xx, 17xx
 - Establishments – "Crane XXX"
- B. Data was also gathered from Micro-to-Host Reports from the Integrated Management Information System (IMIS). The following requests were made:
- All Accidents Reports (Form 36)¹ from 1/1/97-12/31/99
 - All Inspections with Optional Information "S-10 Cranes"
 - All Citations involving 8 CCR 4999 and 8 CCR 2946

II. Total Number of Crane Accidents

From 1 January 1997 through 31 December 1999, the Division of Occupational Safety and Health learned of, or had reported to it, a total of 158 accidents involving a crane.

Over the three-year period from 1997 through 1999, at least one crane accident has occurred in each month of the three year period.

III. Types of Cranes Involved in Accidents

The types of cranes involved in the 158 accidents are as follows (N=158):

Crane Type	Count	Percentage
Mobile Cranes	115	73%
Bridge Cranes	26	16%
Gantry Cranes	5	3%
Tower Cranes	4	3%
Ship Cranes	1	1%
Not Determined ²	7	4%

¹ 8 CCR Section 342(a) requires that "serious injury or illness, or death of an employee occurring in place of employment or in connection with any employment" be reported to the Division. Because only accidents with serious employee injuries, or death, are reported, the exact number of crane accidents is not known. See attached Excel Spreadsheet for all reported crane accidents for the period 1997-99.

² In seven cases, there was insufficient information available to determine the specific type of crane involved.

IV. Crane Operator and Non-Crane Operator Injuries

A. Total Injuries, Serious and Fatal, By Type of Worker

1. Crane Operator -- One Fatal Injury and 23 Non-Fatal Injuries

While fourteen of the operators injured were bridge crane operators, the one fatality was a mobile crane operator.

2. Non-Crane Operators -- 12 Fatal Injuries and 79 Non-Fatal Injuries

a. Ninety-one non-crane operators were injured in crane accidents. Of the 91 crane accident-related injuries, 72 of these accidents involved mobile cranes. These non-crane operators include occupations such as mechanics, oilers, ironworkers, riggers, and stevedores.

b. In this category, 12 involved fatal injuries 8 of which involved non-crane operators who were engaged in work in the vicinity of mobile cranes.

3. Of the total of 13 fatalities for crane operators and non-crane operators, four (4) were the result of falling loads. All of the falling load fatalities involved a mobile crane. There were 3 fatalities from the 14 electrical contact accidents. Two of the electrical contact fatalities involved mobile cranes.

Although there were 35 mobile crane "tip-over" accidents, there was only one fatality in all tip-over accidents when a worker was killed when a crane tipped over onto him.

V. Private vs. Public Sector Crane Accidents

Of the 158 crane accidents, 150 accidents involved private sector entities and 8 involved public sector entities. Of the 8 public sector cases, 7 resulted in serious injuries. All 8 of the public sector cases involved a mobile crane.

VI. Construction vs. Non-construction Crane Accidents

Of the 158 crane accidents, 80 accidents occurred in non-construction work and 78 in construction-related work.

VII. Accident Causation

A. Most Frequent Causes: All Crane Types (N-158) & Mobile Cranes (N-115)

	All Crane Types	Mobile Cranes
1. Instability	67	49
a. Unsecured Load	34	6
b. Load Capacity Exceeded	0	29
c. Ground not level/too soft	0	4
2. Lack of Communication	32	24
3. Electrical Contact	13	10
4. Misc. in 14 Categories	46	32

B. Instability, Lack of Communication and Other Causal Factors

1. Instability

Instability accidents for mobile cranes generally resulted in either the crane tipping over, or the load falling off the hook or slings. Instability accidents were further broken down into separate categories.

2. Lack of Communication

Lack of communication was another major cause of accidents because the point of operation is usually some distance from the crane's operator station or not in full and direct view of the operator in operations involving mobile cranes. Seventy-five percent of accidents caused by both "lack of communication" and "electrical contact" involved mobile cranes.

3. Lack of Training

Although "Lack of Training" did not rank very high as a primary cause, it would have been ranked within the top three if a secondary cause were listed.