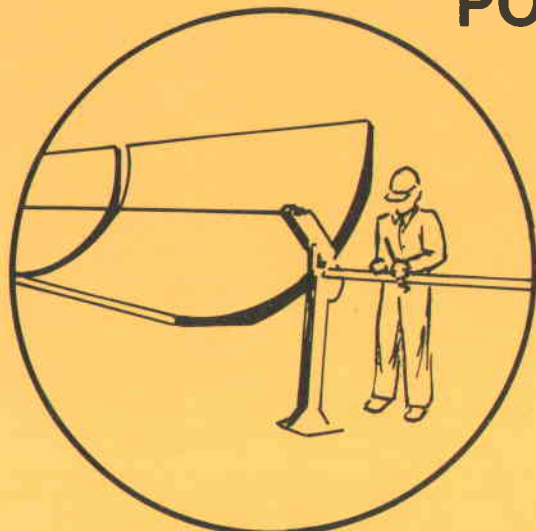


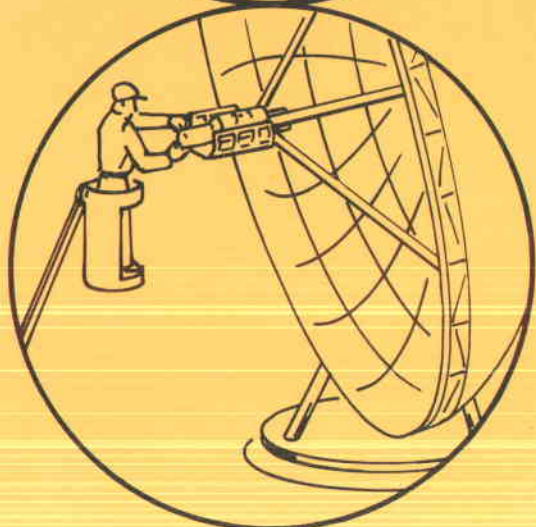
542

XTRA

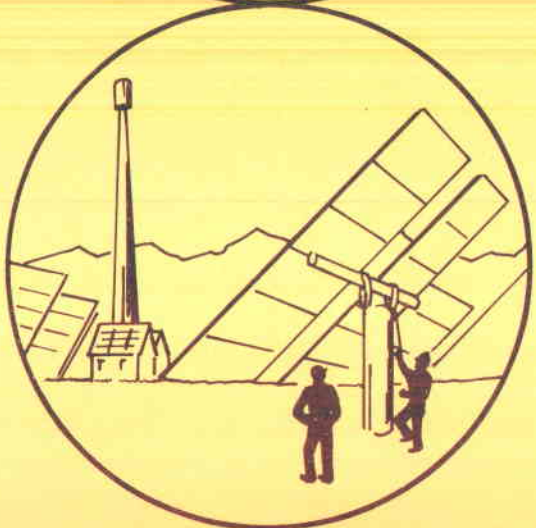
WORKER HEALTH and SAFETY in SOLAR THERMAL POWER SYSTEMS



II. DATA BASE and METHODOLOGY for the ESTIMATION of WORKER INJURY RATES



ENVIRONMENTAL SCIENCE and ENGINEERING
UNIVERSITY of CALIFORNIA, LOS ANGELES
OCTOBER 1979



Prepared for
LABORATORY of NUCLEAR MEDICINE and RADIATION BIOLOGY
UNIVERSITY of CALIFORNIA, LOS ANGELES

NOTICE

This report was prepared as an account of work sponsored by an agency of the United States Government. Neither the United States nor any agency thereof, nor any of their employees, makes any warranty, expressed or implied, or assumes any legal liability or responsibility for any third party's use or the results of such use of any information, apparatus, product or process disclosed in this report, or represents that its use by such third party would not infringe privately owned rights.

Printed in the United States of America

Available from:

National Technical Information Service

U.S. Department of Commerce

5285 Port Royal Road

Springfield, VA 22161

Price: Printed Copy \$5.25 Microfiche \$3.00

WORKER HEALTH AND SAFETY IN SOLAR THERMAL POWER SYSTEMS

II. Data Base and Methodology for the
Estimation of Worker Injury Rates

Alan Z. Ullman
School of Engineering and Applied Science

Bart B. Sokolow
Environmental Science and Engineering

Jeffrey I. Daniels
Environmental Science and Engineering

Study supported by Contract DE-AM03-76-SF00012
between the U.S. Department of Energy and the
University of California

Prepared for

LABORATORY OF NUCLEAR MEDICINE AND RADIATION BIOLOGY
UNIVERSITY OF CALIFORNIA, LOS ANGELES

Credits

"Identification and Assessment of Potential Occupational or Public Health and Safety Issues Associated with STPS Technologies" has been used as a theme for research projects and multidisciplinary course work offered by the interdepartmental graduate program in Environmental Science and Engineering. The content of this report was in part derived from such activities. We wish to acknowledge the contributions of the following faculty and graduate students preparing for the D.Env. degree.

Faculty

Professor Leona M. Libby - Environmental Science and Engineering
Dr. Robert G. Lindberg - Laboratory of Nuclear Medicine and Radiation Biology

Graduate Students

John Hill	- M.S., Physics
Ron Hudson	- M.S., Chemistry
Paul Hurt	- M.S., Chemistry
Ali Kashani	- M.S., Engineering
Gary Meunier	- M.A., Biology
Seth Pauker	- MPH, Public Health
Pankaj Parekh	- MPH, Public Health
Dennis Robinson	- M.S., Health Sciences
Rob Scofield	- MPH, Public Health
Steven Sim	- M.S., Mathematics
Kent Volkmer	- M.S., Environmental Health
Larry Zaragoza	- M.S., Biology

ABSTRACT

A data base and methodology useful for the quantitative estimation of worker hazards in hypothetical technologies is proposed. The hazard to workers is partitioned into categories of accident sources and injury-types. The probability of experiencing a specified rate in each category is estimated from data on a selected group of industries. Direct comparisons between existing and hypothetical technologies are constructed based on anticipated worker activities in plant operations and maintenance. Selected examples of worker hazards in solar thermal electric power generation are developed.

TABLE OF CONTENTS

	Page
1. Introduction	1
2. Description of the Data Base	3
3. Description of the Methodology	7
4. Some Examples of the Use of the Data Base and Methodology	8
4.1 The Use of Non-Aqueous Rankine Cycles in Power Plants	9
4.2 Parabolic Dish Mounted Stirling Cycle Engines	11
References	14
Appendix A: Percentile Plots of Accident Sources and Injury Types	64

LIST OF FIGURES

Number	Title	Page
1	Percentile Plot of Total Injury Rate	45
2	Percentile Plot of Work Days Lost per Injury	46
3	Total Injury Rate per 100 Worker-Years	47
4	Lost Work Days per Injury	48
5	Accident Source: Containers	49
6	Accident Source: Chemicals	50
7	Accident Source: Hand Tools	51
8	Accident Source: Hoisting Apparatus and Conveyors	52
9	Accident Source: Machines	53
10	Accident Source: Metal Items	54
11	Accident Source: Working Surfaces	55
12	Injury Type: Struck By or Against	56
13	Injury Type: Fall from Elevation	57
14	Injury Type: Fall on Same Level	58
15	Injury Type: Caught in or Between	59
16	Injury Type: Rubbed or Abraded	60
17	Injury Type: Bodily Reaction	61
18	Injury Type: Overexertion	62
19	Injury Type: Inhalation and Absorption	63
A-1	Accident Sources: Containers	64
A-2	Accident Sources: Chemicals	64
A-3	Accident Sources: Hand Tools	65
A-4	Accident Sources: Hoisting Apparatus and Conveyors	65
A-5	Accident Sources: Machines	66

LIST OF FIGURES, (Continued)

Number	Title	Page
A-6	Accident Sources: Metal Items	66
A-7	Accident Sources: Working Surfaces	67
A-8	Injury Type: Struck By or Against	67
A-9	Injury Type: Fall from an Elevation	68
A-10	Injury Type: Fall on the Same Level	68
A-11	Injury Type: Caught In or Between	69
A-12	Injury Type: Rubbed or Abraded	69
A-13	Injury Type: Bodily Reaction	70
A-14	Injury Type: Overexertion	70
A-15	Injury Type: Inhalation and Absorption	71

LIST OF TABLES

Number	Title	Page
1	Injury Rates by Accident Source for 105 Selected Industries	15
2	Injury Rates by Accident Type for 105 Selected Industries	21
3	Total Injuries per 100 Worker-Years	25
4	Lost Work Days per Injury	26
5	Accident Source: Containers Injury Rate per 100 Worker-Years	27
6	Accident Source: Chemicals. Injury Rate per 100 Worker-Years	28
7	Accident Source: Land Tools. Injury Rate per 100 Worker-Years	29
8	Accident Source: Hoisting Apparatus Conveyors. Injury Rate per 100 Worker-Years	30
9	Accident Source: Machines. Injury Rate per 100 Worker-Years	31
10	Accident Source: Metal Items. Injury Rate per 100 Worker-Years	32
11	Accident Source: Working Surfaces. Injury Rate per 100 Worker-Years	33
12	Injury Type: Struck By or Against. Injury Rate per 100 Worker-Years	34
13	Injury Type: Fall from Elevation. Injury Rate per 100 Worker-Years	35
14	Injury Type: Fall on Same Level. Injury Rate per 100 Worker-Years	36
15	Injury Type: Caught in or Between. Injury Rate per 100 Worker-Years	37
16	Injury Type: Rubbed or Abraded. Injury Rate per 100 Worker-Years	38
17	Injury Type: Bodily Reaction. Injury Rate per 100 Worker-Years	39

LIST OF TABLES, (Continued)

Number	Title	Page
18	Injury Type: Overexertion. Injury Rate per 100 Worker-Years	40
19	Injury Type: Inhalation and Absorption. Injury Rate per 100 Worker-Years	41
20	Smoothed Percentile Injury Rates per 100 Worker-Years	42
21	Ten Selected Industries Used in all the Decile Plots	43
22	Injuries per 100 Worker-Years Due to Accidents Involving Chemicals Over an Extended Percentile Range	44

1. Introduction

The use of risk-benefit methodologies to assess new engineering projects or alternatives has become well established in several fields. The identification of benefits of a project generally stems directly from the objectives of the project, and these frequently are found to outweigh any secondary benefits.

Assessing the risks of alternative energy technologies is more difficult, particularly when quantitative results are needed. Both primary and secondary risks may be significant, and complex synergisms may have to be considered in detail. Frequently, it is at the conceptual or preliminary designs stage at which one must develop such assessments. The lack of specificity in the designs available at that stage will often preclude doing rigorous, comprehensive, and quantitative analyses to define the risks.

The risk to the environment of a new technology must be addressed in its most general sense. This includes both impacts on the ecology and on exposed populations. This latter category includes worker health and safety. Lack of directly comparable experience with other facilities may prevent analysis of worker health and safety at an early stage in technology development. It may also prevent meaningful risk-benefit tradeoffs between related technological options. For example, one might wish to assess the incremental risk from some modest change in a particular component design or technology. Since comparable experience will not have been accumulated, the conventional methodologies, such as event and fault trees, may not provide a quantitative estimate of risks. Even if the detailed designs needed are available, use of these

methodologies leads to absolute (total), rather than relative, assessments. Absolute hazard assessment may be ill-suited to addressing incremental changes in risks from incremental changes in the technology. While we wish to consider small changes in the technology used, the impact of these changes may be widespread in the design of a plant when described at the fine scale needed for event and fault tree analyses. The results from the comparative assessment of two technologies by event- and fault-tree methods then will be a quantitative estimate of risks for each, while the principally desired result is the difference between the estimates. The predicament is that the uncertainty in each value may well be comparable to or exceed the difference between values. This situation is untenable if one wishes to make decisions based on such analyses. An alternative methodology can, we believe, be developed. If one focuses on the estimation of the hazard to workers of a technology, a series of steps may be proposed by which the hazards can be identified and assessed. An identification of the types of potential hazards is the first step, even if the list is based on intuition rather than detailed analyses. A compilation of sources and types of hazardous focuses attention on the nature of the processes performed, and with which exposed populations must deal. Technical "intuition", Igor Sikorski noted in regard to his aircraft designs, is the ability to visualize the completed project before it is done and to internalize how the device will perform. This visualization does not come about in a vacuum, but rather emerges from our experience with other projects or other processes.

It is the purpose of this report to present a data base, and to

describe a set of guidelines and a methodology by which the data base may be used, and to use these to predict the worker hazards of future technologies. The data base and methodology is developed from a critical review of worker hazards in previous or existing processes. This procedure, if pursued without care, could lead to erroneous projections of hazards. Selective use of an appropriately structured data base will, we believe, provide some clear guidelines for the quantitative estimate of worker hazards. While we do not claim that this projection will work in all cases, we do believe that it is worthwhile to examine the available information on worker hazards in industrial processes, and from that develop a methodology incorporate extant knowledge on hazards to the best advantage.

2. Description of the Data Base

Several information sources (1-4) are available which characterize job-related injury rates and worker-days lost per injury, partition by Standard Industrial Classifications (SIC) (5). These compilations provide data on fatalities, injuries with or without workdays lost, and days away from work or with restricted work activity.

A review of these data shows a wide variability in injury rates among the listed industries. For example, injury rates per 100 worker-years vary from about 25 injuries per 100 worker-years in moderately high rate industries such as Lumber and Wood Products (SIC 24), to about 5 injuries per 100 worker-years in moderately low rate industries such as Communications (SIC 48). If one were to assess the worker hazards in a new industry which, intuitively, was not extreme in its hazard, some intermediate rate would be expected.

Similar rates of injuries are found in dissimilar industries. This might lead one to question the source of the injuries. For example, Carpentering and Flooring Contractors (SIC 175) and Fabricated Metal Products Manufacturing (SIC 34) both have injury rates of about 20 injuries per 100 worker-years. While one might expect that injuries in the former would come principally from hand tools and wood items, those in the latter would be caused by machines and metal items. This intuition should, of course, be checked against reliable surveys of the respective industries. Recently, such data has become available.

Data on injury rates by accident source and injury type are presented in Tables 1 and 2. These data have been prepared from compilations of accident reports for a single year (1977) in California (6), which gives the total number of injuries reported in each category and in each industry. Accident rates were computed from these results and from overall injury rates reported in other sources (1, 2). A selection of 105 SIC has been made in an effort to characterize the operation of energy resource developments. The redundancy in the data for the 105 SIC selected is due to the nature of the coding procedure. The general categories listed (Agriculture, Forestry, and Fishing; Mining; Construction; Manufacturing; Transportation and Public Utilities; Finance, Insurance, and Real Estate; and Services) may include several two-digit SIC which are narrowly defined; in turn, the three- and four-digit codes are still more narrowly defined and are included within the higher code levels. Since not all lower level codes are included, each higher level code will include some information not available in the lower level codes. For example, SIC 17, Special Trades Contractors, includes the data of codes 171 through 176 and 179, which are included in the Tables, but also of codes 177 and

178, which are not. Due to different time periods and data bases used in these various compilations, and the paucity of data on categorized injury rates, the rates listed in Table 1 and 2 must be presumed to be only approximate. Further uncertainty is introduced by possible biases in the reports filed with the compiling agencies. Guidelines (7, 8) to categorize the reported injuries are relatively new, and the uniformity of the reporting is largely unknown.

The results in Tables 1 and 2 provides a means of examining the severity of factors leading to injuries in the various industries. Firstly, injury rates are ordered for the 105 industries for a selection of major accident sources and injury types. These are shown in Tables 3 through 19 for the selected accident sources and types. These tabulations can be used to prepare correlations of the injury rate against the percent of industries exhibiting that rate or less. Examples of these correlations are shown in Figures 1 and 2 for total injury rate per 100 worker-years and for days lost per injury. The remaining correlation plots are given in Appendix A. These plots are in a "log-normal" form; the ordinate is logarithmic, and the abscissa is scaled to a Gaussian probability distribution. This plot will be linear for random variables for which the logarithm of the variable is distributed according to the Gaussian distribution. For a random variable, z , the Gaussian distribution states that the probability of the variable having a value z to $z + dz$ is $p(z) dz$, where

$$p(z) = \frac{1}{\sqrt{2\pi} \sigma} \exp \left(- \frac{(z - \bar{z})^2}{2 \sigma^2} \right) \quad (1)$$

where \bar{z} is the mean value and σ is the standard deviation. The probability that the variable will have a value less than a specified value z is then

P(z), where

$$P(z) = \frac{1}{\sqrt{2\pi} \sigma} \int_{-\infty}^z \exp \left(- \frac{(z' - \bar{z})^2}{2 \sigma^2} \right) dz' \quad (2)$$

For an injury rate said to be log-normal, the probability of a rate less than r is $\phi(r)$, where

$$\phi(r) = \frac{1}{\sqrt{2\pi} \sigma} \int_{-\infty}^{\ln r} \exp \left(- \frac{(z' - \ln \bar{r})^2}{2 \sigma^2} \right) dz \quad (3)$$

where $\ln \bar{r}$ is the mean value. Given such a Gaussian distribution the value of r giving any desired value of P can be found from standard tables of the Gaussian distribution and its integrals (9). From the linear approximations of Figures 1 and 2, and the corresponding results in Appendix A for the remaining data of Tables 3 - 19, the smoothed injury rates for each accident source and injury type may be found in terms of a Gaussian form given in equation (3). The percentile rates can then be computed. This result is given in Table 20 for each decile from 10 to 90. Note that the Nth percentile rate is the rate which will not be exceeded by N% of the industries. Note further that since not all accident sources or injury types are included, the total injury rate at each decile will not equal the sum of either the individual accident sources or injury types listed. The categories not listed in Tables 3 - 20 but included in Tables 1 and 2 are generally expected to be of minor importance for energy technologies, or, as in the case of the category "Other", not readily subject to rational analysis.

The use of a log-normal form carries with it the presumption of a Gaussian distribution. In the usual formulation, a random variable z is said to exhibit a Gaussian distribution of its logarithm if the

variable z takes on a value given by the product of a large number of terms,

$$z = t_1 \times t_2 \times \dots \times t_N$$

Each term t_i may be distributed in any way, but no one term in this product can dominate. The assertion that an injury rate is distributed in a log-normal form then implies that the rate is determined multiplicatively by many factors leading to injury, and that no one factor is the dominant cause of the injury rate observed. In itself, this may be a provocative observation from the data.

The decile rates shown in Table 20 may be displayed on a bar graph, and the positions on the plot characterized by various selected industries. These are shown in Figure- 3 - 19. For the maintenance of uniformity, a group of ten selected industries, listed in Table 21, are used in all of the decile plots, Figures 3-19, and are shown in script lettering on the plots. Additional industries are selected to provide a relatively uniform characterization of the range of expected rates, and are shown in gothic lettering. The selection of these industries in principle should not be a source of bias, since the comparisons can be made on decile rates for injuries. The choice of these industries is intended to help the user focus on the nature of the industrial operations leading to a particular level of worker hazard.

3. Description of the Methodology

The utilization of the data base for the estimation of worker injury rates will be based on four characteristics.

First, the data base provides a means of estimating characteristic

levels of hazard for the various accident sources and injury types considered. Selection and comparison of industries having working environments similar to the technology under consideration will allow semi-quantitative estimates of the injury rate expected. These comparisons are to be made principally on the basis of worker function and environment, and only secondarily on the nature of the industrial activity. The spread in injury rates for the accident sources and injury types considered provides a direct means of bounding the level of hazard which may be encountered.

Second, the data base implicitly reflects the normative steps which will be taken to provide for worker health and safety when operations of high intrinsic risk must be performed. The operating hazards of the selected industries differ by a large amount, while the injury rates are found to be more narrowly confined.

Third, critical examination of the data base permits the identification of industries doing significantly better or worse than average in controlling worker injury rates. The effects of worker education and training, supervision, environment, and function can be addressed in a meaningful and quantitative fashion.

Last, the existence of correlations between or within accident sources and injury types can provide insight into the nature and interrelation of the various factors leading to worker injuries.

4. Some Examples of the Use of the Data Base and Methodology

Let us consider some simple examples to demonstrate both the thrust and the limitations of the proposed methodology. We acknowledge a considerable ad hoc nature in these preliminary analyses.

4.1 The Use of Non-Aqueous Rankine Cycles in Power Plants

Most electric generating plants use a steam Rankine cycle, in which during a cycle water is pressurized, vaporized, expanded to obtain work, and recondensed. Water, of course, is a sensibly non-toxic substance. Reference to Table 1 and 2 shows that worker injuries in the Electric Services Industry (SIC 491) stem largely from routine events such as being struck by objects or over exertion while working on the process, but rarely are caused by chemicals.

Suppose one were to propose using some new fluid, "Fluid X", in place of water in the Rankine cycle, due to fluid X's superior thermodynamic properties under the conditions utilized. Suppose further that this fluid is toxic if ingested or inhaled in modest quantities. Possibly, quite a number of things might change in the design and operations of the system, but one clear difference is that a release of Fluid X might well cause injury to workers in a way quite different from water. Both will be hot, so a bodily reaction could ensue from a release of either, but the risk of inhalation, adsorption, or ingestion will be presumed to be higher for Fluid X than for water. Qualitatively that is helpful, but suppose we wished to address quantitatively the added risk to be experienced in return for Fluid X's better thermodynamic properties.

Reference to Tables 1 and 2 show that in the Electric Services Industry (SIC 491) the injury rate for accidents with chemicals as the source is zero within the accuracy of the compilations, and the injuries characterized by bodily reaction and inhalation have rates of 1.24 and 0.10 per 100 worker-years, respectively. From Figures 6, 17, and 19, we observe that the value for injuries due to bodily reaction falls somewhat

above average (~70th percentile) while the other values fall below the 10th percentile. One might conjecture, then, that the bodily reaction injury rate is due not to chemicals, but due to hot objects, which may be quite common in a power plant. The injury rate due to chemicals may then be presumed to be quite low in such plants.

The use of a more hazardous chemical, Fluid X, will increase the rate of injury due to chemicals, but by how much? For the sake of comparison, we bear in mind the total injury rate for Electrical Services, 6.3 per 100 worker-years from Table 1, and the average value for all industries of 13.0 from Figure 3. From Figure 6, we see that injuries due to chemicals have a 90th percentile rate of 0.50, with the highest decile characterized by Plating and Polishing (SIC 3471) and Paints and Allied Products (SIC 285). It is reasonable to presume that these relatively uncontrolled circumstances will not be characteristic of a power plant using a fluid in a largely closed loop. In fact, all of the industries in the upper 50% of Figure 6 present at best partially controlled uses of chemicals compared to practices expected in the Electrical Services Industries. We conclude that a realistic estimate of the hazards of Fluid X might lead to injury rates within the lowest quartile of industries. This gives a rate of no more than ~0.1 injuries per 100 worker-years whose source is chemicals. A similar estimate can be made for inhalation-type injuries from Figure 19. This incremental rate is less than 2% of the injury rate in the Electrical Services Industry, and less than 1% of the average injury rate in all industries considered. In an absolute sense this is a small risk. Whether the risk-benefit balance is favorable will then depend on its comparison to the benefits

expected and the assessment of what, if any, additional risks are present.

The use of a log-normal model for hazard rates allows an injury rate to be predicted for any percentile, with a caveat that the data base on which the correlations rest is a limited one. It is of interest to examine precisely how infrequent extreme rates of worker injuries are likely to be. In Table 22 the rates of injury by chemicals are shown for percentiles from 0.02 to 99.98%. One observes that only 1 industry in 500 will be expected to have an injury rate at least ten times the mean rate, and an equal number no more than one tenth the mean (i.e. 99.8 and 0.2 percentiles, respectively). Only a singular industry would exhibit such a large deviation from the mean. Particularly in view of the developmental effort involved, suggesting extreme injury rates for hypothetical energy technologies requires careful defense.

The validity of this assessment can be called into doubt on several grounds, particularly since it appears to apply in a generic way to all alternatives to steam in a Rankine cycle. In the proper spirit, however, it must be viewed simply as a bounding analysis, semi-quantitative in intent and practice. At the least, it provides an appropriate data base on which to argue the reasonableness of this estimate.

4.2 Parabolic Dish Mounted Stirling Cycle Engines

Advanced receiver concepts include the use of a parabolic dish with a small engine/alternator mounted at its focus (10). The use of a Stirling cycle engine as the prime mover is among the options. Preliminary designs have capacities of 10 MWe-hr/day at a single facility, and have gross revenues of only \$700/day at 70 mils/kWe-hr.

Analysis of the behavior of this device suggests that repairing a Stirling cycle engine will be like repairing a conventional automobile engine. We do not wish to draw this linkage tightly, but suggest it rather as an appropriate starting point. A priori, it provides a means of ordering the nature of differences between Stirling cycle use and some established technology or industrial operation.

The repair of a Stirling cycle engine mounted on a parabolic dish will be performed entirely or in part at the dish focus. The engine is elevated about 10 m, requiring the use of a cherry-picker or other lifting device. We observe from Figures 13 and 14 that falls from elevation and on the same elevation are relatively infrequent in the Automobile Repair Services and Garage (SIC 75) industry, being below the 20th percentile. The hazard of falls from elevation might be far greater in repair of dish-mounted Stirling cycle engines.

The expected increase in injury risk due to falls from elevation cannot be determined at this time. Figure 13, however, provides some insight and suggests some secondary questions. The highest rate industry listed is Roofing and Sheet Metal Work (SIC 176). Logically this industry, due to its operation in uncontrolled and constantly varying situations, should exhibit a high rate. Similar arguments might apply to Non-Residential Building Contractors (SIC 154) and Oil and Gas Field Service (SIC 138). In industries such as Transportation by Air (SIC 45), ground personnel may function in environments much like that suggested for repair of Stirling cycle engines, making repairs or performing functions on lifting devices. In accord with this comparison, an increment in injury rate due to falls from an elevation of ~ 0.6 per

100 worker-years might be proposed for Stirling cycle engine repair. This value could be higher if the experience in the Transportation by Air industry is significantly skewed by the fraction of injuries occurring to employees who work in elevated areas.

Some results, such as the extremely low rate in the Guided Missile and Space Vehicles, may reflect a greater degree of control on worker activities, rather than an inherently less hazardous worker environment. This observation may be a point of some value, and one which we feel can be substantiated in other cases in which high (low) injury rates are found in areas of low (high) intrinsic hazard. In passing, we note further that large electric generating stations may be expected to have adequate supervision of workers. Solar thermal electric power plants using Stirling cycle engines (10), are less likely to afford strong worker supervision.

References

1. "Occupational Injuries and Illnesses Survey, California", California Department of Industrial Relations, Division of Labor Statistics and Research.
2. "Accident Facts", National Safety Council.
3. "Occupational Injuries and Illnesses in the United States by Industry", U.S. Department of Labor, Bureau of Labor Statistics.
4. "State Data on Occupational Injuries and Illnesses", U.S. Department of Labor, Bureau of Labor Statistics, Office of Occupational Safety and Health Statistics.
5. Standard Industrial Code Manual, 1972 Edition.
6. Unpublished tabulations, State of California, Department of Industrial Relations, Division of Labor Statistics and Research.
7. "Recordkeeping and Reporting Requirements under the California Occupational Safety and Health Act", California Department of Industrial Relations, Division of Labor Statistics and Research, 1979.
8. "What Every Employer Needs to Know About OSHA Recordkeeping", U.S. Department of Labor, Bureau of Labor Statistics, Report 412-3, 1978.
9. c.f. M. Abramowitz and I. Stegun, "Handbook of Mathematical Functions", pp. 966, Dover Publications, New York, 1965.
10. "An Overview of Power Plant Options for the First Small Power System Experiment", P. Walden, ed., JPL, November 1978.

Table 1: Injury rates by accident source for 105 selected industries

STANDARD INDUSTRY CODES	INDUSTRIES	TOTAL INJURIES PER 100 WORKER YEARS	LOST WORK DAYS PER INJURY	RATE OF FATALI- TIES	CONTAIN- ERS	CHEMI- CALS	FURNITURE FIXTURES	HAND TOOLS	HOISTING APPARATUS CONVEYORS	MACHINES	METAL ITEMS	VEHICLES	WOOD ITEMS	WORKING SURFACES	OTHER OR NOT STATED
	Agriculture, Forestry & Fishing	11.2	7.1	0.05	1.23	0.33	0.03	1.09	0.14	0.68	1.00	1.21	0.28	1.60	3.64
01	Agriculture Production-Crops	23.8*	3.4*	0.07	2.59	0.63	0.09	2.45	0.28	1.37	2.48	2.80	0.54	3.17	7.39
02	Agriculture Production- Livestock	5.7*	7.0*	0.03	0.64	0.08	0.00	0.33	0.09	0.17	0.51	0.50	0.17	0.87	2.33
078	Landscape & Horticulture Services	12.5	8.8	0.02	0.72	0.14	0.01	2.03	0.03	1.45	0.60	1.38	0.58	1.54	4.02
08	Forestry	9.8*	10.2*	0.00	0.35	0.00	0.00	1.75	0.00	0.00	0.35	0.35	1.05	1.05	4.90
	Mining	12.7	9.3	0.07	0.45	0.19	0.10	1.18	2.81	0.29	2.18	0.72	0.15	1.45	3.17
13	Oil & Gas Extraction	14.8	9.4	0.08	0.38	0.25	0.12	1.47	4.00	0.18	2.71	0.61	0.19	1.56	3.33
131	Crude Petroleum & Natural Gas	7.0	9.4	0.03	0.24	0.12	0.10	0.86	1.73	0.07	0.96	0.29	0.02	0.74	1.88
138	Oil & Gas Field Services	23.7	9.4	0.13	0.55	0.40	0.13	2.19	6.58	0.30	4.69	0.98	0.38	2.51	5.00
14	Non Metallic Minerals Except Fuels	6.6	8.8	0.06	0.53	0.02	0.06	0.40	0.17	0.40	0.74	0.85	0.08	0.95	2.39
	Construction	16.8	6.5	0.04	0.85	0.12	0.17	2.25	0.19	0.48	2.70	0.72	1.68	2.69	4.97
15	General Building Contractors	17.6	6.1	0.04	0.46	0.07	0.22	3.16	0.08	0.36	2.40	0.53	3.50	2.92	3.89
152	Residential Building Contractors	18.0	5.4	0.03	0.40	0.06	0.23	3.45	0.05	0.38	2.29	0.54	3.82	3.01	3.76
154	Non Residential Building Construction	19.4	6.6	0.06	0.66	0.12	0.18	3.14	0.19	0.36	3.22	0.57	3.19	2.99	4.79
16	Heavy Construc- tion Contractors	10.5	8.5	0.08	0.42	0.11	0.06	1.15	0.39	0.52	1.97	0.83	0.55	1.17	3.34
161	Highway & Street Construction	15.4	8.7	0.12	0.53	0.10	0.07	1.66	0.40	1.13	1.95	1.78	0.72	1.93	5.14
162	Bridge, Tunnel, Water, Sewer Uti- lity Lines	9.1	8.4	0.08	0.38	0.12	0.05	1.00	0.39	0.34	1.98	0.55	0.50	0.95	2.82
17	Special Trade Contractors	19.5	6.3	0.03	1.26	0.16	0.19	2.26	0.18	0.55	3.26	0.81	1.17	3.25	6.40
171	Plumbing, Heat- ing, Air Condi- tioning	20.6	5.3	0.02	0.60	0.19	0.19	2.30	0.06	0.52	5.04	0.90	0.70	2.72	7.36

Table 1: Injury rates by accident source for 105 selected industries (continued)

STANDARD INDUSTRY CODES	INDUSTRIES	TOTAL INJURIES PER 100 WORKER YEARS	LOST WORK DAYS PER INJURY	RATE OF FATALI- TIES	CONTAIN- ERS	CHEMI- CALS	FURNITURE FIXTURES	HAND TOOLS	HOISTING APPARATUS CONVEYORS	MACHINES	METAL ITEMS	VEHICLES	WOOD ITEMS	WORKING SURFACES	OTHER OR NOT STATED
172	Painting, Paper Hanging, Decorat- ing	14.2	7.8	0.00	1.25	0.33	0.17	1.14	0.02	0.28	0.84	0.33	0.84	3.48	5.53
173	Electrical Work	14.4	4.7	0.04	0.81	0.12	0.34	1.64	0.12	0.28	3.07	0.40	0.62	2.33	4.67
174	Masonry, Stone Work, Plaster- ing	20.7	7.1	0.03	1.64	0.19	0.08	1.75	0.11	0.72	1.79	0.86	1.09	4.49	8.00
175	Carpentering & Flooring	20.8	5.9	0.00	1.66	0.04	0.69	4.13	0.01	0.77	2.37	0.51	3.32	3.39	3.90
176	Roofing & Sheet Metal Work	28.7	9.6	0.05	3.33	0.14	0.06	2.75	0.19	0.18	3.14	1.39	1.25	5.71	10.56
179	Miscellaneous Special Trade Contractors	19.7	5.5	0.05	1.00	0.20	0.08	2.04	0.31	0.74	5.44	1.04	0.92	2.32	5.63
	Manufacturing	13.0	6.9	0.01	1.74	0.32	0.27	0.86	0.24	1.52	2.18	0.65	0.72	1.17	3.32
20	Food & Kindred Products	19.8	8.1	0.01	4.18	0.33	0.18	1.59	0.61	1.57	1.23	1.29	0.67	2.49	5.65
201	Meat Products	30.6	6.4	0.00	3.48	0.21	0.40	7.24	0.66	1.48	1.67	1.62	0.38	3.17	10.27
202	Dairy Products	16.7	7.2	0.03	4.36	0.54	0.08	0.60	0.47	1.22	1.09	1.68	0.39	2.23	4.04
203	Preserved Fruits & Vegetables	17.6	7.5	0.00	3.90	0.42	0.13	0.73	0.67	1.52	1.23	0.95	0.86	2.66	4.53
2033	Canned Fruits & Vegetables	17.1	7.6	0.00	3.47	0.40	0.07	0.63	0.59	1.45	1.38	0.85	0.99	2.68	4.59
2034	Dehydrated Fruits, Vegetables & Soups	17.7	8.9	0.00	4.47	0.50	0.16	0.78	0.57	1.35	1.17	1.12	0.62	2.34	4.61
204	Grain Mill Products	19.6	8.7	0.06	5.28	0.30	--	0.60	0.47	1.70	1.76	1.59	0.82	2.31	4.76
22	Textile Mill Products	13.8	8.0	0.00	2.66	0.34	0.36	0.96	0.24	1.76	1.49	0.95	0.24	1.60	3.18
23	Apparel & Other Textile Products	6.1	4.8	0.00	1.10	0.05	0.18	0.41	0.08	1.52	0.32	0.22	0.10	0.64	1.48
239	Miscellaneous Fabricated Textile Products	10.4	6.0	0.00	1.86	0.11	0.29	0.63	0.18	2.28	0.63	0.34	0.20	1.16	2.73
24	Lumber & Wood Products	26.1	6.8	0.07	1.01	0.12	0.43	2.24	0.73	2.74	2.52	1.17	7.26	2.52	5.36
242	Sawmills & Planing Mills	23.7	8.0	0.02	0.53	0.06	0.06	1.28	1.15	2.03	1.46	0.87	9.44	2.17	4.63
2421	Sawmills & Planing Mills- General	24.0	8.0	0.02	0.51	0.06	0.04	1.30	1.19	1.92	1.49	0.89	9.65	2.20	4.74
243	Millwork, Ply- wood, Struc- tural Members	23.2	6.7	0.01	0.99	0.15	1.04	1.25	0.55	3.86	1.91	1.08	7.47	1.44	3.45

Table 1: Injury rates by accident source for 105 selected industries (continued)

STANDARD INDUSTRY CODES	INDUSTRIES	TOTAL INJURIES PER 100 WORKER YEARS	LOST WORK DAYS PER INJURY	RATE OF FATALI- TIES	CONTAIN- ERS	CHEMI- CALs	FURNITURE FIXTURES	HAND TOOLS	HOISTING APPARATUS CONVEYORS	MACHINES	METAL ITEMS	VEHICLES	WOOD ITEMS	WORKING SURFACES	OTHER OR NOT STATED
2431	Millwork	25.0	6.0	0.00	1.18	0.14	0.82	0.87	0.43	4.50	1.78	1.35	8.74	1.54	3.64
245	Wood Buildings & Mobile Homes	35.1	5.1	0.00	1.10	0.13	0.63	3.39	0.30	1.63	7.24	1.48	5.18	5.78	8.25
25	Furniture & Fixtures	18.0	6.1	0.02	1.48	0.08	2.36	1.26	0.15	3.18	2.27	0.75	2.46	0.95	3.07
26	Paper & Allied Products	17.5	8.3	0.02	3.68	0.15	0.22	0.65	0.44	3.03	1.55	0.90	1.13	1.52	4.22
264	Miscellaneous Converted Paper Products	17.7	8.7	0.02	4.42	0.14	0.29	0.60	0.40	3.37	2.00	0.76	0.71	1.50	3.49
265	Paperboard Containers & Boxes	17.9	6.7	0.01	3.37	0.09	0.14	0.64	0.50	3.18	1.14	0.97	1.71	1.53	4.64
27	Printing & Publishing	8.1	7.0	0.01	1.56	0.11	0.13	0.34	0.14	1.46	0.53	0.90	0.16	0.86	1.92
271	Newspapers	7.1	8.3	0.02	1.28	0.09	0.12	0.31	0.16	0.62	0.41	1.21	0.10	1.09	1.72
275	Commercial Printing	9.5	6.8	0.01	1.78	0.15	0.13	0.38	0.16	2.25	0.76	0.76	0.25	0.71	2.18
28	Chemicals & Allied Products	12.5	7.2	0.03	3.45	0.91	0.12	0.48	0.19	0.93	0.97	0.78	0.37	1.31	2.99
283	Drugs	9.1	5.2	0.00	2.52	0.41	0.06	0.35	0.09	1.03	0.45	0.50	0.39	0.90	2.41
2834	Pharmaceutical Preparations	9.9	5.1	0.00	2.93	0.32	0.05	0.21	0.05	1.29	0.50	0.66	0.32	0.92	2.59
284	Soap, Cleaners & Toilet Goods	11.6	8.1	0.00	3.06	0.78	0.22	0.38	0.24	0.92	0.84	0.72	0.32	1.43	2.67
285	Paints & Allied Products	17.0	5.6	0.03	6.73	0.63	0.14	0.32	0.20	0.95	1.06	1.32	0.52	1.90	3.22
29	Petroleum & Coal Products	6.8	8.3	0.02	0.99	0.34	0.10	0.52	0.24	0.27	0.73	0.45	0.12	0.84	2.19
291	Petroleum Refin- ing	5.7	9.0	0.02	0.67	0.35	0.12	0.50	0.12	0.11	0.72	0.35	0.06	0.84	1.86
30	Rubber & Miscel- laneous Plastic Products	17.9	7.9	0.00	2.56	0.50	0.20	1.43	0.31	2.79	2.48	0.71	0.52	1.46	4.94
306	Fabricated Rubber Products, NEC	21.0	7.5	0.00	3.18	0.56	0.16	2.01	0.44	2.72	4.82	0.56	0.26	1.31	4.96
307	Miscellaneous Plastic Products	17.0	6.6	0.01	2.53	0.50	0.24	1.31	0.19	2.94	2.00	0.63	0.61	1.58	4.46
31	Leather & Leather Products	14.0	5.3	0.00	1.46	0.36	0.27	1.55	0.21	3.34	0.90	0.45	0.33	0.90	4.24
32	Stone, Clay & Glass Products	17.6	7.3	0.02	2.31	0.25	0.12	0.89	0.48	1.30	2.53	1.24	0.61	1.55	6.33
327	Concrete, Gypsum, Plaster Products	18.4	6.6	0.06	1.33	0.21	0.12	1.29	0.45	1.14	3.33	1.76	0.46	1.83	6.48

Table 1: Injury rates by accident source for 105 selected industries (continued)

STANDARD INDUSTRY CODES	INDUSTRIES	TOTAL INJURIES PER 100 WORKER YEARS	LOST WORK DAYS PER INJURY	RATE OF FATALI- TIES	CONTAIN- ERS	CHEMI- CALs	FURNITURE FIXTURES	HAND TOOLS	HOISTING APPARATUS CONVEYORS	MACHINES	METAL ITEMS	VEHICLES	WOOD ITEMS	WORKING SURFACES	OTHER OR NOT STATED
329	Miscellaneous Non Metallic Mineral Products	16.9	8.1	0.00	2.66	0.40	0.14	0.94	0.47	1.30	3.74	0.79	0.50	1.51	4.46
33	Primary Metal Industries	18.2	7.9	0.02	1.98	0.35	0.18	1.07	0.40	1.88	6.55	0.63	0.32	1.01	3.83
331	Blast Furnace & Basic Steel Products	11.1	8.6	0.01	1.28	0.16	0.09	0.74	0.31	1.02	3.90	0.22	0.19	0.79	2.38
335	Non Ferrous Rolling & Drawing	13.9	9.8	0.07	1.92	0.20	0.25	0.63	0.36	1.58	3.79	0.45	0.45	0.83	3.43
34	Fabricated Metal Products	19.4	6.4	0.01	2.23	0.50	0.26	1.05	0.27	2.68	5.86	0.66	0.55	1.12	4.25
341	Metal Cans & Shipping Containers	25.3	6.5	0.00	4.12	0.30	0.18	0.86	0.66	3.87	5.34	0.97	1.73	2.24	5.01
344	Fabricated Structural Metal Products	22.8	6.1	0.02	1.69	0.25	0.38	1.38	0.38	2.52	7.90	0.80	0.68	1.34	5.50
3443	Fabricated Plate Work (Boiler Shops)	17.6	6.7	0.02	1.53	0.24	0.31	1.21	0.45	1.25	5.21	0.41	0.27	1.25	5.48
3444	Sheet Metal Work	25.1	4.9	0.02	1.99	0.23	0.57	1.30	0.21	4.04	9.55	1.15	0.63	1.13	4.31
346	Metal Forgings & Stampings	21.5	6.4	0.00	2.26	0.16	0.18	1.16	0.39	3.74	7.97	0.78	0.41	0.89	3.56
3471	Plating & Polishing	19.6	5.8	0.02	2.24	2.06	0.15	0.76	0.09	1.56	6.13	0.56	0.26	1.22	4.56
35	Machinery, Ex- cept Electrical	12.1	5.5	0.00	1.02	0.20	0.20	0.84	0.16	1.71	3.87	0.38	0.19	0.76	2.76
3533	Oil Field Machinery	16.0	4.6	0.03	0.96	0.14	0.14	1.68	0.99	1.71	5.92	0.39	0.14	1.07	2.87
355	Special Indus- try Machinery	12.8	5.5	0.02	0.82	0.25	0.13	1.20	0.19	1.68	4.21	0.36	0.29	0.67	3.01
3573	Electronic Com- puting Equipment	4.3	9.1	0.00	0.63	0.14	0.15	0.20	0.01	0.50	0.45	0.20	0.06	0.49	1.46
36	Electric & Elec- tronic Equipment	6.8	6.5	0.00	0.93	0.51	0.26	0.35	0.06	0.65	0.95	0.23	0.17	0.68	2.01
361	Electric Distri- buting Equipment	9.5	8.3	0.00	0.84	0.20	0.27	0.72	0.12	0.87	2.47	0.15	0.12	0.62	3.12
3621	Motors & Generators	18.2	5.6	0.00	2.34	0.20	0.51	1.52	0.10	2.54	4.78	0.41	0.30	1.32	4.17
3643	Current Carrying Wiring Devices	7.9	7.5	0.00	1.15	0.27	0.15	0.34	--	1.69	1.07	0.27	0.08	1.04	1.84

Table 1: Injury rates by accident source for 105 selected industries (continued)

STANDARD INDUSTRY CODES	INDUSTRIES	TOTAL INJURIES PER 100 WORKER YEARS	LOST WORK DAYS PER INJURY	RATE OF FATALI- TIES	CONTAIN- ERS	CHEMI- CAL	FURNITURE FIXTURES	HAND TOOLS	HOISTING APPARATUS CONVEYORS	MACHINES	METAL ITEMS	VEHICLES	WOOD ITEMS	WORKING SURFACES	OTHER OR NOT STATED
37	Transportation Equipment	11.2	7.1	0.01	0.78	0.20	0.27	0.87	0.08	0.87	2.88	0.61	0.38	1.08	3.16
371	Motor Vehicles & Equipment	21.9	5.7	0.00	1.59	0.27	0.30	1.81	0.22	1.61	6.84	1.15	0.60	1.52	5.99
372	Aircraft & Parts	6.6	7.5	0.01	0.51	0.20	0.20	0.44	0.03	0.66	1.63	0.26	0.11	0.76	1.79
373	Ship & Boat Building & Repairing	22.6	13.4	0.00	1.17	0.83	0.17	1.72	0.24	1.58	4.48	2.07	0.96	2.48	6.89
376	Guided Missiles, Space Vehicles, Parts	2.8	4.9	0.01	0.31	0.07	0.14	0.07	0.00	0.15	0.40	0.16	0.04	0.49	0.95
38	Instruments & Related Products	6.7	5.5	0.00	0.91	0.53	0.20	0.46	0.04	0.82	0.93	0.26	0.08	0.59	1.87
	Transportation & Public Utilities	10.4	10.3	0.05	2.24	0.09	0.35	0.30	0.10	0.13	0.76	1.87	0.24	1.31	3.01
40	Railroad Transportation	7.9	10.9	0.00	0.00	0.72	0.00	0.72	0.00	0.00	1.43	2.87	0.00	0.72	1.44
42	Trucking & Warehousing	19.5	9.1	0.09	4.46	0.18	1.02	0.48	0.20	0.22	1.49	3.91	0.60	2.64	4.29
421	Trucking, Local & Long Distance	19.1	9.5	0.09	4.29	0.18	1.04	0.46	0.20	0.20	1.46	3.85	0.58	2.62	4.22
45	Transportation by Air	12.0	7.4	0.03	2.77	0.13	0.21	0.22	0.19	0.09	0.78	2.18	0.19	1.21	4.03
48	Communication	2.9	18.7	0.01	0.23	0.02	0.08	0.09	0.01	0.08	0.18	0.20	0.05	0.55	1.42
481	Telephone Communication	2.2	26.0	0.00	0.18	0.01	0.06	0.07	0.01	0.05	0.12	0.15	0.03	0.40	1.12
483	Radio & TV Broadcasting	4.2	6.2	0.05	0.19	0.05	0.19	0.05	0.05	0.24	0.24	0.48	0.19	0.72	1.81
49	Electric, Gas, Sanitary Services	12.4	9.9	0.09	3.51	0.05	0.09	0.67	0.07	0.19	1.04	1.61	0.15	1.25	3.76
491	Electric Services	6.3	10.2	0.13	0.21	0.00	0.21	0.78	0.05	0.10	0.67	0.78	0.18	0.73	2.62
492	Gas Production & Distribution	13.4	10.9	0.05	0.22	0.00	0.32	2.39	0.00	0.32	1.57	0.65	0.11	2.17	5.64
493	Combination Utility Services	8.6	12.1	0.22	0.59	0.00	0.05	0.93	0.10	0.00	1.37	0.64	0.17	1.20	3.55
495	Sanitary Services	32.3	7.7	0.08	13.22	0.14	0.07	0.47	0.10	0.54	1.86	5.04	0.30	2.74	7.82
	Finance, Insurance & Real Estate	2.4	5.5	0.00	0.28	0.02	0.18	0.10	0.01	0.11	0.09	0.23	0.05	0.48	0.85
	Services	6.3	6.1	0.01	0.57	0.10	0.33	0.31	0.04	0.23	0.41	0.50	0.10	0.97	2.74
75	Auto Repair Ser- vices & Garages	10.0	5.4	0.01	0.36	0.18	0.05	0.89	0.22	0.34	2.43	1.78	0.06	0.78	2.93

Table 1: Injury rates by accident source for 105 selected industries (continued)

STANDARD INDUSTRY CODES	INDUSTRIES	TOTAL INJURIES PER 100 WORKER YEARS	LOST WORK DAYS PER INJURY	RATE OF FATALI- TIES	CONTAIN- ERS	CHEMI- CALS	FURNITURE FIXTURES	HAND TOOLS	HOISTING APPARATUS CONVEYORS	MACHINES	METAL ITEMS	VEHICLES	WOOD ITEMS	WORKING SURFACES	OTHER OR NOT STATED
76	Miscellaneous Repair Services	11.1	7.4	0.01	0.52	0.21	0.33	1.16	0.08	0.60	2.92	0.75	0.29	1.04	3.20
799	Miscellenaous Amusement, Recreation	12.7	4.2	0.05	1.32	0.11	0.43	0.85	0.06	0.53	0.70	1.30	0.30	2.10	5.00

* Total injury rate and work days lost per injury from "Accident Facts", National Safety Council, 1978.

Other Data: "Total injuries per 100 worker-years" and "Lost work days per injury" from Occupational Injuries and Illnesses Survey, California, 1976.

Accident types and sources: unpublished tabulations, State of California Dept. of Industrial Relations, Division of Labor Statistics and Research.

Table 2: Injury rates by accident type for 105 selected industries

STANDARD INDUSTRY CODES	INDUSTRIES	TOTAL INJURIES REPORTED	STRUCK BY OR AGAINST	FALL FROM ELEVATION	FALL ON SAME LEVEL	CAUGHT IN OR BETWEEN	RUBBED OR ABRADED	BODILY REACTION	OVER- EXERTION	CONTACT WITH ELECTRIC CURRENT	INHALA- TION ABSORP- TION ETC.	MOTOR VEHICLE ACCIDENTS	OTHER OR NOT STATED
	Agriculture, Forestry and Fishing	14,207	3.40	1.12	0.82	0.74	0.53	0.84	2.33	0.01	0.66	0.29	0.45
01	Agriculture Production-Crops	8,001*	7.03	2.16	1.77	1.38	1.22	1.92	5.35	0.02	1.32	0.64	0.99
02	Agriculture Production-Livestock	1,932*	1.95	0.53	0.50	0.43	0.22	0.40	1.08	0.01	0.24	0.10	0.25
078	Landscape & Horticulture Services	1,086	3.92	1.04	0.94	1.04	0.59	0.69	2.59	0.01	0.77	0.52	0.39
08	Forestry	28*	3.85	0.70	1.40	0.00	0.70	2.10	1.05	0.00	0.00	0.00	0.00
	Mining	2,070	3.66	0.94	0.86	1.58	0.53	0.91	2.53	0.01	0.61	0.28	0.77
13	Oil & Gas Extraction	1,666	4.50	1.07	0.92	2.05	0.66	0.95	2.74	0.02	0.75	0.27	0.88
131	Crude Petroleum & Natural Gas	409	1.64	0.41	0.48	0.89	0.27	0.58	1.69	0.02	0.31	0.12	0.58
138	Oil & Gas Field Services	1,257	7.75	1.81	1.43	3.37	1.09	1.38	3.94	0.02	1.24	0.43	1.23
14	Non Metallic Minerals Except Fuels	312	1.46	0.55	0.59	0.47	0.21	0.72	1.69	--	0.30	0.25	0.36
	Construction	24,604	4.97	2.05	1.01	0.61	1.20	1.27	4.09	0.05	0.44	0.22	0.88
15	General Building Contractors	7,198	6.21	2.32	1.05	0.46	1.34	1.09	4.02	0.03	0.30	0.18	0.60
152	Residential Building Contractors	5,008	6.63	2.47	0.95	0.42	1.36	1.07	4.07	0.03	0.27	0.20	0.53
154	Non Residential Building Construction	1,848	6.23	2.20	1.46	0.66	1.60	1.22	4.57	0.03	0.43	0.13	0.88
16	Heavy Construction Contractors	2,846	2.92	0.78	0.72	0.68	0.62	0.88	2.52	0.02	0.50	0.28	0.56
161	Highway and Street Construction	926	4.06	1.25	1.08	0.91	0.77	1.28	3.68	0.03	0.75	0.72	0.88
162	Bridge, Tunnel, Water, Sewer Utility Lines	1,920	2.60	0.65	0.62	0.61	0.58	0.78	2.19	0.02	0.43	0.16	0.47
17	Special Trade Contractors	14,620	5.28	2.47	1.14	0.70	1.40	1.56	4.90	0.08	0.52	0.24	1.20
171	Plumbing, Heating, Air Conditioning	2,881	5.48	2.02	1.25	0.82	1.85	1.80	5.21	0.09	0.62	0.38	1.07
172	Painting, Paper Hanging, Decorating	763	3.00	2.81	0.91	0.45	0.95	1.47	2.96	0.02	0.80	0.13	0.71
173	Electrical Work	1,435	3.88	1.83	0.76	0.50	1.34	1.37	3.41	0.29	0.32	0.18	0.50
174	Masonry, Stone Work, Plastering	3,086	4.57	3.54	1.31	0.55	1.35	2.15	5.88	0.03	0.59	0.15	0.58
175	Carpentering and Flooring	1,440	7.87	2.35	0.91	0.45	1.83	1.24	5.01	0.03	0.10	0.14	0.85
176	Roofing and Sheet Metal Work	1,794	6.66	4.82	1.46	0.75	1.22	1.42	5.70	0.05	0.34	0.30	6.00
179	Miscellaneous Special Trade Contractors	1,999	6.00	1.70	1.03	1.06	1.37	1.17	5.34	0.04	0.77	0.31	0.90
	Manufacturing	88,335	3.74	0.48	0.97	1.24	0.74	0.96	3.49	0.02	0.59	0.11	0.67

Table 2: Injury rates by accident type for 105 selected industries (continued)

STANDARD INDUSTRY CODES	INDUSTRIES	TOTAL INJURIES REPORTED	STRUCK BY OR AGAINST	FALL FROM ELEVATION	FALL ON SAME LEVEL	CAUGHT IN OR BETWEEN	RUBBED OR ABRADED	BODILY REACTION	OVER- EXERTION	CONTACT WITH ELECTRIC	INHALA- TION ABSORP- ETC.	MOTOR VEHICLE ACCIDENTS	OTHER OR NOT STATED
20	Food & Kindred Products	15,006	5.33	0.95	2.06	1.86	0.62	1.56	5.46	0.02	0.76	0.18	1.01
201	Meat Products	3,092	12.79	1.15	2.42	1.93	0.85	1.51	7.72	0.01	0.87	0.16	1.19
202	Dairy Products	644	3.58	0.83	2.15	1.89	0.23	1.50	4.43	--	0.80	0.31	0.96
203	Preserved Fruits and Vegetables	4,315	3.98	0.94	2.21	1.79	0.62	1.53	4.53	0.02	0.95	0.10	0.92
2033	Canned Fruits & Vegetables	2,201	3.92	1.06	2.14	1.68	0.66	1.57	4.10	0.01	0.82	0.08	1.06
2034	Dehydrated Fruits, Vegetables and Soups	772	3.64	0.85	2.04	1.51	0.76	1.51	5.34	0.04	1.10	0.12	0.78
204	Grain Mill Products	713	4.51	1.48	1.46	1.65	0.94	1.54	6.16	0.03	0.58	0.27	0.99
22	Textile Mill Products	963	4.47	0.60	1.25	1.46	0.52	0.89	3.42	0.03	0.49	0.09	0.59
23	Apparel & Other Textile Products	1,757	1.63	0.20	0.55	1.02	0.18	0.45	1.50	0.01	0.18	0.06	0.32
239	Miscellaneous Fabricated Textile Products	465	2.48	0.42	1.01	1.34	0.18	0.92	3.06	0.02	0.33	0.11	0.51
24	Lumber & Wood Products	7,985	9.61	1.41	1.74	2.21	1.63	1.81	6.11	0.05	0.40	0.23	0.90
242	Sawmills & Planing Mills	2,307	6.89	1.06	1.91	2.51	1.37	1.98	6.51	0.03	0.31	0.17	0.95
2421	Sawmills & Planing Mills- General	2,243	6.91	1.08	1.93	2.49	1.40	2.01	6.66	0.03	0.32	0.17	1.00
243	Millwork, Plywood, Structural Members	1,821	8.56	0.70	1.11	2.29	1.64	1.41	6.20	0.08	0.33	0.09	0.78
2431	Millwork	1,038	9.34	0.67	1.18	2.34	1.85	1.37	6.84	0.14	0.36	0.14	0.75
245	Wood Buildings & Mobile Homes	1,659	13.69	3.45	2.64	1.18	2.22	2.52	7.40	0.11	0.74	0.19	0.95
25	Furniture & Fixtures	3,365	7.07	0.42	0.89	1.90	1.01	0.83	4.80	0.02	0.34	0.11	0.61
26	Paper & Allied Products	2,751	4.02	0.68	1.27	2.57	0.52	1.46	5.88	0.05	0.29	0.12	0.64
264	Miscellaneous Converted Paper Products	1,024	4.55	0.69	1.26	2.78	0.40	1.33	5.53	0.10	0.28	0.14	0.64
265	Paperboard Containers and Boxes	1,255	3.92	0.71	1.24	2.65	0.58	1.44	6.48	0.03	0.16	0.04	0.64
27	Printing and Publishing	3,022	1.89	0.38	0.62	1.28	0.15	0.70	2.24	0.00	0.20	0.32	0.32
271	Newspapers	1,042	1.68	0.58	0.68	0.73	0.14	0.67	1.70	--	0.18	0.44	0.29
275	Commercial Printing	1,345	2.23	0.24	0.59	1.94	0.16	0.77	2.70	0.01	0.24	0.23	0.38
28	Chemicals and Allied Products	2,915	2.69	0.52	1.13	0.85	0.37	0.97	3.87	0.02	1.24	0.15	0.69
283	Drugs	488	1.85	0.30	0.90	0.69	0.34	0.58	2.98	0.00	0.84	0.11	0.52
2834	Pharmaceutical Preparations	375	2.06	0.29	1.03	0.77	0.40	0.71	3.17	0.00	0.74	0.16	0.58
284	Soap, Cleaners & Toilet Goods	577	2.29	0.46	1.27	1.07	0.26	1.13	3.38	0.04	1.15	0.20	0.36
285	Paints & Allied Products	591	4.31	0.69	1.78	0.89	0.23	0.95	6.04	0.00	1.12	0.17	0.81
29	Petroleum & Coal Products	614	1.17	0.52	0.49	0.50	0.24	0.74	1.86	0.01	0.51	0.17	0.59
291	Petroleum Refining	374	0.82	0.49	0.52	0.23	0.15	0.72	1.62	0.00	0.53	0.18	0.44
30	Rubber & Miscellaneous Plastic Products	4,629	5.47	0.46	1.30	1.94	0.82	1.12	4.91	0.05	0.75	0.07	1.02

Table 2: Injury rates by accident type for 105 selected industries (continued)

STANDARD INDUSTRY CODES	INDUSTRIES	TOTAL INJURIES REPORTED	STRUCK BY OR AGAINST	FALL FROM ELEVATION	FALL ON SAME LEVEL	CAUGHT IN OR BETWEEN	RUBBED OR ABRADED	BODILY REACTION	OVER- EXERTION	CONTACT WITH ELECTRIC	INHALA- TION ABSORP- TION- ETC.	MOTOR VEHICLE ACCIDENTS	OTHER OR NOT STATED
306	Fabricated Rubber Products, NEC	897	6.27	0.30	1.50	2.29	0.80	1.15	6.32	0.00	0.89	0.07	1.40
307	Miscellaneous Plastic Products	3,081	5.40	0.52	1.29	1.82	0.85	1.08	4.27	0.06	0.75	0.06	0.91
31	Leather & Leather Products	469	4.45	0.36	0.69	1.91	0.74	0.78	3.64	0.00	0.75	0.03	0.69
32	Stone, Clay & Glass Products	4,930	4.71	0.79	1.18	1.62	1.01	1.44	5.12	0.01	0.57	0.22	0.90
327	Concrete, Gypsum, Plaster Products	1,517	4.72	1.16	1.15	1.84	1.27	1.44	4.69	0.01	0.76	0.50	0.84
329	Miscellaneous Non Metallic Mineral Products	751	3.80	0.65	1.35	1.66	1.10	1.28	5.44	0.04	0.63	0.11	0.81
33	Primary Metal Industries	4,002	5.12	0.45	0.99	1.81	1.35	0.95	4.76	0.06	0.57	0.04	2.09
331	Blast Furnace & Basic Steel Products	955	3.51	0.40	0.71	1.24	0.65	0.63	2.63	0.05	0.30	0.02	0.96
335	Non Ferrous Rolling & Drawing	616	3.77	0.38	0.99	1.69	0.92	1.04	3.72	0.04	0.41	0.02	0.90
34	Fabricated Metal Products	9,666	5.88	0.46	1.02	2.16	1.50	1.13	5.12	0.03	1.01	0.08	1.02
341	Metal Cans & Shipping Containers	994	6.36	0.92	1.76	3.44	0.58	2.47	8.02	--	0.51	0.08	1.17
344	Fabricated Structural Metal Products	3,525	7.38	0.68	1.12	2.26	2.21	1.19	5.65	0.04	0.99	0.04	1.25
3443	Fabricated Plate Work (Boiler Shops)	861	4.58	0.80	0.88	1.39	1.84	1.17	4.07	0.02	1.10	0.02	1.74
3444	Sheet Metal Work	1,199	8.50	0.48	1.17	3.24	2.28	1.09	6.15	0.04	0.92	0.08	1.13
346	Metal Forgings & Stampings	942	7.55	0.25	0.94	2.53	1.44	0.96	5.80	--	0.62	0.09	1.32
3471	Plating & Polishing	902	5.76	0.61	0.98	1.22	1.46	1.04	4.61	0.04	2.37	0.28	1.24
35	Machinery Except Electrical	7,606	3.72	0.32	0.66	1.09	1.11	0.72	3.22	0.03	0.58	0.08	0.56
3533	Oil Field Machinery	581	5.12	0.52	0.91	1.29	1.49	0.77	4.82	0.00	0.52	0.06	0.50
355	Special Industry Machinery	672	4.11	0.32	0.53	1.03	0.97	0.74	3.58	0.02	0.80	0.08	0.61
3573	Electronic Computing Equipment	1,006	0.85	0.15	0.47	0.26	0.10	0.46	1.48	0.01	0.23	0.06	0.22
36	Electric and Electronic Equipment	6,346	1.59	0.18	0.60	0.47	0.38	0.54	1.91	0.03	0.66	0.05	0.39
361	Electric Distributing Equipment	384	2.50	0.40	0.52	0.79	0.82	0.77	2.75	0.02	0.57	0.00	0.37
3621	Motors & Generators	179	5.18	0.51	1.12	1.93	0.51	0.92	5.90	0.00	0.61	0.10	1.42
3643	Current Carrying Wiring Devices	206	1.84	0.15	1.15	1.15	0.42	0.58	1.76	0.00	0.46	0.00	0.38
37	Transportation Equipment	8,502	3.32	0.47	0.84	0.67	0.90	0.99	2.77	0.03	0.57	0.08	0.55
371	Motor Vehicles & Equipment	3,018	6.68	0.71	1.26	1.60	2.03	1.74	5.45	0.04	1.04	0.14	1.20
372	Aircraft and Parts	2,192	1.76	0.27	0.61	0.42	0.42	0.69	1.69	0.02	0.34	0.06	0.34
373	Ship & Boat Building & Repairing	656	7.03	1.93	1.20	1.34	1.96	2.20	4.27	0.03	1.69	0.03	0.90
376	Guided Missiles, Space Vehicles, Parts	651	0.51	0.15	0.42	0.09	0.09	0.35	0.79	0.02	0.18	0.05	0.16

Table 2: Injury rates by accident type for 105 selected industries (continued)

STANDARD INDUSTRY CODES	INDUSTRIES	TOTAL INJURIES REPORTED	STRUCK BY OR AGAINST	FALL FROM ELEVATION	FALL ON SAME LEVEL	CAUGHT IN OR BETWEEN	RUBBED OR ABRADED	BODILY REACTION	OVER- EXERTION	CONTACT WITH ELECTRIC CURRENT	INHALA- TION ABSORP- TION ETC,	MOTOR VEHICLE ACCIDENTS	OTHER OR NOT STATED
38	Instruments and Related Products	2,156	1.63	0.18	0.56	0.50	0.38	0.53	1.76	0.01	0.69	0.07	0.39
	Transportation and Public Utilities	20,835	2.25	0.78	0.81	0.42	0.28	1.09	3.35	0.02	0.21	0.54	0.64
40	Railroad Transportation	22	1.44	0.72	0.72	0.00	1.44	0.00	2.87	0.00	0.72	0.00	0.00
42	Trucking & Warehousing	10,079	4.48	1.75	1.55	0.86	0.44	1.84	6.45	0.01	0.27	1.27	0.57
421	Trucking Local & Long Distance	9,663	4.34	1.74	1.54	0.84	0.43	1.83	6.28	0.00	0.26	1.27	0.55
45	Transportation by Air	3,937	2.37	0.54	0.91	0.51	0.27	1.17	4.10	0.02	0.41	0.18	1.54
48	Communication	2,104	0.48	0.34	0.25	0.05	0.10	0.55	0.69	0.01	0.05	0.08	0.30
481	Telephone Communication	1,648	0.34	0.23	0.22	0.03	0.07	0.43	0.52	0.01	0.04	0.08	0.29
483	Radio & TV Broadcasting	176	0.91	0.52	0.19	0.19	0.10	0.62	1.10	0.00	0.05	0.19	0.33
49	Electric, Gas, Sanitary Services	2,896	2.80	0.69	0.84	0.62	0.50	1.31	4.16	0.07	0.27	0.47	0.66
491	Electric Services	243	1.19	0.52	0.36	0.15	0.15	1.24	1.97	0.21	0.10	0.21	0.18
492	Gas Production & Distribution	247	2.66	0.78	1.95	0.22	0.22	2.71	3.80	0.00	0.22	0.22	0.65
493	Combination Utility Services	351	1.20	0.66	0.74	0.34	0.15	1.52	2.60	0.17	0.49	0.25	0.49
495	Sanitary Services	1,911	8.15	1.62	1.76	1.96	1.59	2.20	11.49	--	0.34	1.39	1.81
	Finance, Insurance & Real Estate	5,108	0.50	0.21	0.33	0.08	0.08	0.27	0.55	0.01	0.05	0.15	0.18
	Services	39,884	1.46	0.32	0.80	0.25	0.21	0.60	1.86	0.01	0.29	0.14	0.36
75	Auto Repair Services & Garages	3,482	3.07	0.38	0.59	0.72	1.09	0.70	1.97	0.03	0.42	0.33	0.71
76	Miscellaneous Repair Services	1,606	3.38	0.68	0.62	0.68	1.24	0.56	2.55	0.07	0.60	0.17	0.54
799	Miscellaneous Amusement Recreation	2,027	3.62	0.76	1.52	0.56	0.45	1.50	2.84	0.02	0.39	0.20	0.83

* Total injury rate and work days lost per injury from "Accident Facts", National Safety Council, 1978.

Other data: "Total injuries per 100 worker-years" and "Lost work days per injury" from Occupational Injuries and Illnesses Survey, California, 1976.

Accident types and sources: unpublished tabulations, State of California Dept. of Industrial Relations, Division of Labor Statistics and Research.

Table 3
Total Injuries
Per 100 Worker-Years

No.	SIC	Industry	Rate	No.	SIC	Industry	Rate	No.	SIC	Industry	Rate
1	245	Wood Building & Mobile Homes	35.1	36	265	Paperboard Containers & Boxes	17.9	71		Agriculture, Forestry, Fishing	11.2
2	495	Sanitary Services	32.2	37	30	Rubber & Misc. Plastic Prods.	17.9	72	37	Transportation Equipment	11.2
3	201	Meat Products	30.6	38	2034	Dehydrated Fruits, Veg. & Soups	17.7	73	331	Blast Furnaces & Basic Steel	11.1
4	176	Roofing & Sheet Metal Work	28.7	39	264	Misc. Converted Paper Products	17.7	74	76	Misc. Repair Services	11.1
5	24	Lumber & Wood Products	26.1	40	15	General Building Contractors	17.6	75	16	Heavy Construction Contractors	10.5
6	341	Metal Cans & Shipping Cont.	25.3	41	203	Preserved Fruits & Vegetables	17.6	76	239	Misc. Fabricated Textile Prods.	10.4
7	3444	Sheet Metal Work	25.1	42	32	Stone, Clay, & Glass Products	17.6	77		Transportation & Public Utilities	10.4
8	2431	Millwork	25.0	43	3443	Fabricated Plate Work	17.6	78	75	Auto Repair Service & Garages	10.0
9	2421	Sawmills & Planing Mills-Gen'l	24.0	44	26	Paper & Allied Products	17.5	79	2834	Pharmaceutical Preparations	9.9
10	01	Agriculture Prods. - Crops	23.8	45	2033	Canned Fruits & Vegetables	17.1	80	08	Forestry	9.8
11	138	Oil & Gas Field Services	23.7	46	285	Paints & Allied Products	17.0	81	275	Commercial Printing	9.5
12	242	Sawmills & Planing Mills	23.7	47	307	Misc. Plastic Products	17.0	82	361	Electrical Distributing Equipment	9.5
13	243	Millwork, Plywood, Struct. Memb.	23.2	48	329	Misc. Non-Metallic Mineral Prods.	16.9	83	162	Bridge, Tunnel, Water Utilities	9.1
14	344	Fabr. Structural Metal Prods.	22.8	49		Construction	16.8	84	283	Drugs	9.1
15	373	Ship & Boat Building & Repair	22.6	50	202	Dairy Products	16.7	85	27	Printing and Publishing	8.1
16	371	Motor Vehicles & Equipment	21.9	51	3533	Oil Field Machinery	16.0	86	3643	Current Carrying Wiring Devices	7.9
17	346	Metal Forgings & Stampings	21.5	52	161	Highway & Street Construction	15.4	87	40	Railroad Transportation	7.9
18	306	Fabricated Rubber Products, NEC	2.10	53	13	Oil & Gas Extraction	14.8	88	271	Newspapers	7.1
19	175	Carpentering & Flooring	20.8	54	173	Electrical Work	14.4	89	131	Crude Petr. & Natural Gas	7.0
20	174	Masonry, Stone Work, Plastering	20.7	55	172	Painting, Paper Hanging, Decor.	14.2	90	29	Petroleum & Coal Products	6.8
21	171	Plumbing, Heating, Air Cond.	20.6	56	31	Leather & Leather Products	14.0	91	36	Electrical & Related Products	6.8
22	20	Food & Kindred Products	19.8	57	335	Non-Ferrous Rolling & Drawing	13.9	92	38	Instruments & Related Products	6.7
23	179	Misc. Special Trades Contractors	19.7	58	22	Textile Mill Products	13.8	93	14	Non-Metallic Minerals Exc. Fuels	6.6
24	204	Grain Mill Products	19.6	59	492	Gas Production & Distribution	13.4	94	372	Aircraft & Parts	6.6
25	3471	Plating & Polishing	19.6	60		Manufacturing	13.0	95	491	Electrical Services	6.3
26	17	Special Trades Contractors	19.5	61	355	Special Industry Machinery	12.8	96		Services	6.3
27	42	Trucking & Warehousing	19.5	62		Mining	12.7	97	23	Apparel & Other Textile Prods.	6.1
28	154	Non-Residential Building Contr.	19.4	63	799	Misc. Amusement Recreation	12.7	98	02	Agricultural Prod. - Livestock	5.7
29	34	Fabricated Metal Products	19.4	64	078	Landscape & Hort. Services	12.5	99	291	Petroleum Refining	5.7
30	421	Trucking Local & Long Distance	19.1	65	28	Chemicals & Allied Products	12.5	100	3573	Electronic Computing Equip.	4.3
31	327	Concrete Gypsum Plaster Prods.	18.4	66	49	Electrical, Gas, & Sanitary Serv.	12.4	101	483	Radio & T.V. Broadcasting	4.2
32	33	Primary Metal Industries	18.2	67	35	Machinery Except Electrical	12.1	102	48	Communications	2.9
33	3621	Motors & Generators	18.2	68	493	Combination Utility Services	12.1	103	376	Guided Missiles, Space Vehicles	2.8
34	152	Residential Building Contractors	18.0	69	45	Transportation by Air	12.0	104		Finance, Insurance, Real Estate	2.4
35	25	Furniture & Fixtures	18.0	70	284	Soap, Cleaners, & Toilet Goods	11.6	105	481	Telephone Communications	2.2

Table 4
Lost Work Days Per Injury

No.	SIC	Industry	Rate	No.	SIC	Industry	Rate	No.	SIC	Industry	Rate
1	421	Telephone Communications	26.0	36	329	Misc. Non-Metallic Mineral Prods.	8.1	71	201	Meat Products	6.4
2	42	Communications	18.7	37	22	Textile Mill Products	8.0	72	34	Fabricated Metal Products	6.4
3	373	Ship & Boat Building & Repair	13.4	38	242	Sawmills & Planing Mills	8.0	73	346	Metal Forgings & Stampings	6.4
4	493	Combination Utility Services	12.1	39	2421	Sawmills & Planing Mills - Gen'l	8.0	74	17	Special Trades Contractors	6.3
5	40	Railroad Transportation	10.9	40	30	Rubber & Misc. Plastic Prods.	7.9	75	483	Radio & T.V. Broadcasting	6.2
6	492	Gas Production & Distribution	10.9	41	33	Primary Metal Industries	7.9	76	15	General Building Contractors	6.1
7		Transportation & Public Utils.	10.3	42	172	Painting, Paper Hanging, Decor.	7.8	77	25	Furniture & Fixtures	6.1
8	02	Forestry	10.2	43	495	Sanitary Services	7.7	78	344	Fabr. Structural Metal Products	6.1
9	491	Electrical Services	10.2	44	2033	Canned Fruits & Vegetables	7.6	79		Services	6.1
10	49	Electrical, Gas, & Sanitary Serv.	9.9	45	203	Preserved Fruits & Vegetables	7.5	80	239	Misc. Fabricated Textile Prods.	6.0
11	335	Non-Ferrous Rolling & Drawing	9.8	46	306	Fabricated Rubber Products, NEC	7.5	81	2431	Millwork	6.0
12	176	Roofing & Sheet Metal Work	9.6	47	3643	Current Carrying Wiring Devices	7.5	82	175	Carpentering & Flooring	5.9
13	421	Trucking Local & Long Distance	9.5	48	372	Aircraft & Parts	7.5	83	3471	Plating & Polishing	5.8
14	13	Oil & Gas Extraction	9.4	49	45	Transportation by Air	7.4	84	371	Motor Vehicles & Equipment	5.7
15	131	Crude Petr. & Natural Gas	9.4	50	76	Misc. Repair Services	7.4	85	285	Paints & Allied Products	5.6
16	138	Oil & Gas Field Services	9.4	51	32	Stone, Clay, & Glass Products	7.3	86	3621	Motors & Generators	5.6
17		Mining	9.3	52	202	Dairy Products	7.2	87	179	Misc. Special Trades Contractors	5.5
18	3573	Electronic Computing Equipment	9.1	53	28	Chemicals & Allied Products	7.2	88	35	Machinery Except Electrical	5.5
19	42	Trucking & Warehousing	9.1	54		Agriculture, Forestry, Fishing	7.1	89	355	Special Industry Machinery	5.5
20	291	Petroleum Refining	9.0	55	174	Masonry, Stone Work, Plastering	7.1	90	38	Instruments & Related Products	5.5
21	2034	Dehydrated Fruits & Vegetables	8.9	56	37	Transportation Equipment	7.1	91		Finance, Insurance, Real Estate	5.5
22	078	Landscape & Hort. Services	8.8	57	02	Agricultural Prod. - Livestock	7.0	92	152	Residential Building Contractors	5.4
23	14	Non-Metallic Minerals Exc. Fuels	8.8	58	27	Printing and Publishing	7.0	93	75	Auto Repair Service & Garage	5.4
24	161	Highway & Street Construction	8.7	59		Manufacturing	6.9	94	171	Plumbing, Heating, Air Cond.	5.3
25	204	Grain Mill Products	8.7	60	24	Lumber & Wood Products	6.8	95	31	Leather & Leather Products	5.3
26	264	Misc. Converted Paper Products	8.7	61	275	Commercial Printing	6.8	96	283	Drugs	5.2
27	331	Blast Furnace & Basic Steel	8.6	62	243	Millwork, Plywood, Struct. Memb.	6.7	97	245	Wood Buildings & Mobile Homes	5.1
28	16	Heavy Construction Contractors	8.5	63	265	Paperboard Containers & Boxes	6.7	98	2834	Pharmaceutical Preparations	5.1
29	162	Bridge, Tunnel, Water, Util.	8.4	64	3443	Fabricated Plate Work	6.7	99	3444	Sheet Metal Work	4.9
30	26	Paper & Allied Products	8.3	65	154	Non-Residential Building Contr.	6.6	100	376	Guided Missiles, Space Vehicles	4.9
31	271	Newspapers	8.3	66	307	Misc. Plastic Products	6.6	101	23	Apparel & Other Textile Prods.	4.8
32	29	Petroleum & Coal Products	8.3	67	327	Concrete Gypsum Plaster Prods.	6.6	102	173	Electrical Work	4.7
33	361	Electric Distributing Equip.	8.3	68		Construction	6.5	103	3533	Oil Field Machinery	4.6
34	20	Food & Kindred Products	8.1	69	341	Metal Cans & Shipping Cont.	6.5	104	799	Misc. Amusement Recreation	4.2
35	284	Soap, Cleaners, & Toilet Goods	8.1	70	36	Electric & Electronic Equip.	6.5	105	01	Agricultural Prods. - Crops	3.4

Table 5

Accident Source: Containers
Injury Rate Per 100 Worker-Years

No.	SIC	Industry	Rate	No.	SIC	Industry	Rate	No.	SIC	Industry	Rate
1	495	Sanitary Services	13.22	36	33	Primary Metals Industries	1.98	71	355	Special Industry Machinery	0.82
2	285	Paints & Allied Products	6.73	37	355	Non-Ferrous Rolling & Drawing	1.92	72	173	Electrical Work	0.81
3	204	Grain Mill Products	5.28	38	239	Misc. Fabricated Textile Prods.	1.86	73	37	Transportation Equipment	0.78
4	2034	Dehydrated Fruits, Veg., & Soups	4.47	39	275	Commercial Printing	1.78	74	078	Landscape & Hort. Services	0.72
5	42	Trucking & Warehousing	4.46	40		Manufacturing	1.74	75	291	Petroleum Refining	0.67
6	264	Misc. Converted Paper Products	4.42	41	344	Fabr. Structural Metal Prods.	1.69	76	154	Non-Residential Building Contr.	0.66
7	202	Dairy Products	4.36	42	175	Carpentering & Flooring	1.66	77	02	Agriculture Prod. - Livestock	0.64
8	421	Trucking Local & Long Distances	4.29	43	174	Masonry, Stone Work, Plastering	1.64	78	3573	Electronic Computing Equipment	0.63
9	20	Food & Kindred Products	4.18	44	371	Motor Vehicles & Equipment	1.59	79	171	Plumbing, Heating, Air Cond.	0.60
10	341	Metal Cans & Shipping Cont.	4.12	45	27	Printing & Publishing	1.56	80	493	Combination Utility Services	0.59
11	203	Preserved Fruits and Vegetables	3.90	46	3443	Fabricated Plate Work	1.53	81		Services	0.57
12	26	Paper & Allied Products	3.68	47	25	Furniture & Fixtures	1.48	82	138	Oil & Gas Field Services	0.55
13	49	Electric, Gas, & Sanitary Serv.	3.51	48	31	Leather & Leather Products	1.46	83	14	Non-Metallic Minerals Exc. Fuels	0.53
14	201	Meat Products	3.48	49	327	Concrete Gypsum Plaster Prods.	1.33	84	161	Highway & Street Construction	0.53
15	2033	Canned Fruits & Vegetables	3.47	50	799	Misc. Amusement Recreation	1.32	85	242	Sawmills & Planing Mills	0.53
16	28	Chemicals & Allied Products	3.45	51	271	Newspapers	1.28	86	76	Misc. Repair Services	0.52
17	265	Paperboard Containers & Boxes	3.37	52	331	Blast Furnace & Basic Steel	1.28	87	2421	Sawmills & Planing Mills - Gen'l	0.51
18	176	Roofing & Sheet Metal Work	3.33	53	17	Special Trades Contractors	1.26	88	372	Aircraft & Parts	0.51
19	306	Fabricated Rubber Products, NEC	3.18	54	172	Painting, Paper Hanging, Decor.	1.25	89	15	General Building Contractors	0.46
20	284	Soap, Cleaners, & Toilet Goods	3.06	55		Agriculture, Forestry, Fishing	1.23	90		Mining	0.45
21	2834	Pharmaceutical Preparations	2.93	56	2431	Millwork	1.18	91	16	Heavy Construction Contractors	0.42
22	45	Transportation by Air	2.77	57	373	Ship & Boat Building & Repair	1.17	92	152	Residential Building Contractors	0.40
23	22	Textile Mill Products	2.66	58	3643	Current Carrying Wiring Devices	1.15	93	13	Oil & Gas Extraction	0.38
24	329	Misc. Non-Metallic Mineral Prods.	2.66	59	23	Apparel & Other Textile Prods.	1.10	94	162	Bridge, Tunnel, Water, Util.	0.38
25	01	Agriculture Prod. - Crops	2.59	60	245	Wood Buildings & Mobile Homes	1.10	95	75	Auto Repair Serv. & Garages	0.36
26	30	Rubber & Misc. Plastic Prods.	2.56	61	35	Machinery Except Electrical	1.02	96	08	Forestry	0.35
27	307	Misc. Plastic Products	2.53	62	24	Lumber & Wood Products	1.01	97	376	Guided Missiles, Space Vehicles	0.31
28	284	Drugs	2.52	63	179	Misc. Special Trades Contractors	1.00	98		Finance, Insurance, Real Estate	0.28
29	3621	Motors & Generators	2.34	64	243	Millwork, Plywood, Struct. Memb.	0.99	99	131	Crude Petr. & Nat'l Gas	0.24
30	32	Stone, Clay, & Glass Products	2.31	65	29	Petroleum & Coal Products	0.99	100	48	Communication	0.23
31	346	Metal Forgings & Stampings	2.26	66	3533	Oil Field Machinery	0.96	101	492	Gas Production & Distribution	0.22
32	3471	Plating & Polishing	2.24	67	36	Electric & Electronic Equip.	0.93	102	491	Electrical Services	0.21
33		Transportation & Public Util.	2.24	68	38	Instruments & Related Prods.	0.91	103	483	Radio and T.V. Broadcasts	0.19
34	34	Fabricated Metal Products	2.23	69		Construction	0.85	104	481	Telephone Communication	0.18
35	3444	Sheet Metal Work	1.99	70	361	Electric Distributing Equip.	0.84	105	40	Railroad Transportation	0.00

Table 6
 Accident Source: Chemicals
 Injury Rate Per 100 Worker-Years

No.	SIC	Industry	Rate	No.	SIC	Industry	Rate	No.	SIC	Industry	Rate
1	3471	Plating & Polishing	2.06	36	32	Stone, Clay, & Glass Products	0.25	71	45	Transportation by Air	0.13
2	28	Chemicals & Allied Products	0.91	37	344	Fabr. Structural Metal Prods.	0.25	72	131	Crude Petr. & Nat'l Gas	0.12
3	373	Ship & Boat Building & Repair	0.83	38	355	Special Industry Machinery	0.25	73		Construction	0.12
4	284	Soaps, Cleaners, & Toilet Goods	0.78	39	3443	Fabricated Plate Work	0.24	74	154	Non-Residential Building Contr.	0.12
5	40	Railroad Transportation	0.72	40	3444	Sheet Metal Work	0.23	75	162	Bridge, Tunnel, Water, Util.	0.12
6	01	Agriculture Prods. - Crops	0.63	41	201	Meat Products	0.21	76	173	Electrical Work	0.12
7	285	Paints & Allied Products	0.63	42	327	Concrete, Gypsum, Plaster Prods.	0.21	77	24	Lumber & Wood Products	0.12
8	306	Fabricated Rubber Products, NEC	0.56	43	76	Misc. Repair Services	0.21	78	16	Heavy Construction Contractors	0.11
9	202	Dairy Products	0.54	44	179	Misc. Special Trades Contractors	0.20	79	239	Misc. Fabricated Textile Prods.	0.11
10	38	Instruments & Related Products	0.53	45	335	Non-Ferrous Rolling & Drawing	0.20	80	27	Printing & Publishing	0.11
11	36	Electric & Electronic Equip.	0.51	46	35	Machinery Except Electrical	0.20	81	799	Misc. Amusement Recreation	0.11
12	2034	Dehydrated Fruits, Veg. & Soups	0.50	47	361	Electric Distributing Equip.	0.20	82	161	Highway & Street Construction	0.10
13	30	Rubber & Misc. Plastic Prods.	0.50	48	3621	Motors & Generators	0.20	83		Services	0.10
14	307	Misc. Plastic Products	0.50	49	37	Transportation Equipment	0.20	84	265	Paperboard Containers & Boxes	0.09
15	34	Fabricated Metal Products	0.50	50	372	Aircraft & Parts	0.20	85	271	Newspapers	0.09
16	203	Preserved Fruits & Vegetables	0.42	51		Mining	0.19	86		Transportation & Public Util.	0.09
17	283	Drugs	0.41	52	171	Plumbing, Heating, Air Cond.	0.19	87	02	Agriculture Prod. - Livestock	0.08
18	138	Oil & Gas Field Services	0.40	53	174	Masonry, Stonework, Plastering	0.19	88	25	Furniture & Fixtures	0.08
19	2033	Canned Fruits & Vegetables	0.40	54	42	Trucking & Warehousing	0.18	89	15	General Building Contractors	0.07
20	329	Misc. Non-Metallic Mineral Prods.	0.40	55	421	Trucking Local & Long Distance	0.18	90	376	Guided Missiles, Space Vehicles	0.07
21	31	Leather & Leather Products	0.36	56	75	Auto Repair Serv. & Garages	0.18	91	152	Residential Building Contractors	0.06
22	291	Petroleum Refining	0.35	57	17	Special Trades Contractors	0.16	92	242	Sawmills & Planing Mills	0.06
23	33	Primary Metal Industries	0.35	58	331	Blast Furnace & Basic Steel	0.16	93	2421	Sawmills & Planing Mills - Gen'l	0.06
24	22	Textile Mill Products	0.34	59	346	Metal Forgings & Stampings	0.16	94	23	Apparel & Other Textile Prods.	0.05
25	29	Petroleum & Coal Products	0.34	60	243	Millwork, Plywood, Struct. Memb.	0.15	95	483	Radio & T.V. Broadcasting	0.05
26		Agriculture, Forestry, Fishing	0.33	61	26	Paper & Allied Products	0.15	96	49	Electrical, Gas, & Sanitary Serv.	0.05
27	172	Painting, Paper Hanging, Decor.	0.33	62	275	Commercial Printing	0.15	97	175	Carpentering & Flooring	0.04
28	20	Food & Kindred Products	0.33	63	078	Landscape & Hort. Services	0.14	98	14	Non-Metallic Minerals exc. Fuels	0.02
29		Manufacturing	0.32	64	176	Roofing & Sheet Metal	0.14	99	48	Communications	0.02
30	2834	Pharmaceutical Preparations	0.32	65	2431	Millwork	0.14	100		Finance, Insurance, Real Estate	0.02
31	204	Grain Mill Products	0.30	66	264	Misc. Converted Paper Products	0.14	101	481	Telephone Communication	0.01
32	341	Metal Cans & Shipping Cont.	0.30	67	3533	Oil Field Machinery	0.14	102	08	Forestry	0.00
33	3643	Current Carrying Wiring Devices	0.27	68	3573	Electronic Computing Equipment	0.14	103	491	Electrical Services	0.00
34	371	Motor Vehicles & Equipment	0.27	69	495	Sanitary Services	0.14	104	492	Gas Production & Distribution	0.00
35	13	Oil & Gas Extraction	0.25	70	245	Wood Buildings & Mobile Homes	0.13	105	493	Combination Utility Services	0.00

Table 7

Accident Source: Hand Tools
Injury Rate Per 100 Worker-Years

No.	SIC	Industry	Rate	No.	SIC	Industry	Rate	No.	SIC	Industry	Rate
1	201	Meat Products	7.24	36	25	Furniture & Fixtures	1.26	71	2033	Canned Fruits & Vegetables	0.63
2	175	Carpentering & Flooring	4.13	37	243	Millwork, Plywood, Struct. Memb.	1.25	72	239	Misc. Fabricated Textile Prods.	0.63
3	152	Residential Building Contractors	3.45	38	3443	Fabricated Plate Work	1.21	73	335	Non-Ferrous Rolling & Drawing	0.63
4	245	Wood Buildings & Mobile Homes	3.39	39	355	Special Industry Machinery	1.20	74	202	Dairy Products	0.60
5	15	General Building Contractors	3.16	40		Mining	1.18	75	204	Grain Mill Products	0.60
6	154	Non-Residential Building Contr.	3.14	41	346	Metal Forgings & Stampings	1.16	76	264	Misc. Converted Paper Products	0.60
7	176	Roofing & Sheet Metal	2.75	42	76	Misc. Repair Services	1.16	77	29	Petroleum & Coal Products	0.52
8	01	Agriculture Prod. - Crops	2.45	43	16	Heavy Construction Contractors	1.15	78	291	Petroleum Refining	0.50
9	492	Gas Production & Distribution	2.39	44	172	Painting, Paper Hanging, Decor.	1.14	79	28	Chemicals & Allied Products	0.48
10	171	Plumbing, Heating, Air Cond.	2.30	45		Agriculture, Fishing, Forestry	1.09	80	42	Trucking & Warehousing	0.48
11	17	Special Trades Contractors	2.26	46	33	Primary Metals Industry	1.07	81	495	Sanitary Services	0.47
12		Construction	2.25	47	34	Fabricated Metal Products	1.05	82	38	Instruments & Related Products	0.46
13	24	Lumber & Wood Products	2.24	48	162	Bridge, Tunnel, Water, Util.	1.00	83	421	Trucking Local & Long Distance	0.46
14	138	Oil & Gas Field Services	2.19	49	22	Textile Mill Products	0.96	84	372	Aircraft & Parts	0.44
15	179	Misc. Special Trades Contractors	2.04	50	329	Misc. Non-Metallic Mineral Prods.	0.94	85	23	Apparel & Other Textile Parts	0.41
16	078	Landscape & Hort. Services	2.03	51	493	Combination Utility Services	0.93	86	14	Non-Metallic Minerals Exc. Fuels	0.40
17	306	Fabricated Rubber Products, NEC	2.01	52	32	Stone, Clay, & Glass Products	0.89	87	275	Commercial Printing	0.38
18	371	Motor Vehicles & Equip.	1.81	53	75	Auto Repair Serv. & Garages	0.89	88	284	Soap, Cleaners, & Toilet Goods	0.38
19	08	Forestry	1.75	54	2431	Millwork	0.87	89	283	Drugs	0.35
20	174	Masonry, Stone Work, Plastering	1.75	55	37	Transportation Equipment	0.87	90	36	Electric & Electronic Equip.	0.35
21	373	Ship & Boat Building & Repair	1.72	56	131	Crude Petr. & Nat'l Gas	0.86	91	27	Printing & Publishing	0.34
22	3533	Oil Field Machinery	1.68	57		Manufacturing	0.86	92	3643	Current Carrying Wiring Devices	0.34
23	161	Highway & Street Construction	1.66	58	341	Metal Cans & Shipping Cont.	0.86	93	02	Agriculture Prod. - Livestock	0.33
24	173	Electrical Work	1.64	59	799	Misc. Amusement Recreation	0.85	94	285	Paints & Allied Products	0.32
25	20	Food & Kindred Products	1.59	60	35	Machinery Except Electrical	0.84	95	271	Newspapers	0.31
26	31	Leather & Leather Products	1.55	61	2034	Dehydrated Fruits, Veg. & Soups	0.78	96		Services	0.31
27	3621	Motors & Generators	1.52	62	491	Electrical Services	0.78	97		Transportation & Public Util.	0.30
28	13	Oil & Gas Extraction	1.47	63	3471	Plating & Polishing	0.76	98	45	Transportation by Air	0.22
29	30	Rubber & Misc. Plastic Prods.	1.43	64	331	Blast Furnaces & Basic Steel	0.74	99	2834	Pharmaceutical Preparations	0.21
30	344	Fabr. Structural Metal Prods.	1.38	65	203	Preserved Fruits & Vegetables	0.73	100	3573	Electronic Computing Equipment	0.20
31	307	Misc. Plastic Products	1.31	66	361	Electrical Distributing Equip.	0.72	101		Finance, Insurance, Real Estate	0.10
32	2421	Sawmills & Planing Mills - Gen'l	1.30	67	40	Railroad Transportation	0.72	102	48	Communication	0.09
33	3444	Sheet Metal Work	1.30	68	49	Electric, Gas, & Sanitary Serv.	0.67	103	376	Guided Missiles, Space Vehicles	0.07
34	327	Concrete, Gypsum, Plaster Prods.	1.29	69	26	Paper & Allied Products	0.65	104	481	Telephone Communication	0.07
35	242	Sawmills & Planing Mills	1.28	70	265	Paperboard Containers & Boxes	0.64	105	483	Radio & T.V. Broadcasting	0.05

Table 8

Accident Source: Hoisting Apparatus & Conveyors
Injury Rates Per 100 Worker-Years

No.	SIC	Industry	Rate	No.	SIC	Industry	Rate	No.	SIC	Industry	Rate
1	138	Oil & Gas Field Services	6.50	36	331	Blast Furnace & Basic Steel	0.31	71	174	Masonry, Stone Work, Plastering	0.11
2	13	Oil & Gas Extraction	4.00	37	245	Wood Building & Mobile Homes	0.30	72	3621	Motors & Generators	0.10
3		Mining	2.81	38	01	Agriculture Prop. - Crops	0.28	73		Transportation & Public Util.	0.10
4	131	Crude Petr. & Nat'l Gas	1.73	39	34	Fabricated Metal Products	0.27	74	493	Combination Utility Services	0.10
5	2421	Sawmills & Planing Mills - Gen'l	1.19	40		Manufacturing	0.24	75	495	Sanitary Services	0.10
6	242	Sawmills & Planing Mills	1.15	41	22	Textile Mill Products	0.24	76	02	Agriculture Prod. - Livestock	0.09
7	3533	Oil Field Machinery	0.99	42	284	Soap, Cleaners, & Toilet Goods	0.24	77	283	Drugs	0.09
8	24	Lumber & Wood Products	0.73	43	29	Petroleum & Coal Products	0.24	78	3471	Plating & Polishing	0.09
9	203	Preserved Fruits & Vegetables	0.67	44	373	Ship & Boat Building & Repair	0.24	79	15	General Building Contractors	0.08
10	201	Meat Products	0.66	45	371	Motor Vehicles & Equipment	0.22	80	23	Apparel & Other Textile Prods.	0.08
11	341	Metal Cans & Shipping Cont.	0.66	46	75	Auto Repair Serv. & Garages	0.22	81	37	Transportation Equipment	0.08
12	20	Food & Kindred Products	0.61	47	31	Leather & Leather Products	0.21	82	76	Misc. Repair Services	0.08
13	2033	Canned Fruits & Vegetables	0.59	48	3444	Sheet Metal Work	0.21	83	49	Electric, Gas, & Sanitary Serv.	0.07
14	2034	Dehydrated Fruits, Veg., & Soups	0.57	49	285	Paints & Allied Products	0.20	84	171	Plumbing, Heating, & Air Cond.	0.06
15	243	Mill Work, Plywood, Struct. Memb.	0.55	50	42	Trucking and Warehousing	0.20	85	36	Electric & Electronic Equip.	0.06
16	265	Paperboard Containers & Boxes	0.50	51	421	Trucking Local & Long Distance	0.20	86	799	Misc. Amusement Recreation	0.06
17	32	Stone, Clay, & Glass Products	0.48	52		Construction	0.19	87	152	Residential Building Contractors	0.05
18	202	Dairy Products	0.47	53	154	Non-Residential Building Contr.	0.19	88	2834	Pharmaceutical Preparations	0.05
19	204	Grain Mill Products	0.47	54	176	Roofing & Sheet Metal Work	0.19	89	483	Radio & T.V. Broadcasting	0.05
20	329	Misc. Non-Metallic Mineral Prods.	0.47	55	28	Chemicals & Allied Products	0.19	90	491	Electrical Services	0.05
21	327	Concrete, Gypsum, Plaster Prods.	0.45	56	307	Misc. Plastic Products	0.19	91	38	Instrument & Related Products	0.04
22	3443	Fabricated Plate Work	0.45	57	355	Special Industry Machinery	0.19	92		Services	0.04
23	26	Paper & Allied Products	0.44	58	45	Transportation by Air	0.19	93	078	Landscape & Hort. Services	0.03
24	306	Fabricated Rubber Products, NEC	0.44	59	17	Special Trades Contractors	0.18	94	372	Aircraft & Parts	0.03
25	2431	Millwork	0.43	60	239	Misc. Fabricated Textile Prods.	0.18	95	172	Painting, Paper Hanging, Decor.	0.02
26	161	Highway & Street Construction	0.40	61	14	Non-Metallic Minerals Exc. Fuels	0.17	96	175	Carpentering & Flooring	0.01
27	264	Misc. Converted Paper Products	0.40	62	271	Newspapers	0.16	97	3573	Electronic Computing Equipment	0.01
28	33	Primary Metal Industries	0.40	63	275	Commercial Printing	0.16	98	48	Communication	0.01
29	16	Heavy Construction Contractors	0.39	64	35	Machinery Except Electrical	0.16	99	481	Telephone Communication	0.01
30	162	Bridge, Tunnel, Water, Util.	0.39	65	25	Furniture & Fixtures	0.15	100		Finance, Insurance, Real Estate	0.01
31	346	Metal Forgings & Stampings	0.39	66		Agriculture, Forestry, Fishing	0.14	101	08	Forestry	0.00
32	344	Fabr. Structural Metal Prods.	0.38	67	27	Printing & Publishing	0.14	102	3643	Current Carrying Wiring Devices	0.00
33	335	Non-Ferrous Rolling & Drawing	0.36	68	173	Electrical Work	0.12	103	376	Guided Missiles, Space Vehicles	0.00
34	179	Misc. Special Trades Contractors	0.31	69	291	Petroleum Refining	0.12	104	40	Railroad Transportation	0.00
35	30	Rubber & Misc. Plastic Prods.	0.31	70	361	Electric Distributing Equip.	0.12	105	492	Gas Production & Distribution	0.00

Table 9
Accident Source: Machines
Injury Rate Per 100 Worker-Years

No.	SIC	Industry	Rate	No.	SIC	Industry	Rate	No.	SIC	Industry	Rate
1	2431	Millwork	4.50	36	203	Preserved Fruits & Vegetables	1.52	71	171	Plumbing, Heating, Air Cond.	0.52
2	3444	Sheet Metal Work	4.04	37	23	Apparel & Other Textile Products	1.52	72	3573	Electronic Computing Equipment	0.50
3	341	Metal Cans & Shipping Cont.	3.87	38	201	Meat Products	1.48	73		Construction	0.48
4	243	Millwork, Plywood, Struct. Memb.	3.86	39	27	Printing & Publishing	1.46	74	14	Non-Metallic Minerals Exc. Fuels	0.40
5	346	Metal Forging & Stampings	3.74	40	078	Landscape & Hort. Services	1.45	75	152	Residential Building Contractors	0.38
6	264	Misc. Converted Paper Products	3.37	41	2033	Canned Fruits & Vegetables	1.45	76	15	General Building Contractors	0.36
7	31	Leather & Leather Products	3.34	42	01	Agriculture Prod. - Crops	1.37	77	154	Non-Residential Building Contr.	0.36
8	25	Furniture & Fixtures	3.18	43	2034	Dehydrated Fruits, Veg., & Soups	1.35	78	162	Bridge, Tunnel, Water, Util.	0.34
9	265	Paperboard Containers & Boxes	3.18	44	32	Stone, Clay, & Glass Products	1.30	79	75	Auto Repair Serv. & Garages	0.34
10	26	Paper & Allied Products	3.03	45	329	Misc. Non-Metallic Mineral Prods.	1.30	80	492	Gas Production & Distribution	0.32
11	307	Misc. Plastic Products	2.94	46	2834	Pharmaceutical Preparations	1.29	81	138	Oil & Gas Field Services	0.30
12	30	Rubber & Misc. Plastic Products	2.79	47	3443	Fabricated Plate Work	1.25	82		Mining	0.29
13	24	Lumber & Wood Products	2.74	48	202	Grain Mill Products	1.22	83	172	Painting, Paper Hanging, Decor.	0.28
14	306	Fabricated Rubber Products, NEC	2.72	49	327	Concrete, Gypsum, Plaster Prods.	1.14	84	173	Electrical Work	0.28
15	34	Fabricated Metal Products	2.68	50	161	Highway & Street Construction	1.13	85	29	Petroleum & Coal Products	0.27
16	3621	Motors & Generators	2.54	51	283	Drugs	1.03	86	483	Radio & T.V. Broadcasting	0.24
17	344	Fabr. Structural Metal Prods.	2.52	52	331	Blast Furnace & Basic Steel	1.02	87		Services	0.23
18	239	Misc. Fabricated Textile Prods.	2.28	53	285	Paints & Allied Products	0.95	88	42	Trucking & Warehousing	0.22
19	275	Commercial Printing	2.25	54	28	Chemicals & Allied Products	0.93	89	421	Trucking Local and Long Distance	0.20
20	242	Sawmills & Planing Mills	2.03	55	284	Soaps, Cleaners, & Toilet Goods	0.92	90	49	Electric, Gas & Sanitary Serv.	0.19
21	2421	Sawmills & Planing Mills - Gen'l	1.92	56	361	Electric Distributing Equipment	0.87	91	131	Oil & Gas Extraction	0.18
22	33	Primary Metal Industries	1.88	57	37	Transportation Equipment	0.87	92	176	Roofing & Sheet Metal Work	0.18
23	22	Textile Mill Products	1.76	58	38	Instruments & Related Products	0.82	93	02	Agriculture Prod. - Livestock	0.17
24	35	Machinery Except Electrical	1.71	59	175	Carpentering & Flooring	0.77	94	376	Guided Missiles, Space Vehicles	0.15
25	3533	Oil Field Machinery	1.71	60	179	Misc. Special Trades Contractors	0.74	95		Transportation & Public Util.	0.13
26	204	Grain Mill Products	1.70	61	174	Masonry, Stone Work, Plastering	0.72	96	291	Petroleum Refining	0.11
27	3643	Current Carrying Wiring Devices	1.69	62		Agriculture, Forestry, Fishing	0.68	97		Finance, Insurance, Real Estate	0.11
28	355	Special Industry Machinery	1.68	63	372	Aircraft & Parts	0.66	98	491	Electrical Services	0.10
29	245	Wood Buildings & Mobile Homes	1.63	64	36	Electric & Electronic Equip.	0.65	99	45	Transportation by Air	0.09
30	371	Motor Vehicles & Equipment	1.61	65	271	Newspapers	0.62	100	48	Communications	0.08
31	335	Non-Ferrous Rolling & Drawing	1.58	66	76	Misc. Repair Services	0.60	101	131	Crude Petr. & Nat'l Gas	0.07
32	373	Ship & Boat Building & Repair	1.58	67	17	Special Trades Contractors	0.55	102	481	Telephone Communications	0.05
33	20	Food & Kindred Products	1.57	68	495	Sanitary Services	0.54	103	08	Forestry	0.00
34	3471	Plating & Polishing	1.56	69	799	Misc. Amusement Recreation	0.53	104	40	Railroad Transportation	0.00
35		Manufacturing	1.52	70	16	Heavy Construction Contractors	0.52	105	493	Combination Utility Services	0.00

Table 10
 Accident Source: Metal Items
 Injury Rate Per 100 Worker-Years

No.	SIC	Industry	Rate	No.	SIC	Industry	Rate	No.	SIC	Industry	Rate
1	3444	Sheet Metal Work	9.55	36	361	Electrical Distribution Equip.	2.47	71	3643	Current Carrying Wiring Devices	1.07
2	346	Metal Forgings & Stamping	7.97	37	75	Auto Repair Serv. & Garages	2.43	72	285	Paints & Allied Products	1.06
3	344	Fabr. Structural Metal Prods.	7.90	38	15	General Building Contractors	2.40	73	49	Electric, Gas, & Sanitary Serv.	1.04
4	245	Wood Buildings & Mobile Homes	7.24	39	175	Carpentering & Flooring	2.37	74		Agriculture, Forestry, Fishing	1.00
5	371	Motor Vehicles & Equipment	6.84	40	152	Residential Building Contractors	2.29	75	28	Chemicals & Allied Products	0.97
6	33	Primary Metal Industries	6.55	41	25	Furniture & Fixtures	2.27	76	131	Crude Petr. & Nat'l Gas	0.96
7	3471	Plating & Polishing	6.13	42		Mining	2.18	77	36	Electric & Electronic Equip.	0.95
8	3533	Oil Field Machinery	5.92	43		Manufacturing	2.18	78	38	Instruments & Related Products	0.93
9	34	Fabricated Metal Products	5.86	44	264	Misc. Converted Paper Products	2.00	79	31	Leather & Leather Products	0.90
10	179	Misc. Special Trades Contractors	5.44	45	307	Misc. Plastic Products	2.00	80	172	Painting, Paper Hanging, Decor.	0.84
11	341	Metal Cans & Shipping Cont.	5.34	46	162	Bridge, Tunnel, Water, Util.	1.98	81	284	Soap, Cleaners, & Toilet Groups	0.84
12	3443	Fabricated Plate Work	5.21	47	16	Heavy Construction Contractors	1.97	82	45	Transportation by Air	0.78
13	171	Plumbing, Heating, Air Cond.	5.04	48	161	Highway & Street Construction	1.95	83		Transportation & Public Util.	0.76
14	306	Fabricated Rubber Products, NEC	4.82	49	243	Millwork, Plywood, Struct. Memb.	1.91	84	275	Commercial Printing	0.76
15	3621	Motors & Generators	4.78	50	495	Sanitary Services	1.86	85	14	Non-Metallic Minerals Exc. Fuels	0.74
16	138	Oil & Gas Field Services	4.69	51	174	Masonry, Stonework, Plastering	1.79	86	29	Petroleum & Coal Products	0.73
17	373	Ship & Boat Building & Repair	4.48	52	2431	Millwork	1.78	87	291	Petroleum Refining	0.72
18	355	Special Industry Machinery	4.21	53	204	Grain Mill Products	1.76	88	799	Misc. Amusements Recreation	0.70
19	331	Blast Furnace & Basic Steel	3.90	54	201	Meat Products	1.67	89	491	Electrical Services	0.67
20	35	Machinery Except Electrical	3.87	55	372	Aircraft & Parts	1.63	90	239	Misc. Fabricated Textile Prods.	0.63
21	335	Non-Ferrous Rolling & Drawing	3.79	56	492	Gas Production & Distribution	1.57	91	078	Landscape & Hort. Services	0.60
22	329	Misc. Non-Metallic Mineral Prods.	3.74	57	26	Paper & Allied Products	1.55	92	27	Printing & Publishing	0.53
23	327	Concrete, Gypsum, & Plaster Prods.	3.33	58	22	Textile Mill Products	1.49	93	02	Agriculture Prod. - Livestock	0.51
24	17	Special Trades Contractors	3.26	59	2421	Sawmills & Planing Mills-Gen'l	1.49	94	2834	Pharmaceutical Preparations	0.50
25	154	Non-Residential Building Contr.	3.22	60	42	Trucking & Warehousing	1.49	95	283	Drugs	0.45
26	176	Roofing & Sheet Metal Work	3.14	61	242	Sawmills & Planing Mills	1.46	96	3573	Electronic Computing Equipment	0.45
27	173	Electrical Work	3.07	62	421	Trucking Local & Long Distance	1.46	97	271	Newspapers	0.41
28	76	Misc. Repair Services	2.92	63	40	Railroad Transportation	1.43	98		Services	0.41
29	37	Transportation Equipment	2.88	64	2033	Canned Fruits & Vegetables	1.38	99	376	Guided Missiles, Space Vehicles	0.40
30	13	Oil & Gas Extraction	2.71	65	493	Combination Utility Services	1.37	100	08	Forestry	0.35
31		Construction	2.70	66	20	Food & Kindred Products	1.23	101	23	Apparel & Other Textile Prods.	0.32
32	32	Stone, Clay, & Glass Products	2.53	67	203	Preserved Fruits & Vegetables	1.23	102	483	Radio & T.V. Broadcasting	0.24
33	24	Lumber & Wood Products	2.52	68	2034	Dehydrated Fruits, Veg. & Soups	1.17	103	48	Communications	0.18
34	01	Agriculture Prod. - Crops	2.48	69	265	Paperboard Containers & Boxes	1.14	104	481	Telephone Communications	0.12
35	30	Rubber & Misc. Plastic Prods.	2.48	70	202	Dairy Products	1.09	105		Finance, Insurance, Real Estate	0.09

Table 11

Accident Source: Working Surfaces
Injury Rate Per 100 Worker-Years

No.	SIC	Industry	Rate	No.	SIC	Industry	Rate	No.	SIC	Industry	Rate
1	245	Wood Buildings & Mobile Homes	5.78	36		Agriculture, Forestry, Fishing	1.60	71	3643	Current Carrying Wiring Devices	1.04
2	176	Roofing & Sheet Metal Work	5.71	37	22	Textile Mill Products	1.60	72	76	Misc. Repair Services	1.04
3	174	Masonry, Stone Work, Plastering	4.49	38	307	Misc. Plastic Products	1.58	73	33	Primary Metal Industries	1.01
4	172	Painting, Paper Hanging, Decor.	3.48	39	13	Oil & Gas Extraction	1.56	74		Services	0.97
5	175	Carpentering & Flooring	3.39	40	32	Stone, Clay, & Glass Products	1.55	75	14	Non-Metallic Minerals Exc. Fuels	0.95
6	17	Special Trades Contractors	3.25	41	078	Landscape & Hort. Services	1.54	76	162	Bridge, Tunnel, Water, Util.	0.95
7	01	Agriculture Prod. - Crops	3.17	42	2431	Millwork	1.54	77	25	Furniture & Fixtures	0.95
8	201	Meat Products	3.17	43	265	Paperboard Containers & Boxes	1.53	78	2834	Pharmaceutical Preparations	0.92
9	152	Residential Building Contractors	3.01	44	26	Paper & Allied Products	1.52	79	283	Drugs	0.90
10	154	Non-Residential Building Contr.	2.99	45	371	Motor Vehicles & Equipment	1.52	80	31	Leather & Leather Products	0.90
11	15	General Building Contractors	2.92	46	329	Misc. Non-Metallic Mineral Prods.	1.51	81	346	Metal Forgings & Stamping	0.89
12	495	Sanitary Services	2.74	47	264	Misc. Converted Paper Products	1.50	82	02	Agriculture Prod. - Livestock	0.87
13	171	Plumbing, Heating, Air Cond.	2.72	48	30	Rubber & Misc. Plastic Products	1.46	83	27	Printing & Publishing	0.86
14		Construction	2.69	49		Mining	1.45	84	29	Petroleum & Coal Products	0.84
15	2033	Canned Fruits & Vegetables	2.68	50	243	Millwork, Plywood, Struct. Memb.	1.44	85	291	Petroleum Refining	0.84
16	203	Preserved Fruits & Vegetables	2.66	51	284	Soap, Cleaners, & Toilet Goods	1.43	86	335	Non-Ferrous Rolling & Drawing	0.83
17	42	Trucking & Warehousing	2.64	52	344	Fabr. Structural Metal Prods.	1.34	87	331	Blast Furnace & Basic Steel	0.79
18	421	Trucking Local & Long Distance	2.62	53	3621	Motors & Generators	1.32	88	75	Auto Repair Serv. & Garage	0.78
19	24	Lumber & Wood Products	2.52	54	28	Chemicals & Allied Products	1.31	89	35	Machinery Except Electrical	0.76
20	138	Oil & Gas Field Services	2.51	55	306	Fabricated Rubber Products, NEC	1.31	90	372	Aircraft & Parts	0.76
21	20	Food & Kindred Products	2.49	56		Transportation & Public Utilities	1.31	91	131	Oil & Gas Extraction	0.74
22	373	Ship & Boat Building & Repair	2.48	57	3443	Fabricated Plate Work	1.25	92	491	Electrical Services	0.73
23	2034	Dehydrated Fruits & Vegetables	2.34	58	49	Electric, Gas, & Sanitary Serv.	1.25	93	40	Railroad Transportation	0.72
24	173	Electrical Work	2.33	59	3471	Plating & Polishing	1.22	94	483	Radio & T.V. Broadcasting	0.72
25	179	Misc. Special Trades Contractors	2.32	60	45	Transportation by Air	1.21	95	275	Commercial Printing	0.71
26	204	Grain Mill Products	2.31	61	493	Combination Utility Services	1.20	96	36	Electric & Electronic Equip.	0.68
27	341	Metal Cans & Shipping Cont.	2.24	62	16	Heavy Construction Contractors	1.17	97	355	Special Industry Machinery	0.67
28	202	Dairy Products	2.23	63		Manufacturing	1.17	98	23	Apparel & Other Textile Prods.	0.64
29	2421	Sawmills & Planing Mills - Gen'l	2.20	64	239	Misc. Fabricated Textile Prods.	1.16	99	361	Electric Distributing Equip.	0.62
30	242	Sawmills & Planing Mills	2.17	65	3444	Sheet Metal Work	1.13	100	38	Instruments & Related Products	0.59
31	492	Gas Production & Distribution	2.17	66	34	Fabricated Metal Products	1.12	101	48	Communication	0.55
32	799	Misc. Amusement Recreation	2.10	67	271	Newspapers	1.09	102	3573	Electronic Computing Equipment	0.49
33	161	Highway & Street Construction	1.93	68	37	Transportation Equipment	1.08	103	376	Guided Missiles, Space Vehicles	0.49
34	285	Paints & Allied Products	1.90	69	3533	Oil Field Machinery	1.07	104		Finance, Insurance, Real Estate	0.48
35	327	Concrete, Gypsum, & Plaster Prod.	1.83	70	08	Forestry	1.05	105	481	Telephone Communication	0.40

Table 12

Injury Type: Struck By or Against
Injury Rate Per 100 Worker-Years

No.	SIC	Industry	Rate	No.	SIC	Industry	Rate	No.	SIC	Industry	Rate
1	245	Wood Buildings & Mobile Homes	13.69	36	327	Concrete Gypsum Plaster Prods.	4.72	71	16	Heavy Construction Contr.	2.92
2	201	Meat Products	12.79	37	32	Stone Clay & Glass Products	4.71	72	49	Electric Gas & Sanitary Serv.	2.80
3	24	Lumber & Wood Products	9.61	38	3443	Fabricated Plate Work	4.58	73	28	Chemicals & Allied Products	2.69
4	2431	Millwork	9.34	39	174	Masonry, Stone Work, Plastering	4.57	74	492	Gas Production & Distribution	2.66
5	243	Millwork, Plywood, Struct. Memb.	8.56	40	264	Misc. Converted Paper Products	4.55	75	162	Bridge, Tunnel, Water, Util.	2.60
6	3444	Sheet Metal Work	8.50	41	204	Grain Mill Products	4.51	76	361	Electric Distributing Equip.	2.50
7	495	Sanitary Services	8.15	42	13	Oil & Gas Extraction	4.50	77	239	Misc. Fabricated Textile Prods.	2.48
8	175	Carpentering & Flooring	7.87	43	42	Trucking & Warehousing	4.48	78	45	Transportation by Air	2.37
9	138	Oil & Gas Field Services	7.75	44	22	Textile Mill Products	4.47	79	284	Soap, Cleaners, & Toilet Goods	2.29
10	346	Metal Forging & Stampings	7.55	45	31	Leather & Leather Products	4.45	80		Transportation & Public Utils.	2.25
11	344	Fabr. Structural Metal Prods.	7.38	46	421	Trucking Local & Long Distance	4.34	81	275	Commercial Printing	2.23
12	25	Furniture & Fixtures	7.07	47	285	Paints & Allied Products	4.31	82	2834	Pharmaceutical Preparations	2.06
13	01	Agricultural Prod. - Crops	7.03	48	355	Special Industry Machinery	4.11	83	02	Agricultural Prod. - Livestock	1.95
14	373	Ship & Boat Building & Repair	7.03	49	161	Highway & Street Construction	4.06	84	27	Printing & Publishing	1.89
15	2421	Sawmills & Planing Mills - Gen'l	6.91	50	26	Paper & Allied Products	4.02	85	283	Drugs	1.85
16	242	Sawmills & Planing Mills	6.89	51	203	Preserved Fruits & Vegetables	3.98	86	3643	Current Carrying Wiring Devices	1.84
17	371	Motor Vehicles & Equipment	6.68	52	078	Landscape & Hort. Services	3.92	87	372	Aircraft & Parts	1.76
18	176	Roofing & Sheet Metal Work	6.66	53	2033	Canned Fruits & Vegetables	3.92	88	271	Newspapers	1.68
19	152	Residential Building Contractors	6.63	54	265	Paperboard Containers & Boxes	3.92	89	131	Crude Petr. & Nat'l Gas	1.64
20	341	Metal Cans & Shipping Cont.	6.36	55	173	Electrical Work	3.88	90	38	Instruments & Related Products	1.63
21	306	Fabricated Rubber Products, NEC	6.27	56	08	Forestry	3.85	91	23	Apparel & Other Textile Prods.	1.63
22	154	Non-Residential Building Contr.	6.23	57	329	Misc. Non-Metallic Mineral Prods.	3.80	92	36	Electric & Electronic Equip.	1.59
23	15	General Building Contractors	6.21	58	335	Non-Ferrous Rolling & Drawing	3.77	93	14	Non-Metallic Minerals Exc. Fuels	1.46
24	179	Misc. Special Trade Contractors	6.00	59		Manufacturing	3.74	94		Services	1.46
25	34	Fabr. Metal Products	5.88	60	35	Machinery Except Electrical	3.72	95	40	Railroad Transportation	1.44
26	3471	Plating & Polishing	5.76	61		Mining	3.66	96	493	Combination Utility Services	1.20
27	171	Plumbing, Heating, Air Cond.	5.48	62	2034	Dehydrated Fruits, Veg., & Soups	3.64	97	491	Electrical Services	1.19
28	30	Rubber & Misc. Plastic Products	5.47	63	799	Misc. Amusement Recreation	3.62	98	29	Petroleum & Coal Prod.	1.17
29	307	Misc. Plastic Products	5.40	64	202	Dairy Products	3.58	99	483	Radio & T.V. Broadcasting	0.91
30	20	Food & Kindred Products	5.33	65	331	Blast Furnace & Basic Steel	3.51	100	3573	Electronic Computing Equipment	0.85
31	17	Special Trades Contractors	5.28	66		Agriculture, Forestry, Fishing	3.40	101	291	Petroleum Refining	0.82
32	3621	Motors & Generators	5.18	67	76	Misc. Repair Services	3.38	102	376	Guided Missiles, Space Vehicles	0.51
33	33	Primary Metal Industries	5.12	68	37	Transportation Equipment	3.32	103		Finance, Insurance, Real Estate	0.50
34	3533	Oil Field Machinery	5.12	69	75	Auto Repair Serv. & Garages	3.07	104	48	Communication	0.48
35		Construction	4.97	70	172	Painting, Paper Hangings, Decor.	3.00	105	481	Telephone Communication	0.34

Table 13

Injury Type: Fall from Elevation
Injury Rate per 100 Worker-Years

No.	SIC	Industry	Rate	No.	SIC	Industry	Rate	No.	SIC	Industry	Rate
1	176	Roofing & Sheet Metal Work	4.82	36	202	Dairy Products	0.83	71	291	Petroleum Refining	0.49
2	174	Masonry, Stone Work, Plastering	3.54	37	3443	Fabricated Plate Work	0.80	72		Manufacturing	0.48
3	245	Wood Buildings, & Mobile Homes	3.45	38	32	Stone, Clay, & Glass Products	0.79	73	3444	Sheet Metal Work	0.48
4	172	Painting, Paper Hanging, Decor.	2.81	39	16	Heavy Construction Contractors	0.78	74	37	Transportation Equipment	0.47
5	152	Residential Building Contractors	2.47	40		Transportation & Public Utils.	0.78	75	284	Soap, Cleaners, & Toilet Goods	0.46
6	17	Special Trades Contractors	2.47	41	492	Gas Production & Distribution	0.78	76	30	Rubber & Misc. Plastic Prods.	0.46
7	175	Carpentering & Flooring	2.35	42	799	Misc. Amusement Recreation	0.76	77	34	Fabricated Metal Products	0.46
8	15	General Building Contractors	2.32	43	371	Motor Vehicles & Equipment	0.72	78	33	Primary Metal Industries	0.45
9	154	Non-Residential Building Contr.	2.20	44	40	Railroad Transportation	0.72	79	239	Misc. Fabricated Textile Prods.	0.42
10	01	Agriculture Prod. - Crops	2.16	45	265	Paperboard Containers & Boxes	0.71	80	25	Furniture & Fixtures	0.42
11		Construction	2.05	46	08	Forestry	0.70	81	131	Crude Petr. & Nat'l Gas	0.41
12	171	Plumbing, Heating, Air Cond.	2.02	47	243	Millwork, Plywood, Struct. Memb.	0.70	82	331	Blast Furnace & Basic Steel	0.40
13	373	Ship & Boat Building & Repair	1.93	48	264	Misc. Converted Paper Products	0.69	83	361	Electric Distributing Equip.	0.40
14	173	Electrical Work	1.83	49	285	Paints & Allied Products	0.69	84	27	Printing & Publishing	0.38
15	138	Oil & Gas Field Services	1.81	50	49	Electric, Gas & Sanitary Serv.	0.69	85	335	Non-Ferrous Rolling & Drawing	0.38
16	42	Trucking & Warehousing	1.75	51	26	Paper & Allied Prods.	0.68	86	75	Auto Repair Serv. & Garages	0.38
17	421	Trucking Local & Long Distance	1.74	52	344	Fabr. Structural Metal Prods.	0.68	87	31	Leather & Leather Products	0.36
18	179	Misc. Special Trades Contractors	1.70	53	76	Misc. Repair Services	0.68	88	48	Communication	0.34
19	495	Sanitary Services	1.62	54	2431	Millwork	0.67	89	35	Machinery Except Electrical	0.32
20	204	Grain Mill Products	1.48	55	493	Combination Utility Services	0.66	90	355	Special Industry Machinery	0.32
21	24	Lumber & Wood Products	1.41	56	162	Bridge, Tunnel, Water, Util.	0.65	91		Services	0.32
22	161	Highway & Street Construction	1.25	57	329	Misc. Non-Metallic Mineral Prods.	0.65	92	283	Drugs	0.30
23	327	Concrete, Gypsum, Plaster Prods.	1.16	58	3471	Plating & Polishing	0.61	93	306	Fabricated Rubber Products, NEC	0.30
24	201	Meat Products	1.15	59	22	Textile Mill Products	0.60	94	2834	Pharmaceutical Preparations	0.29
25		Agriculture, Forestry, Fishing	1.12	60	271	Newspapers	0.58	95	372	Aircraft & Parts	0.27
26	2421	Sawmills & Planing Mills-Gen'l	1.08	61	14	Non-Metallic Minerals exc. Fuels	0.55	96	346	Metal Forgings & Stampings	0.25
27	13	Oil & Gas Extraction	1.07	62	45	Transportation by Air	0.54	97	275	Commercial Printing	0.24
28	242	Sawmills & Planing Mills	1.06	63	02	Agricultural Prod. - Livestock	0.53	98	481	Telephone Communication	0.23
29	2033	Canned Fruits & Vegetables	1.06	64	28	Chemicals & Allied Products	0.52	99		Finance, Insurance, Real Estate	0.21
30	078	Landscape & Hort. Services	1.04	65	29	Petroleum & Coal Products	0.52	100	23	Apparel & Other Textile Prods.	0.20
31	20	Food & Kindred Products	0.95	66	307	Misc. Plastic Products	0.52	101	36	Electric & Electronic Equip.	0.18
32		Mining	0.94	67	3533	Oil Field Machinery	0.52	102	38	Instruments & Related Products	0.18
33	203	Preserved Fruits & Vegetables	0.94	68	483	Radio & T.V. Broadcasting	0.52	103	3573	Electronic Computing Equipment	0.15
34	341	Metal Cans & Shipping Cont.	0.92	69	491	Electric, Gas & Sanitary Services	0.52	104	3643	Current Carrying Wiring Devices	0.15
35	2034	Dehydrated Fruits, Veg., & Soups	0.85	70	3621	Motors & Generators	0.51	105	376	Guided Missiles, Space Vehicles	0.15

Table 14

Injury Type: Fall on Same Level
Injury Rate Per 100 Worker-Years

No.	SIC	Industry	Rate	No.	SIC	Industry	Rate	No.	SIC	Industry	Rate
1	245	Wood Buildings & Mobile Homes	2.64	36	373	Ship & Boat Building & Repair	1.20	71	49	Electric Gas & Sanitary Serv.	0.84
2	201	Meat Products	2.42	37	2431	Millwork	1.18	72		Agriculture Forestry Fishing	0.82
3	203	Preserved Fruits & Vegetables	2.21	38	32	Stone, Clay, & Glass Products	1.18	73		Transportation & Public Utils.	0.81
4	202	Dairy Products	2.15	39	3444	Sheet Metal Work	1.17	74		Services	0.80
5	2033	Canned Fruits & Vegetables	2.14	40	327	Concrete, Gypsum, Plaster Prods.	1.15	75	173	Electrical Work	0.76
6	20	Food & Kindred Products	2.06	41	3643	Current Carrying Wiring Devices	1.15	76	493	Combination Utility Services	0.74
7	2034	Dehydrated Fruits, Veg., & Soups	2.04	42	17	Special Trades Contractors	1.14	77	16	Heavy Construction Contr.	0.72
8	492	Gas Production & Distribution	1.95	43	28	Chemicals & Allied Products	1.13	78	40	Railroad Transportation	0.72
9	2421	Sawmills & Planing Mills-Gen'l	1.93	44	344	Fabr. Structural Metal Prods.	1.12	79	331	Blast Furnace & Basic Steel	0.71
10	242	Sawmills & Planing Mills	1.91	45	3621	Motors & Generators	1.12	80	31	Leather & Leather Products	0.69
11	285	Paints & Allied Products	1.78	46	243	Millwork, Plywood, Struct. Memb.	1.11	81	271	Newspapers	0.68
12	01	Agriculture Prod. - Crops	1.77	47	161	Highway & Street Construction	1.08	82	35	Machinery Except Electrical	0.66
13	495	Sanitary Services	1.76	48	15	General Building Contractors	1.05	83	27	Printing & Publishing	0.62
14	341	Metal Cans & Shipping Cont.	1.76	49	179	Misc. Special Trade Contractors	1.03	84	76	Misc. Repair Services	0.62
15	24	Lumber & Wood Products	1.74	50	2834	Pharmaceutical Preparations	1.03	85	162	Bridge, Tunnel, Water, Util.	0.62
16	42	Trucking & Warehousing	1.55	51	34	Fabricated Metal Products	1.02	86	36	Electrical & Electronic Equip.	0.60
17	421	Trucking Local & Long Distance	1.54	52		Construction	1.01	87	372	Aircraft & Parts	0.60
18	799	Misc. Amusement Recreation	1.52	53	239	Misc. Fabricated Textile Prods.	1.01	88	14	Non-Metallic Minerals Exc. Fuels	0.59
19	306	Fabricated Rubber Products, NEC	1.50	54	33	Primary Metal Industries	0.99	89	75	Auto Repair Service & Garages	0.59
20	154	Non-Residential Building Contr.	1.46	55	335	Non-Ferrous Rolling & Drawing	0.99	90	275	Commercial Printing	0.59
21	176	Roofing & Sheetmetal Work	1.46	56	3471	Plating & Polishing	0.98	91	38	Instruments & Related Products	0.56
22	204	Grain Mill Products	1.46	57		Manufacturing	0.97	92	23	Apparel & Other Textile Prods.	0.55
23	138	Oil & Gas Field Services	1.43	58	152	Residential Building Contractors	0.95	93	355	Special Industry Machinery	0.53
24	08	Forestry	1.40	59	078	Landscape & Hort. Services	0.94	94	291	Petroleum Refining	0.52
25	329	Misc. Non-Metallic Mineral Prods.	1.35	60	346	Metal Forgings & Stampings	0.94	95	361	Electric Distributing Equip.	0.52
26	174	Masonry, Stone Work, Plastering	1.31	61	13	Oil & Gas Extraction	0.92	96	02	Agriculture Prod. - Livestock	0.50
27	30	Rubber & Misc. Plastic Prods.	1.30	62	45	Transportation by Air	0.91	97	29	Petroleum & Coal Products	0.49
28	307	Misc. Plastic Products	1.29	63	172	Painting, Paper Hanging, Decor.	0.91	98	131	Crude Petr'l & Nat'l Gas	0.48
29	26	Paper & Allied Products	1.27	64	175	Carpentering & Flooring	0.91	99	3573	Electronic Computing Equipment	0.47
30	284	Soap, Cleaners, & Toilet Goods	1.27	65	3533	Oil Field Machinery	0.91	100	376	Guided Missiles, Space Vehicles	0.42
31	264	Misc. Converted Paper Products	1.26	66	283	Drugs	0.90	101	491	Electrical Services	0.36
32	371	Motor Vehicles & Equipment	1.26	67	25	Furniture & Fixtures	0.89	102		Finance, Insurance, Real Estate	0.33
33	171	Plumbing, Heating, Air Cond.	1.25	68	3443	Fabricated Plate Work	0.88	103	48	Communication	0.25
34	22	Textile Mill Products	1.25	69		Mining	0.86	104	481	Telephone Communication	0.22
35	265	Paperboard Containers & Boxes	1.24	70	37	Transportation Equipment	0.84	105	483	Radio & T.V. Broadcasting	0.19

Table 15

Injury Type - Caught in or Between
Rate Per 100 Worker-Year

No.	SIC	Industry	Rate	No.	SIC	Industry	Rate	No.	SIC	Industry	Rate
1	341	Metal Cans & Shipping Cont.	3.44	36		Mining	1.58	71	16	Heavy Construction Contractors	0.68
2	138	Oil & Gas Field Services	3.37	37	2034	Dehydrated Fruits, Veg., & Soups	1.51	72	76	Misc. Repair Services	0.68
3	3444	Sheet Metal Work	3.24	38	22	Textile Mill Products	1.46	73	37	Transportation Equipment	0.67
4	264	Misc. Converted Paper Products	2.78	39	3443	Fabricated Plate Work	1.39	74	154	Non-Residential Building Contr.	0.66
5	265	Paperboard Containers & Boxes	2.65	40	01	Agriculture Prod. - Crops	1.38	75	49	Electric, Gas, & Sanitary Serv.	0.62
6	26	Paper & Allied Products	2.57	41	239	Misc. Fabricated Textile Prods.	1.34	76		Construction	0.61
7	346	Metal Forgings & Stampings	2.53	42	373	Ship & Boat Building & Repair	1.34	77	162	Bridge, Tunnel, Water, Util.	0.61
8	242	Sawmills & Planing Mills	2.51	43	3533	Oil Field Machinery	1.29	78	799	Misc. Amusement Recreation	0.56
9	2421	Sawmills & Planing Mills - Gen'l	2.49	44	27	Printing & Publishing	1.28	79	174	Masonry, Stone Work, Plastering	0.55
10	2431	Millwork	2.34	45		Manufacturing	1.24	80	45	Transportation by Air	0.51
11	243	Millwork, Plywood, Struct. Memb.	2.29	46	331	Blast Furnace & Basic Steel	1.24	81	29	Petroleum & Coal Products	0.50
12	306	Fabricated Rubber Products, NEC	2.29	47	3471	Plating & Polishing	1.22	82	38	Instruments & Related Products	0.50
13	344	Fabr. Structural Metal Prods.	2.26	48	245	Wood Buildings & Mobile Homes	1.18	83	173	Electrical Work	0.50
14	24	Lumber & Wood Products	2.21	49	3643	Current Carrying Wiring Devices	1.15	84	14	Non-Metallic Minerals Exc. Fuels	0.47
15	34	Fabricated Metal Products	2.16	50	35	Machinery Except Electrical	1.09	85	36	Electric & Electronic Equipment	0.47
16	13	Oil & Gas Extraction	2.05	51	284	Soap, Cleaners, & Toilet Goods	1.07	86	15	General Building Contractors	0.46
17	495	Sanitary Services	1.96	52	179	Misc. Special Trade Contractors	1.06	87	175	Carpentering & Flooring	0.45
18	275	Commercial Printing	1.94	53	078	Landscape & Hort. Services	1.04	88	172	Painting, Paper Hanging, Decor.	0.45
19	30	Rubber & Misc. Plastic Prods.	1.94	54	355	Special Industry Machinery	1.03	89	02	Agriculture Prod. - Livestock	0.43
20	201	Meat Products	1.93	55	23	Apparel & Other Textile Prods.	1.02	90		Transportation & Public Utils.	0.42
21	3621	Motors & Generators	1.93	56	161	Highway & Street Construction	0.91	91	152	Residential Building Contr.	0.42
22	31	Leather & Leather Products	1.91	57	131	Crude Petr'l & Nat'l Gas	0.89	92	372	Aircraft & Parts	0.42
23	25	Furniture & Fixtures	1.90	58	285	Paints & Allied Products	0.89	93	493	Combination Utility Services	0.34
24	202	Dairy Products	1.89	59	42	Trucking & Warehousing	0.86	94	3573	Electronic Computing Equipment	0.26
25	20	Food & Kindred Products	1.86	60	28	Chemicals & Allied Products	0.85	95		Services	0.25
26	327	Concrete, Gypsum, Plaster Prods.	1.84	61	421	Trucking Local & Long Distance	0.84	96	291	Petroleum Refining	0.23
27	307	Misc. Plastic Products	1.82	62	171	Plumbing, Heating, Air Cond.	0.82	97	492	Gas Production & Distribution	0.22
28	33	Primary Metal Industries	1.81	63	361	Electric Distributing Equipment	0.79	98	483	Radio & T.V. Broadcasting	0.19
29	203	Preserved Fruits & Vegetables	1.79	64	2834	Pharmaceutical Preparations	0.77	99	491	Electrical Services	0.15
30	335	Non-Ferrous Rolling & Drawing	1.69	65	176	Roofing & Sheet Metal Work	0.75	100	376	Guided Missiles, Space Vehicles	0.09
31	2033	Canned Fruits & Vegetables	1.68	66		Agriculture, Forestry, Fishing	0.74	101		Finance, Insurance, Real Estate	0.08
32	329	Misc. Non-Metallic Mineral Prods.	1.66	67	271	Newspapers	0.73	102	48	Communication	0.05
33	204	Grainmill Products	1.65	68	75	Auto Repair Serv. & Garages	0.72	103	481	Telephone Communication	0.03
34	32	Stone, Clay & Glass Products	1.62	69	17	Special Trade Contractors	0.70	104	08	Forestry	0.00
35	371	Motor Vehicles & Equipment	1.60	70	283	Drugs	0.69	105	40	Railroad Transportation	0.00

Table 16

Injury Type - Rubbed or Abraded
Rate Per 100 Worker-Years

No.	SIC	Industry	Rate	No.	SIC	Industry	Rate	No.	SIC	Industry	Rate
1	3444	Sheet Metal Work	2.28	36	138	Oil & Gas Field Services	1.09	71	799	Misc. Amusement Recreation	0.45
2	245	Wood Buildings & Mobile Homes	2.22	37	25	Furniture & Fixtures	1.01	72	42	Trucking & Warehousing	0.44
3	344	Fabr. Structural Metal Prods.	2.21	38	32	Stone, Clay, & Glass Products	1.01	73	421	Trucking Local & Long Distance	0.43
4	371	Motor Vehicles & Equipment	2.03	39	355	Special Industry Machinery	0.97	74	3643	Current Carrying Wiring Devices	0.42
5	373	Ship & Boat Building & Repair	1.96	40	172	Painting, Paper Hanging, Decor.	0.95	75	264	Misc. Converted Paper Products	0.40
6	171	Plumbing, Heating, Air Cond.	1.85	41	204	Grain Mill Products	0.94	76	2834	Pharmaceutical Preparations	0.40
7	2431	Millwork	1.85	42	335	Non-Ferrous Rolling & Drawing	0.92	77	36	Electric & Electronic Equip.	0.38
8	3443	Fabricated Plate Work	1.84	43	37	Transportation Equipment	0.90	78	38	Instruments & Related Products	0.38
9	175	Carpentering & Flooring	1.83	44	201	Meat Products	0.85	79	28	Chemicals & Allied Products	0.37
10	243	Millwork, Plywood, Struct. Memb.	1.64	45	307	Misc. Plastic Products	0.85	80	283	Drugs	0.34
11	24	Lumber & Wood Products	1.63	46	30	Rubber & Misc. Plastic Prods.	0.82	81		Transportation & Public Utils.	0.28
12	154	Non-Residential Building Contr.	1.60	47	361	Electric Distributing Equip.	0.82	82	45	Transportation by Air	0.27
13	495	Sanitary Services	1.59	48	306	Fabricated Rubber Products, NEC	0.80	83	131	Crude Petr'l & Nat'l Gas	0.27
14	34	Fabricated Metal Products	1.50	49	161	Highway & Street Construction	0.77	84	284	Soap, Cleaners, & Toilet Goods	0.26
15	3533	Oil Field Machinery	1.49	50	2034	Dehydrated Fruits, Veg. & Soups	0.76	85	29	Petroleum & Coal Products	0.24
16	3471	Plating & Polishing	1.46	51	31	Leather & Leather Products	0.74	86	202	Dairy Products	0.23
17	346	Metal Forging & Stampings	1.44	52		Manufacturing	0.74	87	285	Paints & Allied Products	0.23
18	40	Railroad Transportation	1.44	53	08	Forestry	0.70	88	02	Agriculture Prod. - Livestock	0.22
19	17	Special Trade Contractors	1.40	54	13	Oil & Gas Extraction	0.66	89	492	Gas Production & Distribution	0.22
20	2421	Sawmills & Planing Mills - Gen'l	1.40	55	2033	Canned Fruits & Vegetables	0.66	90	14	Non-Metallic Minerals Exc. Fuels	0.21
21	179	Misc. Special Trades Contractors	1.37	56	331	Blast Furnace & Basic Steel	0.65	91		Services	0.21
22	242	Sawmills & Planing Mills	1.37	57	16	Heavy Construction Contr.	0.62	92	23	Apparel & Other Textile Prods.	0.18
23	152	Residential Building Contr.	1.36	58	20	Food & Kindred Products	0.62	93	239	Misc. Fabricated Textile Prods.	0.18
24	174	Masonry, Stone Work, Plastering	1.35	59	203	Preserved Fruits & Vegetables	0.62	94	275	Commercial Printing	0.16
25	33	Primary Metal Industries	1.35	60	078	Landscape & Hort. Services	0.59	95	27	Printing & Publishing	0.15
26	15	General Building Contractors	1.34	61	162	Bridge, Tunnel, Water, Util.	0.58	96	291	Petroleum Refining	0.15
27	173	Electrical Work	1.34	62	265	Paperboard Containers & Boxes	0.58	97	491	Electrical Services	0.15
28	327	Concrete, Gypsum, Plaster Prods.	1.27	63	341	Metal Cans & Shipping Cont.	0.58	98	493	Combination Utility Services	0.15
29	76	Misc. Repair Services	1.24	64	372	Aircraft & Parts	0.54	99	271	Newspapers	0.14
30	01	Agriculture Prod. - Crops	1.22	65		Agriculture, Forestry, Fishing	0.53	100	3573	Electronic Computing Equipment	0.10
31	176	Roofing & Sheet Metal Work	1.22	66		Mining	0.53	101	48	Communication	0.10
32		Construction	1.20	67	22	Textile Mill Products	0.52	102	483	Radio & T.V. Broadcasting	0.10
33	35	Machinery Except Electrical	1.11	68	26	Paper & Allied Products	0.52	103	376	Guided Missiles, Space Vehicles	0.09
34	329	Misc. Non-Metallic Mineral Prods.	1.10	69	3621	Motors & Generators	0.51	104		Finance, Insurance, Real Estate	0.08
35	75	Auto Repair Serv. & Garages	1.09	70	49	Electric, Gas, & Sanitary Serv.	0.50	105	481	Telephone Communication	0.07

Table 17

Injury Type - Bodily Reaction
Rate Per 100 Worker-Years

No.	SIC	Industry	Rate	No.	SIC	Industry	Rate	No.	SIC	Industry	Rate
1	492	Gas Production & Distribution	2.71	36	264	Misc. Converted Paper Products	1.33	71		Agriculture, Forestry, Fishing	0.84
2	245	Wood Buildings & Mobile Homes	2.52	37	49	Electric, Gas, & Sanitary Serv.	1.31	72	25	Furniture & Fixtures	0.83
3	341	Metal Cans & Shipping Cont.	2.47	38	161	Highway & Street Construction	1.28	73	162	Bridge, Tunnel, Water, Util.	0.78
4	373	Ship & Boat Building & Repair	2.20	39	329	Misc. Non-Metallic Mineral Prods.	1.28	74	34	Leather & Leather Products	0.78
5	495	Sanitary Services	2.20	40		Construction	1.27	75	275	Commercial Printing	0.77
6	174	Masonry, Stone Work, Plastering	2.15	41	175	Carpentering & Flooring	1.24	76	3533	Oil Field Machinery	0.77
7	08	Forestry	2.10	42	491	Electrical Services	1.24	77	361	Electric Distributing Equip.	0.77
8	2421	Sawmills & Planing Mills - Gen'l	2.01	43	154	Non-Residential Building Contr.	1.22	78	29	Petroleum & Coal Products	0.74
9	242	Sawmills & Planing Mills	1.98	44	344	Fabr. Structural Metal Prods.	1.19	79	355	Special Industry Machinery	0.74
10	01	Agriculture Prod. - Crops	1.92	45	179	Misc. Special Trade Contractors	1.17	80	14	Non-Metallic Minerals Exc. Fuels	0.72
11	42	Trucking & Warehousing	1.84	46	3443	Fabricated Plate Work	1.17	81	291	Petroleum Refining	0.72
12	421	Trucking Local & Long Distance	1.83	47	45	Transportation by Air	1.17	82	35	Machinery Except Electrical	0.72
13	24	Lumber & Wood Products	1.81	48	306	Fabricated Rubber Products, NEC	1.15	83	2834	Pharmaceutical Preparations	0.71
14	171	Plumbing, Heating, Air Cond.	1.80	49	284	Soap, Cleaners, & Toilet Goods	1.13	84	27	Printing & Publishing	0.70
15	371	Motor Vehicles & Equipment	1.74	50	34	Fabricated Metal Products	1.13	85	75	Auto Repair Serv. & Garages	0.70
16	2033	Canned Fruits & Vegetables	1.57	51	30	Rubber & Misc. Plastic Prods.	1.12	86	078	Landscape & Hort. Services	0.69
17	17	Special Trade Contractors	1.56	52	15	General Building Contr.	1.09	87	372	Aircraft & Parts	0.69
18	20	Food & Kindred Products	1.56	53	3444	Sheet Metal Work	1.09	88	271	Newspapers	0.67
19	204	Grain Mill Products	1.54	54		Transportation & Public Utilis.	1.09	89	331	Blast Furnace & Basic Steel	0.63
20	203	Preserved Fruits & Vegetables	1.52	55	307	Misc. Plastic Products	1.08	90	483	Radio & T.V. Broadcasting	0.62
21	493	Combination Utility Services	1.53	56	152	Residential Building Contr.	1.07	91		Services	0.60
22	201	Meat Products	1.51	57	335	Non-Ferrous Rolling & Drawing	1.04	92	131	Crude Petr'l & Nat'l Gas	0.58
23	2034	Dehydrated Fruits, Veg., & Soups	1.51	58	3471	Plating & Polishing	1.04	93	283	Drugs	0.58
24	202	Dairy Products	1.50	59	37	Transportation Equipment	0.99	94	3643	Current Carrying Wiring Devices	0.58
25	799	Misc. Amusement Recreation	1.50	60	28	Chemicals & Allied Products	0.97	95	76	Misc. Repair Services	0.56
26	172	Painting, Paper Hanging, Decor.	1.47	61		Manufacturing	0.96	96	48	Communication	0.55
27	26	Paper & Allied Products	1.46	62	346	Metal Forgings & Stampings	0.96	97	36	Electric & Electronic Equipment	0.54
28	265	Paperboard Containers & Boxes	1.44	63	13	Oil & Gas Extraction	0.95	98	38	Instruments & Related Products	0.53
29	32	Stone, Clay, & Glass Prods.	1.44	64	285	Paints & Allied Products	0.95	99	3573	Electronic Computing Equipment	0.46
30	327	Concrete, Gypsum, Plaster Prods.	1.44	65	33	Primary Metal Industries	0.95	100	23	Apparel & Other Textile Prods.	0.45
31	176	Roofing & Sheet Metal Work	1.42	66	239	Misc. Fabricated Textile Prods.	0.92	101	481	Telephone Communication	0.43
32	243	Millwork, Plywood, Struct. Memb.	1.41	67	3621	Motors & Generators	0.92	102	02	Agriculture Prod. - Livestock	0.40
33	138	Oil & Gas Field Services	1.38	68		Mining	0.91	103	376	Guided Missiles, Space Vehicles	0.35
34	173	Electrical Work	1.37	69	22	Textile Mill Products	0.89	104		Finance, Insurance, Real Estate	0.27
35	2431	Millwork	1.37	70	16	Heavy Construction Contr.	0.88	105	40	Railroad Transportation	0.00

Table 18

Injury Type - Overexertion Rate
Rate Per 100 Worker-Years

No.	SIC	Industry	Rate	No.	SIC	Industry	Rate	No.	SIC	Industry	Rate
1	495	Sanitary Services	11.49	36	3533	Oil Field Machinery	4.82	71	799	Misc. Amusement Recreation	2.84
2	341	Metal Cans & Shipping Cont.	8.02	37	25	Furniture & Fixtures	4.80	72	37	Transportation Equipment	2.77
3	201	Meat Products	7.72	38	33	Primary Metal Industries	4.76	73	361	Electric Distributing Equipment	2.75
4	245	Wood Buildings & Mobile Homes	7.40	39	327	Concrete, Gypsum, Plaster Prods.	4.69	74	13	Oil & Gas Extraction	2.74
5	2431	Millwork	6.84	40	3471	Plating & Polishing	4.61	75	275	Commercial Printing	2.70
6	2421	Sawmills & Planing Mills - Gen'l	6.66	41	154	Non-Residential Building Contr.	4.57	76	331	Blast Furnace & Basic Steel	2.63
7	242	Sawmills & Planing Mills	6.51	42	203	Preserved Fruits & Vegetables	4.53	77	493	Combination Utility Services	2.60
8	265	Paperboard Containers & Boxes	6.48	43	202	Dairy Products	4.43	78	078	Landscape & Hort. Services	2.59
9	42	Trucking & Warehousing	6.45	44	307	Misc. Plastic Products	4.27	79	76	Misc. Repair Services	2.55
10	306	Fabricated Rubber Products, NEC	6.32	45	373	Ship & Boat Building & Repairing	4.16	80		Mining	2.53
11	421	Trucking Local & Long Distance	6.28	46	49	Electric, Gas, & Sanitary Serv.	4.10	81	16	Heavy Construction Contr.	2.52
12	243	Millwork, Plywood, Struct. Memb.	6.20	47	2033	Canned Fruits & Vegetables	4.10	82		Agriculture Forestry Fishing	2.33
13	204	Grain Mill Products	6.16	48	45	Transportation by Air	4.09	83	27	Printing & Publishing	2.24
14	3444	Sheet Metal Work	6.15	49		Construction	4.07	84	162	Bridge, Tunnel, Water, Util.	2.19
15	24	Lumber & Wood Products	6.11	50	152	Residential Building Contr.	4.07	85	75	Auto Repair Service & Garages	1.97
16	285	Paints & Allied Products	6.04	51	3443	Fabricated Plate Work	4.07	86	491	Electrical Services	1.97
17	3621	Motors & Generators	5.90	52	15	General Building Contractors	4.02	87	36	Electric & Electronic Equip.	1.91
18	174	Masonry, Stone Work, Plastering	5.88	53	138	Oil & Gas Field Services	3.94	88	29	Petroleum & Coal Products	1.86
19	26	Paper & Allied Products	5.88	54	28	Chemicals & Allied Products	3.87	89		Services	1.86
20	346	Metal Forgings & Stampings	5.80	55	492	Gas Production & Distribution	3.80	90	3643	Current Carrying Wiring Devices	1.76
21	176	Roofing & Sheet Metal Work	5.70	56	335	Non-Ferrous Rolling & Drawing	3.72	91	38	Instruments & Related Products	1.76
22	344	Fabr. Structural Metal Prods.	5.65	57	161	Highway & Street Construction	3.68	92	271	Newspapers	1.70
23	264	Misc. Converted Paper Products	5.53	58	31	Leather & Leather Products	3.64	93	131	Crude Petr. & Natural Gas	1.69
24	20	Food & Kindred Products	5.46	59	355	Special Industry Machinery	3.58	94	14	Non-Metallic Minerals Exc. Fuels	1.69
25	371	Motor Vehicles & Equipment	5.45	60		Manufacturing	3.49	95	372	Aircraft & Parts	1.69
26	329	Misc. Non-Metallic Mineral Prods.	5.44	61	22	Textile Mill Products	3.42	96	291	Petroleum Refining	1.62
27	01	Agriculture Prod. - Crops	5.35	62	173	Electrical Work	3.41	97	23	Apparel & Other Textile Prods.	1.50
28	179	Misc. Special Trade Contractors	5.34	63	284	Soap, Cleaners & Toilet Goods	3.38	98	3573	Electronic Computing Equipment	1.48
29	2034	Dehydrated Fruits, Veg. & Soups	5.34	64		Transportation & Public Utils.	3.35	99	483	Radio & T.V. Broadcasting	1.10
30	171	Plumbing, Heating, Air Cond.	5.31	65	35	Machinery Except Electrical	3.22	100	02	Agriculture Prod. - Livestock	1.08
31	32	Stone, Clay, & Glass Products	5.12	66	2834	Pharmaceutical Preparations	3.17	101	08	Forestry	1.05
32	34	Fabricated Metal Products	5.12	67	239	Misc. Fabricated Textile Prods.	3.06	102	376	Guided Missiles, Space Vehicles	0.79
33	175	Carpentering & Flooring	5.01	68	283	Drugs	2.98	103	48	Communication	0.69
34	30	Rubber & Misc. Plastic Prods.	4.91	69	172	Painting, Paper Hanging, Decor.	2.96	104		Finance, Insurance, Real Estate	0.55
35	17	Special Trade Contractors	4.90	70	40	Railroad Transportation	2.87	105	481	Telephone Communication	0.52

Table 19

Injury Type-Inhalation Absorption Etc.
Rate Per 100 Worker-Years

No.	SIC	Industry	Rate	No.	SIC	Industry	Rate	No.	SIC	Industry	Rate
1	3471	Plating & Polishing	2.37	36	36	Electric & Electronic Equip.	0.66	71	372	Aircraft & Parts	0.34
2	373	Ship & Boat Building & Repair	1.69	37	329	Misc. Non-Metallic Mineral Prods.	0.63	72	495	Sanitary Services	0.34
3	01	Agriculture Prod. - Crops	1.32	38	171	Plumbing, Heating, Air Cond.	0.62	73	239	Misc. Fabricated Textile Prods.	0.33
4	28	Chemicals & Allied Products	1.24	39	346	Metal Forgings & Stampings	0.62	74	243	Millwork, Plywood, Struct. Memb.	0.33
5	138	Oil & Gas Field Services	1.24	40		Mining	0.61	75	173	Electrical Work	0.32
6	284	Soap, Cleaners, & Toilet Goods	1.15	41	3621	Motors and Generators	0.61	76	2421	Sawmills & Planing Mills-Gen'l	0.32
7	285	Paints & Allied Products	1.12	42	76	Misc. Repair Services	0.60	77	131	Crude Petroleum & Natural Gas	0.31
8	2034	Dehydrated Fruits, Veg. & Soups	1.10	43	174	Masonry, Stone Work, Plastering	0.59	78	242	Sawmills & Planing Mills	0.31
9	3443	Fabricated Plate Work	1.10	44		Manufacturing	0.59	79	14	Non-Metallic Minerals Exc. Fuels	0.30
10	371	Motor Vehicles & Equipment	1.04	45	204	Grain Mill Products	0.58	80	15	General Building Contractors	0.30
11	34	Fabricated Metal Products	1.01	46	35	Machinery Except Electrical	0.58	81	331	Blast Furnace & Basic Steel	0.30
12	344	Fabr. Structural Metal Prods.	0.99	47	32	Stone, Clay, & Glass Products	0.57	82	26	Paper & Allied Products	0.29
13	203	Preserved Fruits & Vegetables	0.95	48	33	Primary Metal Industries	0.57	83		Services	0.29
14	3444	Sheet Metal Work	0.92	49	361	Electric Distributing Equip.	0.57	84	264	Misc. Converted Paper Products	0.28
15	306	Fabricated Rubber Products, NEC	0.89	50	37	Transportation Equipment	0.57	85	152	Residential Building Contr.	0.27
16	201	Meat Products	0.87	51	291	Petroleum Refining	0.53	86	42	Trucking & Warehousing	0.27
17	283	Drugs	0.84	52	17	Special Trade Contractors	0.52	87	49	Electric, Gas, & Sanitary Serv.	0.27
18	2033	Canned Fruits & Vegetables	0.82	53	3533	Oil Field Machinery	0.52	88	421	Trucking Local & Long Distance	0.26
19	172	Painting, Paper Hanging, Decor.	0.80	54	29	Petroleum & Coal Products	0.51	89	02	Agriculture Prod. - Livestock	0.24
20	202	Dairy Products	0.80	55	341	Metal Cans & Shipping Cont.	0.51	90	275	Commercial Printing	0.24
21	355	Special Industry Machinery	0.80	56	16	Heavy Construction Contractor	0.50	91	3573	Electronic Computing Equipment	0.23
22	078	Landscape & Hort. Services	0.77	57	22	Textile Mill Products	0.49	92	492	Gas Production & Distribution	0.22
23	179	Misc. Special Trades Contractors	0.77	58	493	Combination Utility Services	0.49	93		Transportation & Public Utilities	0.21
24	20	Food & Kindred Products	0.76	59	3643	Current Carrying Wiring Devices	0.46	94	27	Printing & Publishing	0.20
25	327	Concrete, Gypsum, Plaster Prods.	0.76	60		Construction	0.44	95	23	Apparel & Other Textile Prods.	0.18
26	13	Oil & Gas Extraction	0.75	61	154	Non-Residential Building Contr.	0.43	96	271	Newspapers	0.18
27	161	Highway & Street Construction	0.75	62	162	Bridge, Tunnel, Water, Util.	0.43	97	376	Guided Missiles, Space Vehicles	0.18
28	30	Rubber & Misc. Plastic Prods.	0.75	63	75	Auto Repair Service	0.42	98	265	Paper Board Containers & Boxes	0.16
29	307	Misc. Plastic Products	0.75	64	335	Non-Ferrous Rolling & Draining	0.41	99	175	Carpentering & Flooring	0.10
30	31	Leather & Leather Products	0.75	65	45	Transportation by Air	0.41	100	491	Electrical Services	0.10
31	245	Wood Building & Mobile Homes	0.74	66	24	Lumber & Wood Products	0.40	101	48	Communication	0.05
32	2834	Pharmaceutical Preparations	0.74	67	799	Misc. Amusement Recreation	0.39	102	483	Radio & T.V. Broadcasting	0.05
33	40	Railroad Transportation	0.72	68	2431	Millwork	0.36	103		Finance, Insurance, Real Estate	0.05
34	38	Instruments & Related Products	0.69	69	25	Furniture & Fixtures	0.34	104	481	Telephone Communication	0.04
35		Agriculture, Forestry, Fishing	0.66	70	176	Roofing & Sheet Metal Work	0.34	105	08	Forestry	0.00

Table 20

Smoothed Percentile Injury Rates Per
100 Worker-Years

Percentile	90	80	70	60	50	40	30	20	10
	Total Injury Rate	24.0	19.5	16.7	14.7	13.0	11.5	10.1	8.7
Lost Work Days Per Injury	9.9	8.9	8.2	7.7	7.2	6.8	6.3	5.7	5.2
Source:									
: Containers	4.08	2.68	1.98	1.53	1.20	0.94	0.73	0.34	0.35
: Chemicals	0.50	0.35	0.27	0.22	0.18	0.15	0.12	0.092	0.065
: Hand Tools	2.26	1.62	1.27	1.03	0.85	0.70	0.57	0.45	0.32
: Hoisting Apparatus & Conveyors	0.73	0.44	0.31	0.23	0.17	0.13	0.94	0.065	0.040
: Machines	2.78	1.71	1.20	0.89	0.67	0.51	0.37	0.26	0.16
: Metal Items	5.01	3.35	2.50	1.95	1.55	1.23	0.96	0.72	0.48
: Working Surfaces	2.83	2.22	1.86	1.60	1.39	1.21	1.04	0.87	0.68
Type :									
: Struck by or Against	7.65	5.80	4.75	4.01	3.42	2.92	2.46	2.02	1.53
: Fall from Elevation	1.85	1.31	1.03	0.83	0.68	0.56	0.45	0.36	0.25
: Fall on Same Level	1.72	1.40	1.20	1.06	0.94	0.83	0.73	0.63	0.51
: Caught in or Between	2.87	1.75	1.36	1.10	0.90	0.74	0.60	0.46	0.33
: Rubbed or Abraded	1.80	1.22	0.92	0.73	0.58	0.46	0.37	0.28	0.10
: Bodily Reaction	1.80	1.47	1.27	1.12	1.00	0.89	0.79	0.68	0.55
: Overexertion	6.19	4.95	4.21	3.66	3.22	2.83	2.47	2.10	1.68
: Inhalation, Absorption	0.92	0.69	0.56	0.47	0.40	0.34	0.28	0.23	0.17

Table 21

Ten Selected Industries Used in All of the Decile Plots

SIC	Industry
138	Oil and Gas Field Services
154	Non-Residential Building Construction
162	Bridge, Tunnel, Winter, Sewer Utility Lines
171	Plumbing, Heating, Air Conditioning
285	Paints and Allied Products
291	Petroleum Refining
346	Metal Forgings and Stampings
372	Aircraft and Parts Manufacturing
491	Electric Services Utilities
75	Auto Repair Services and Garages

Table 22

Injuries Per 100 Worker-Years Due to Accidents Involving
Chemicals Over an Extended Percentile Range

Percentile	0.02	0.05	0.1	0.2	0.5	1	2	5	10	20
Injuries per 100 Worker-Years	0.010	0.013	0.016	0.018	0.023	0.028	0.035	0.049	0.065	0.092

Percentile	50	80	90	95	98	99	99.5	99.8	99.9	99.95	99.98
Injuries per 100 Worker-Years	0.18	0.35	0.50	0.66	0.92	1.14	1.38	1.76	2.08	2.46	3.12

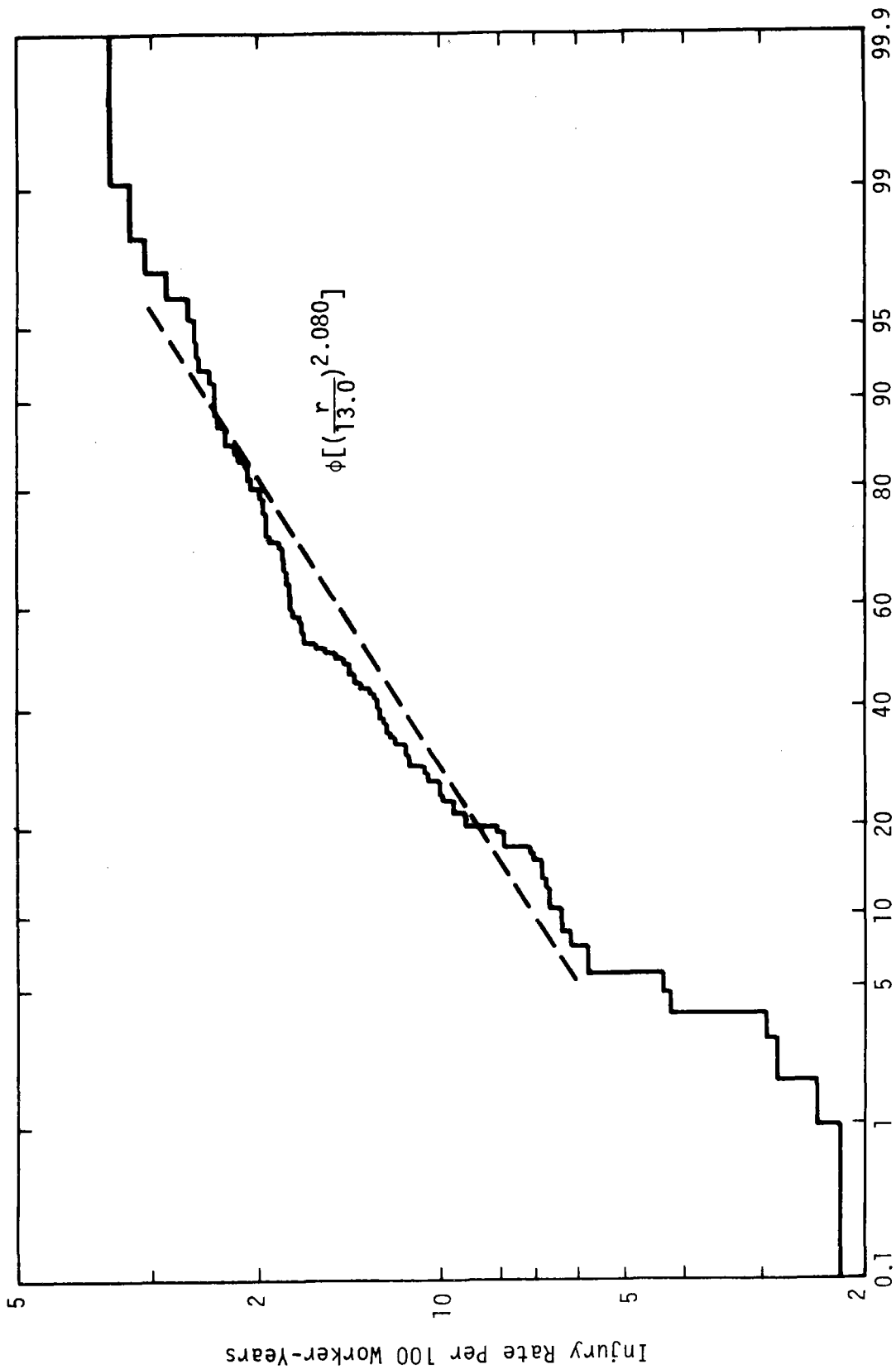


Figure 1
Percentile Plot of Total Injury Rate

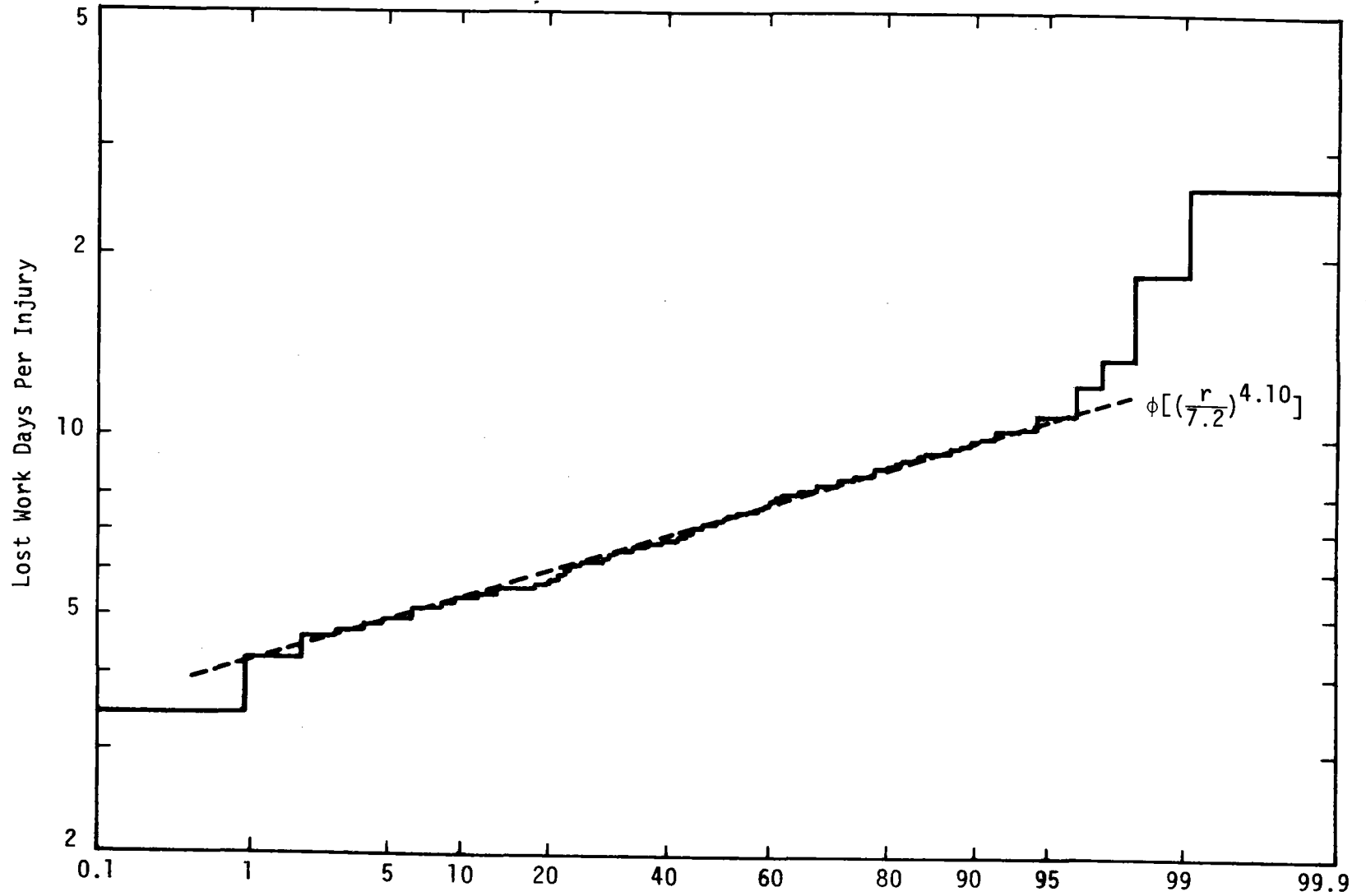


Figure 2

Percentile Plot of Work Days Lost Per Injury

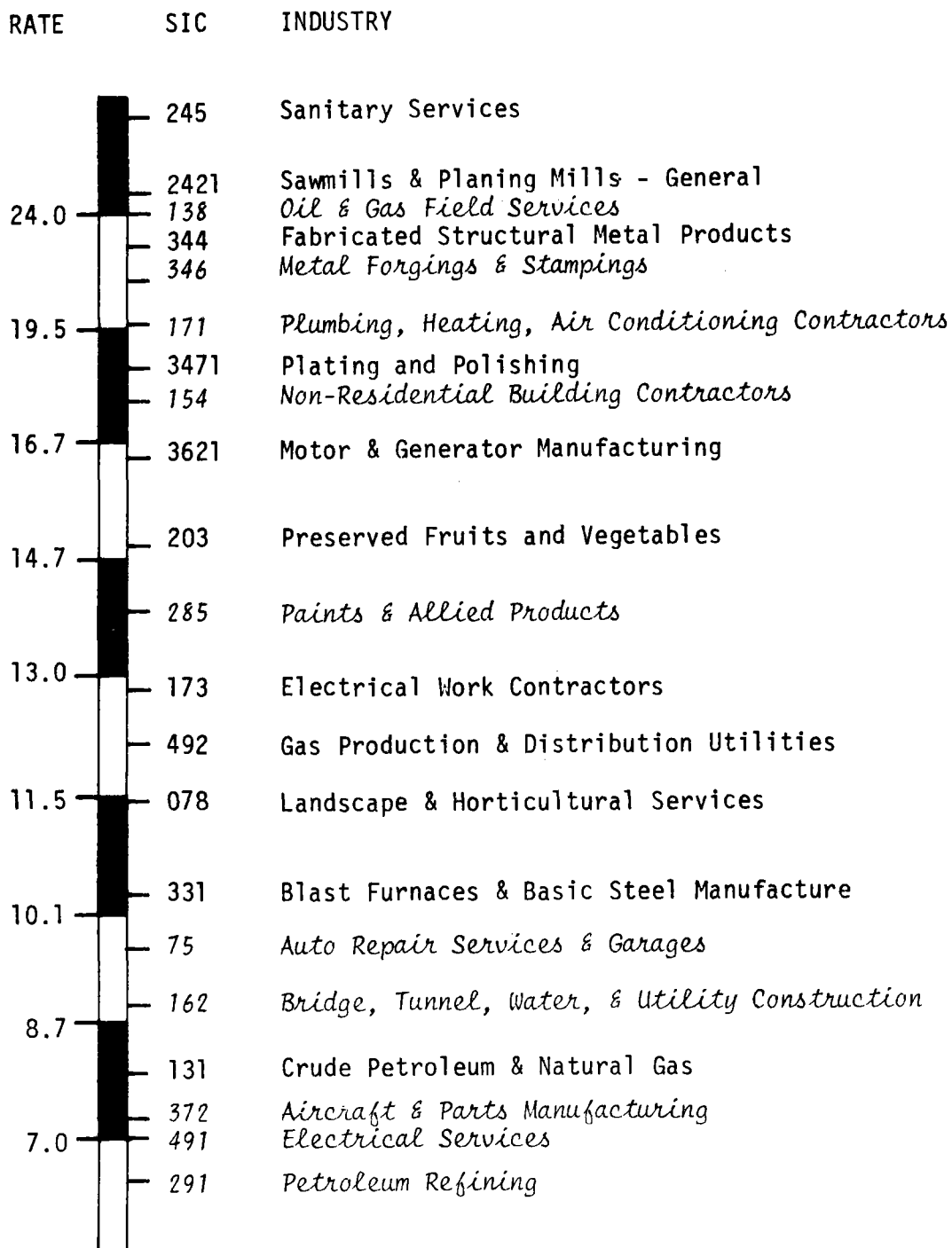


Figure 3

Total Injury Rate Per 100 Worker-Years

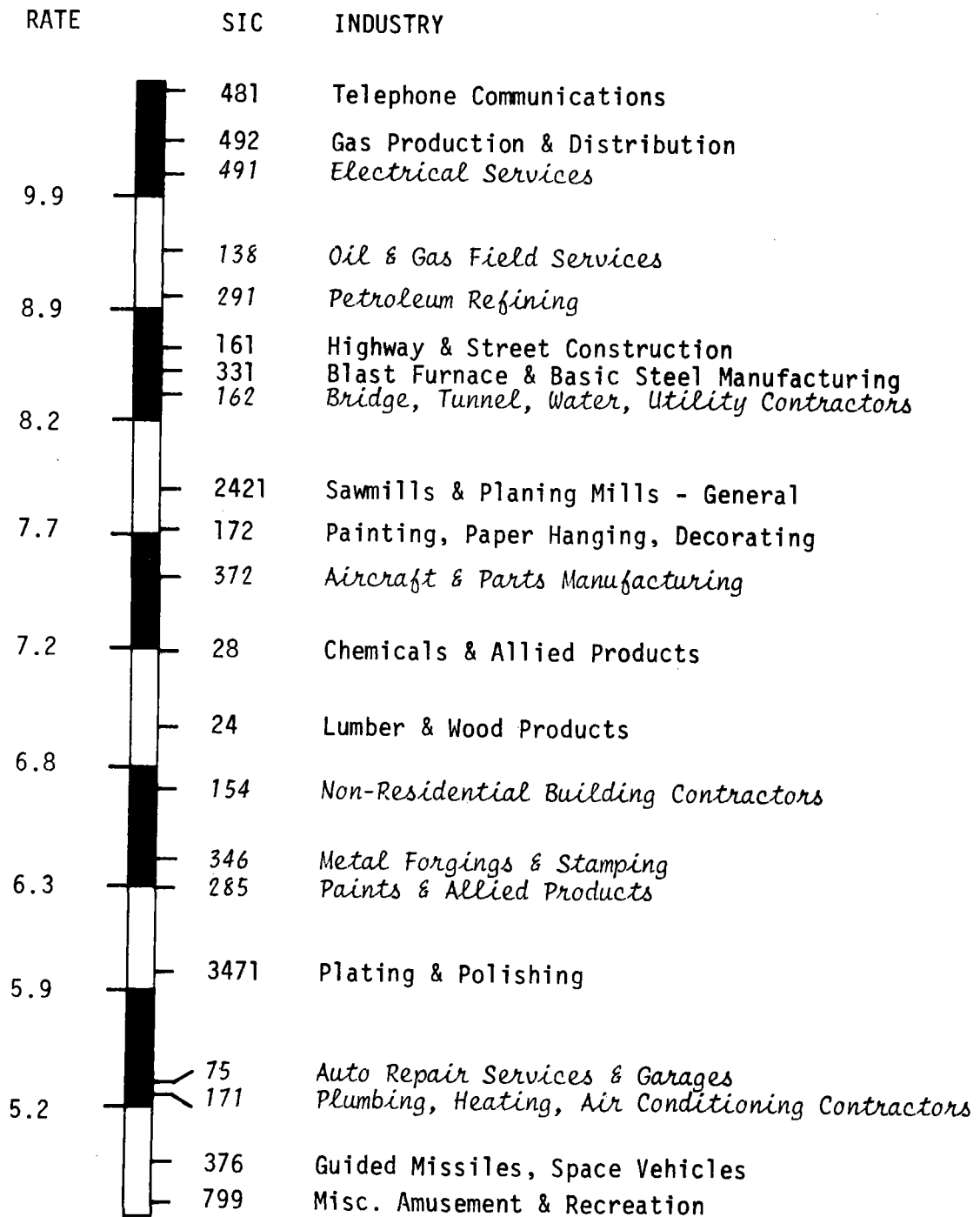


Figure 4

Lost Workdays Per Injury

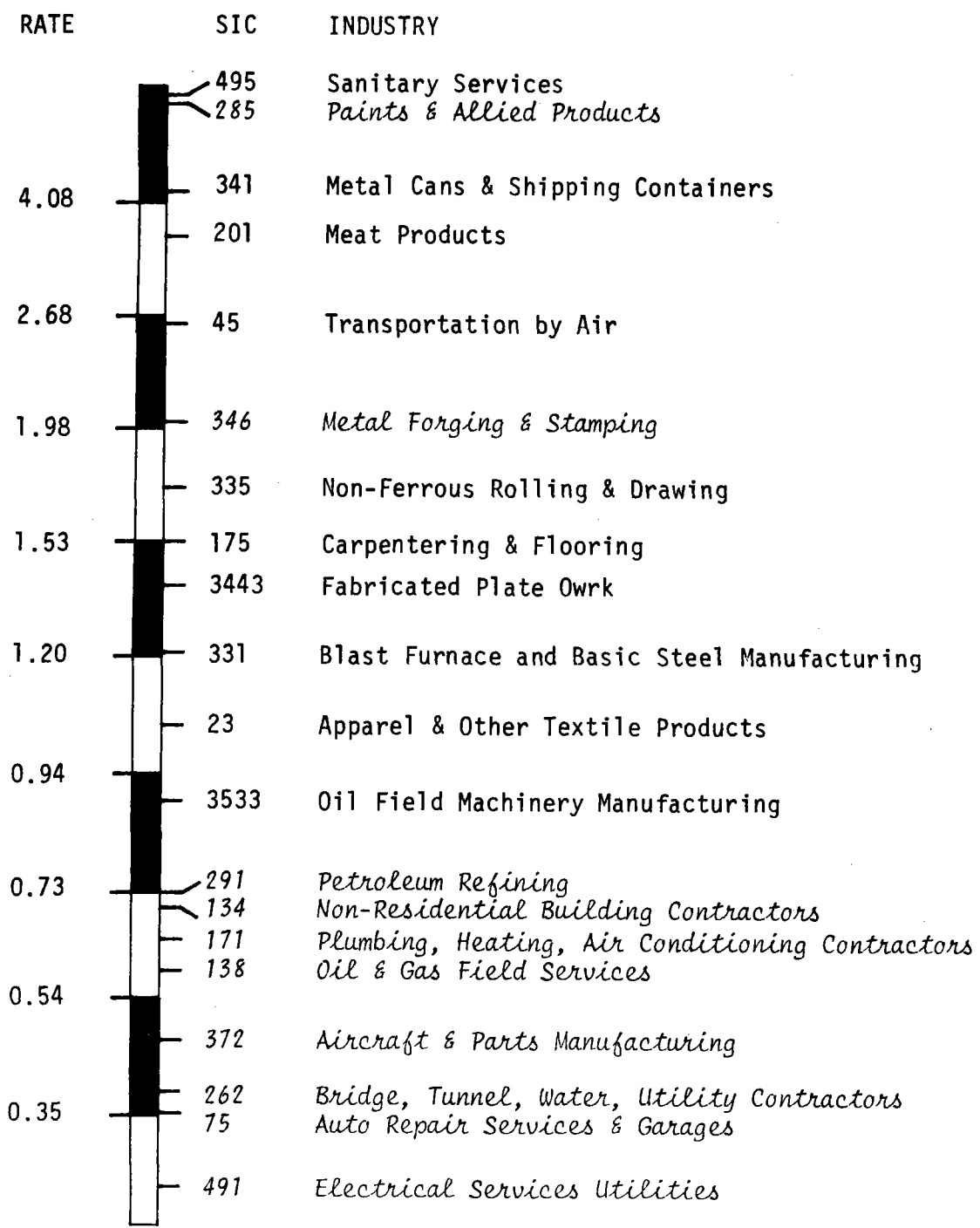


Figure 5
 Accident Source: Containers
 (Injury Rate Per 100 Worker-Years)

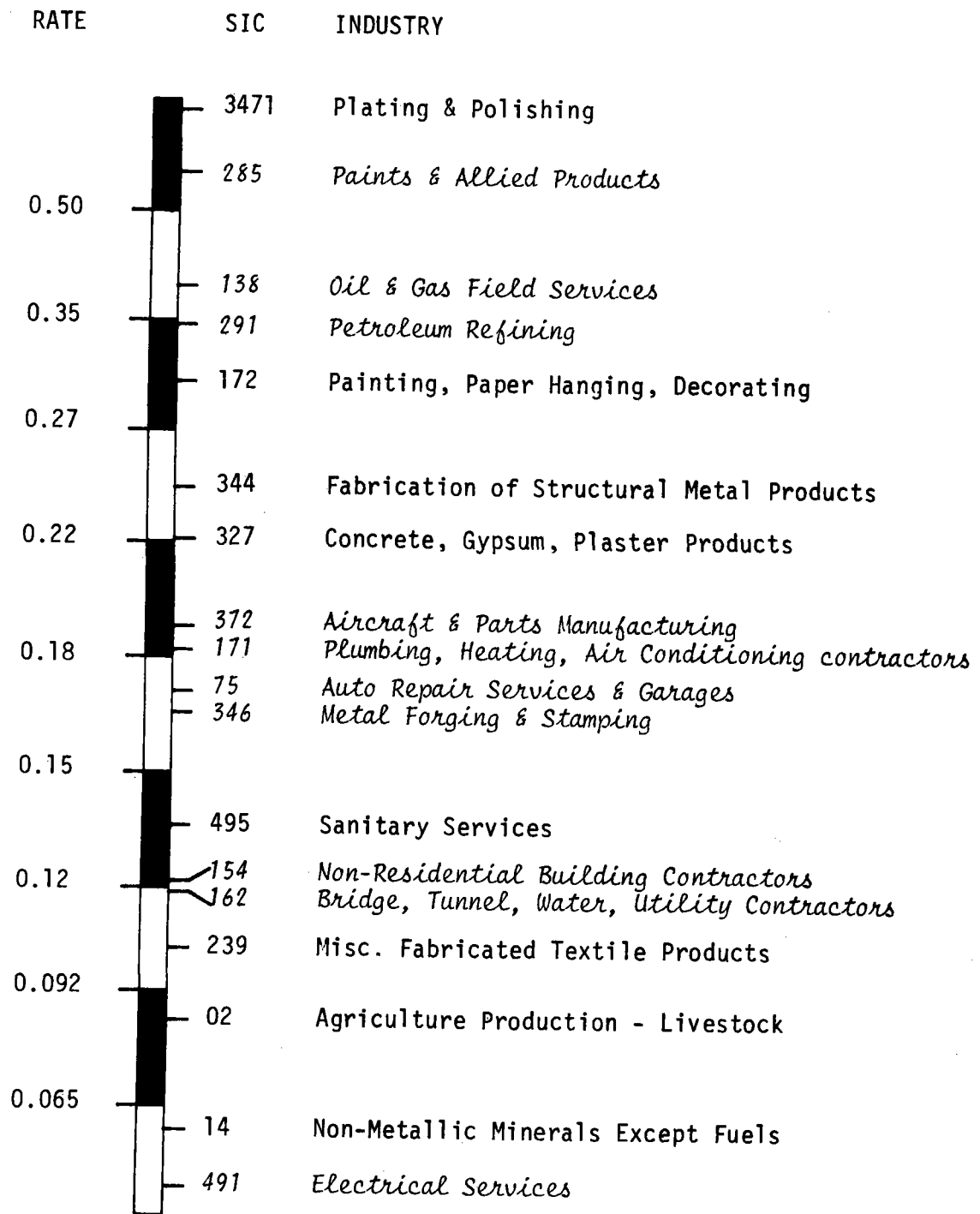


Figure 6

Accident Source: Chemicals
(Injury Rate Per 100 Worker-Years)

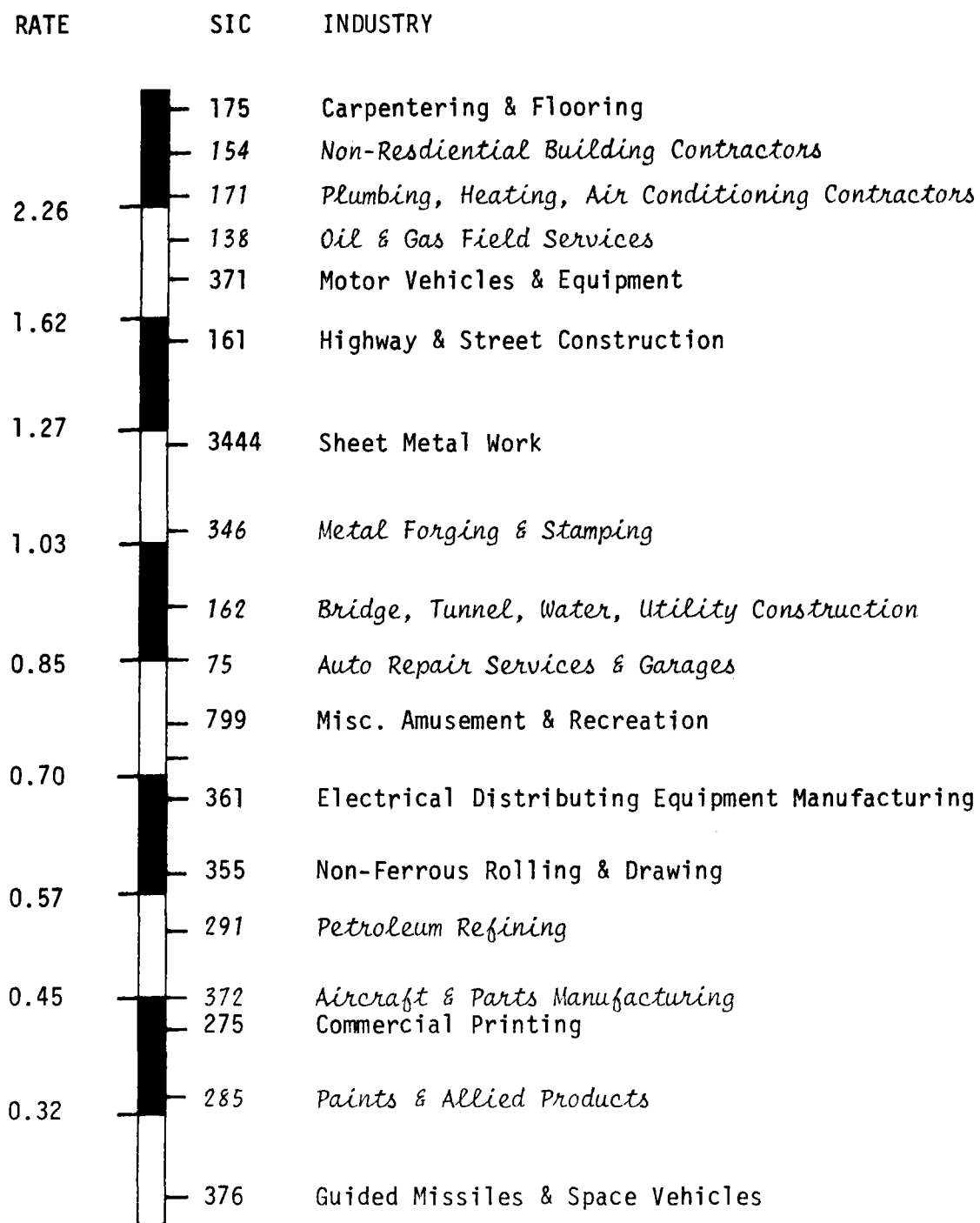


Figure 7

Accident Source: Hand Tools
(Injury Rates Per 100 Worker-Years)

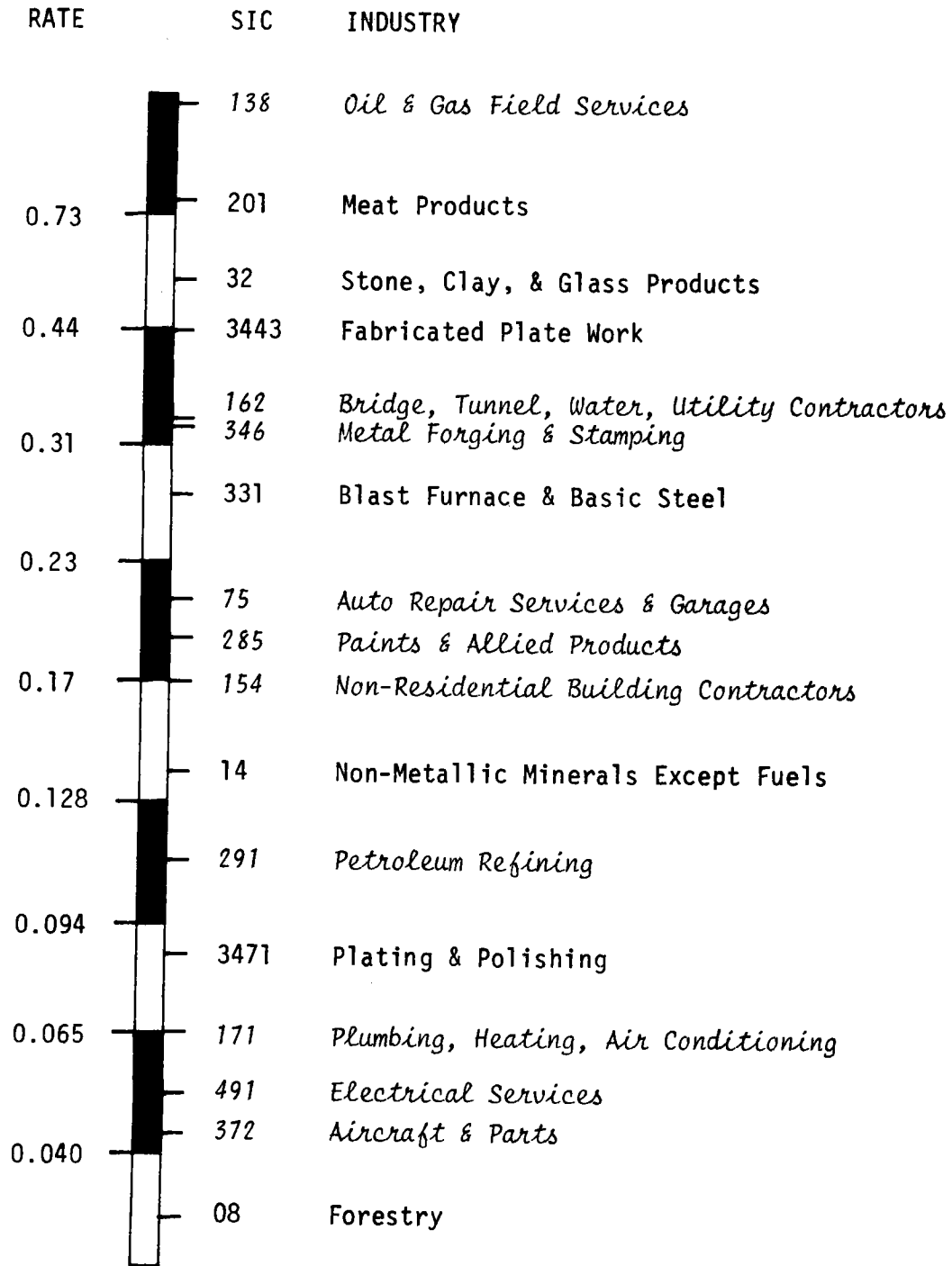


Figure 8

Accident Source: Hoisting Apparatus & Conveyors
(Injury Rate Per 100 Worker-Years)

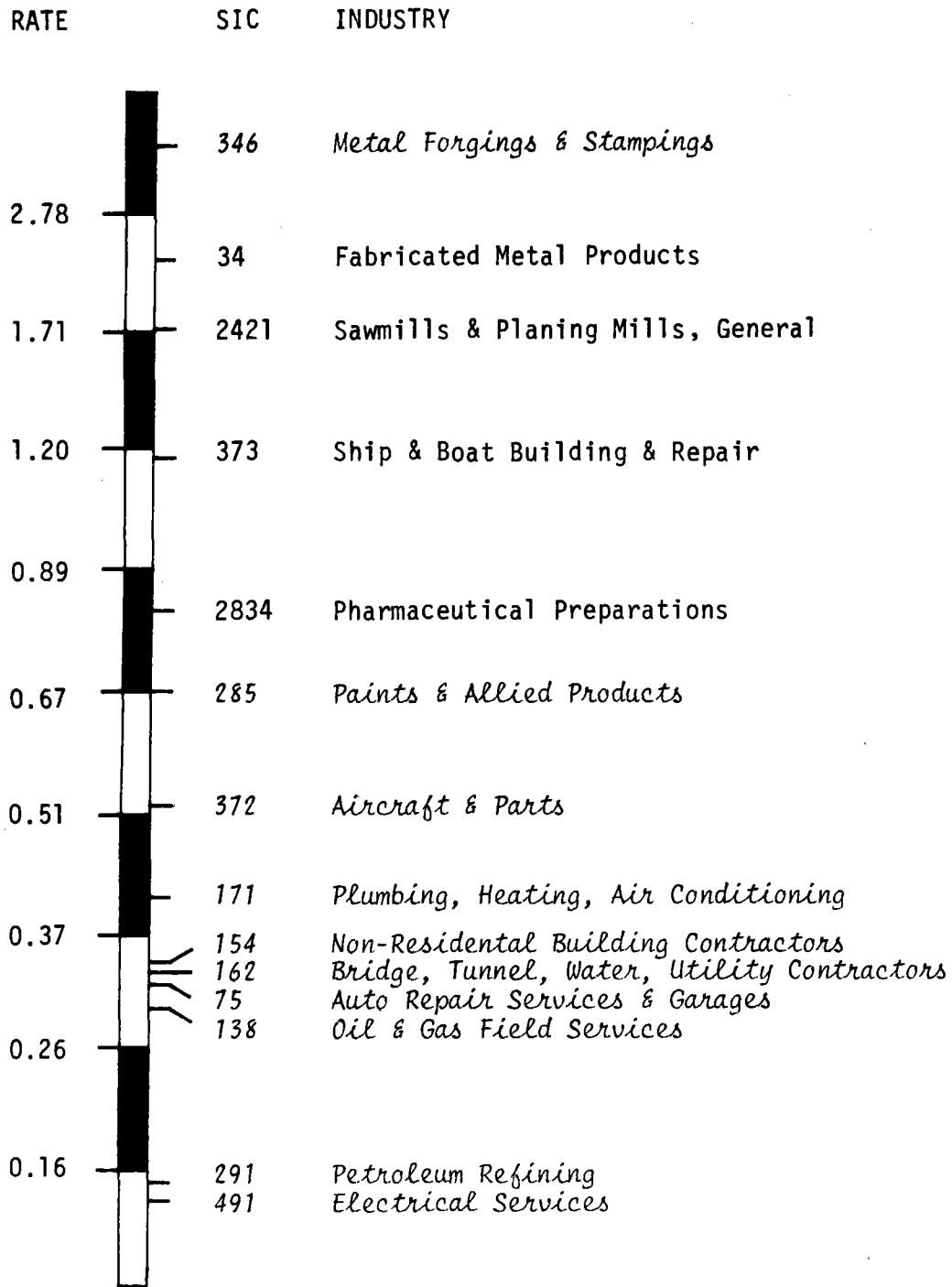


Figure 9

Accident Source: Machines
(Injury Rate Per 100 Worker-Years)

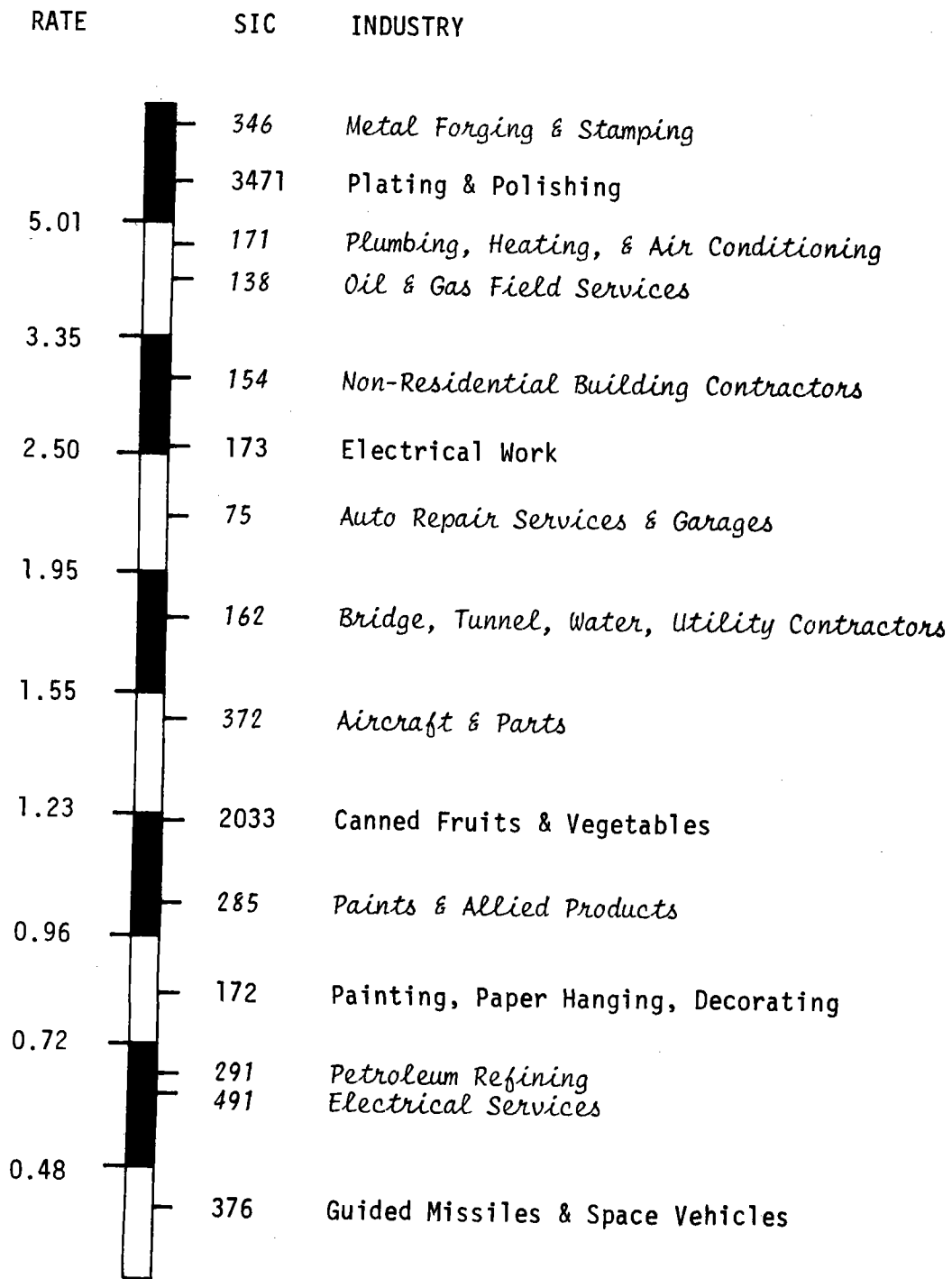


Figure 10

Accident Source: Metal Items
(Injury Rate Per 100 Worker-Years)

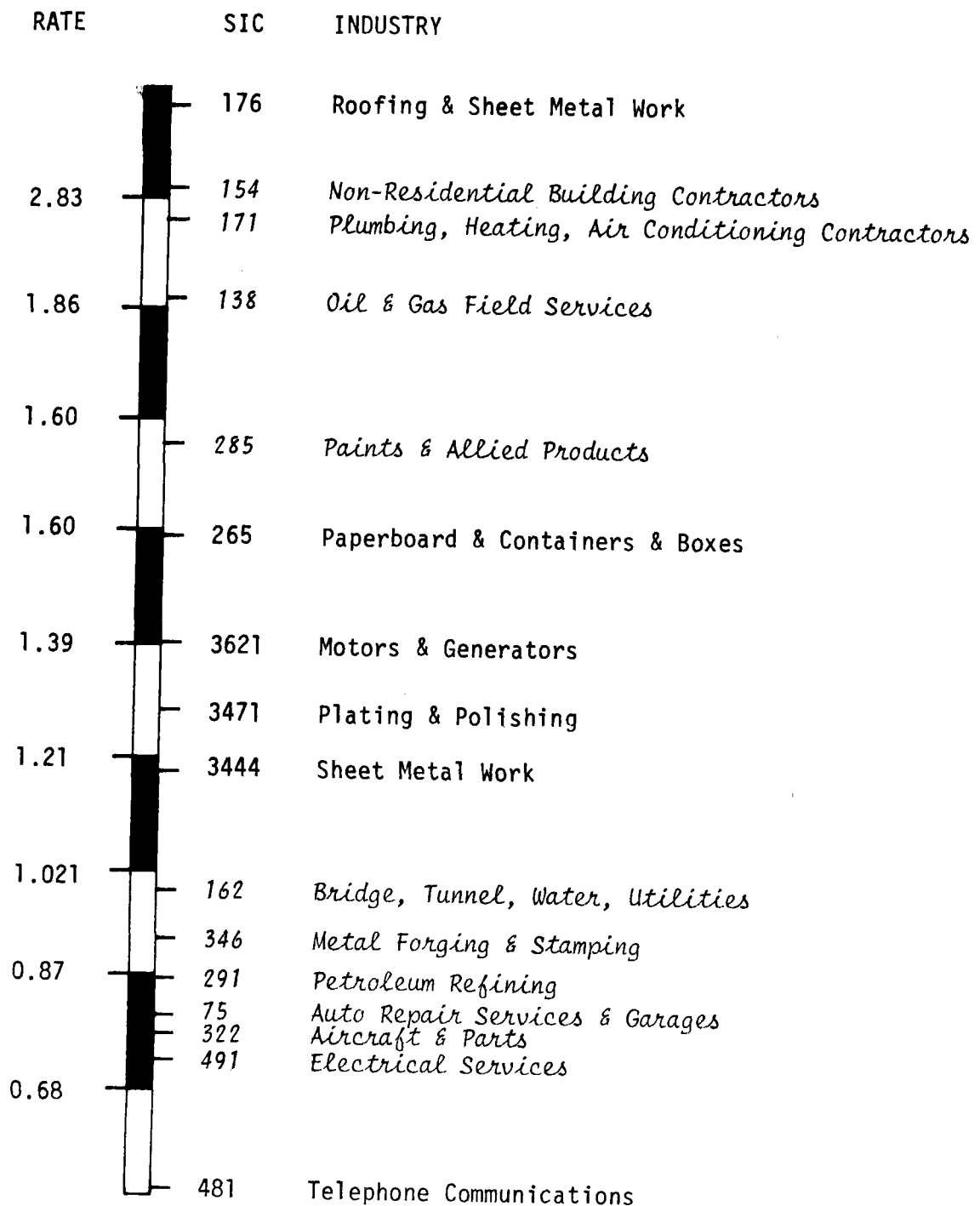


Figure 11

Accident Source: Working Surfaces
(Injury Rate Per 100 Worker-Years)

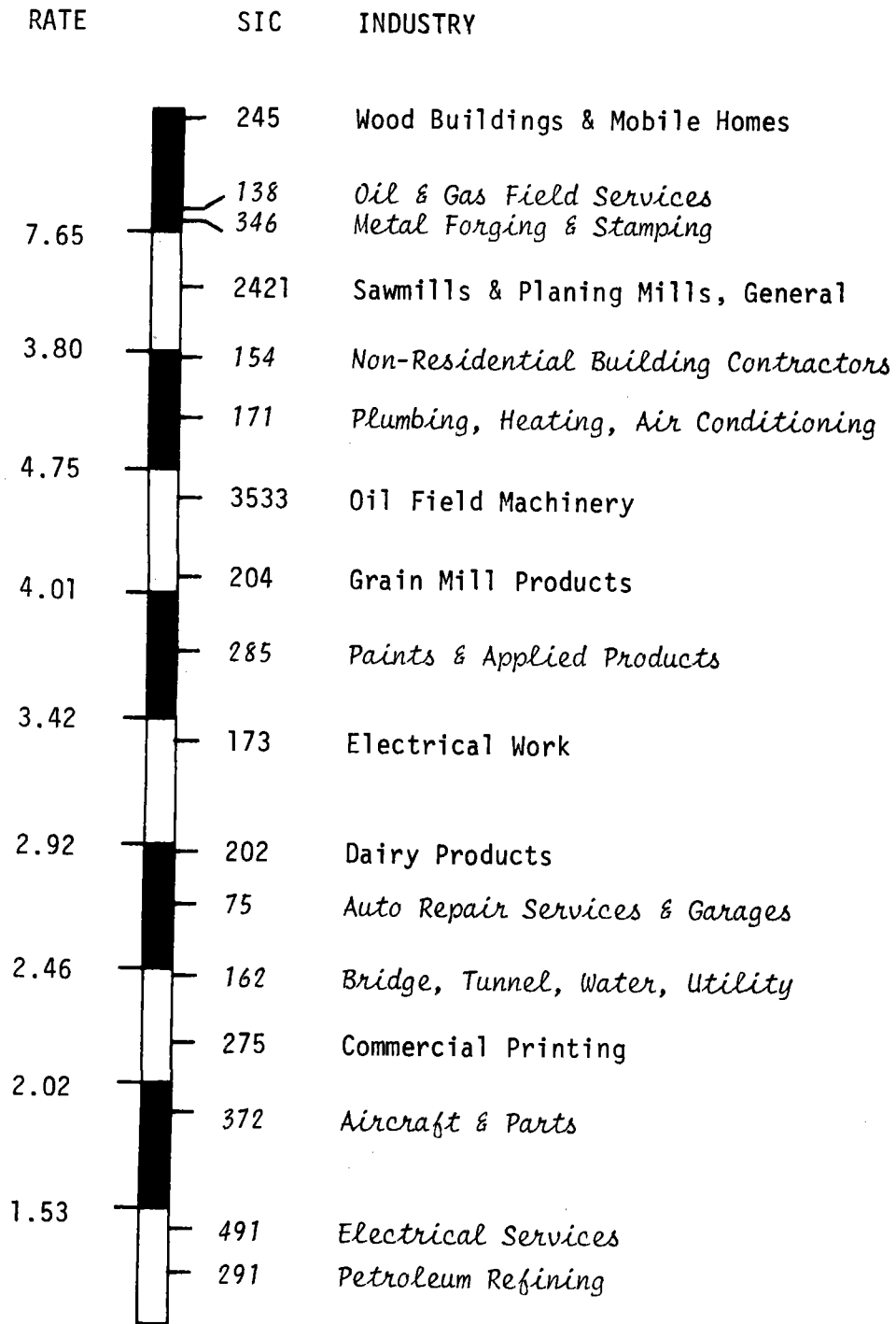


Figure 12

Injury Type: Struck By or Against
(Injury Rate Per 100 Worker-Years)

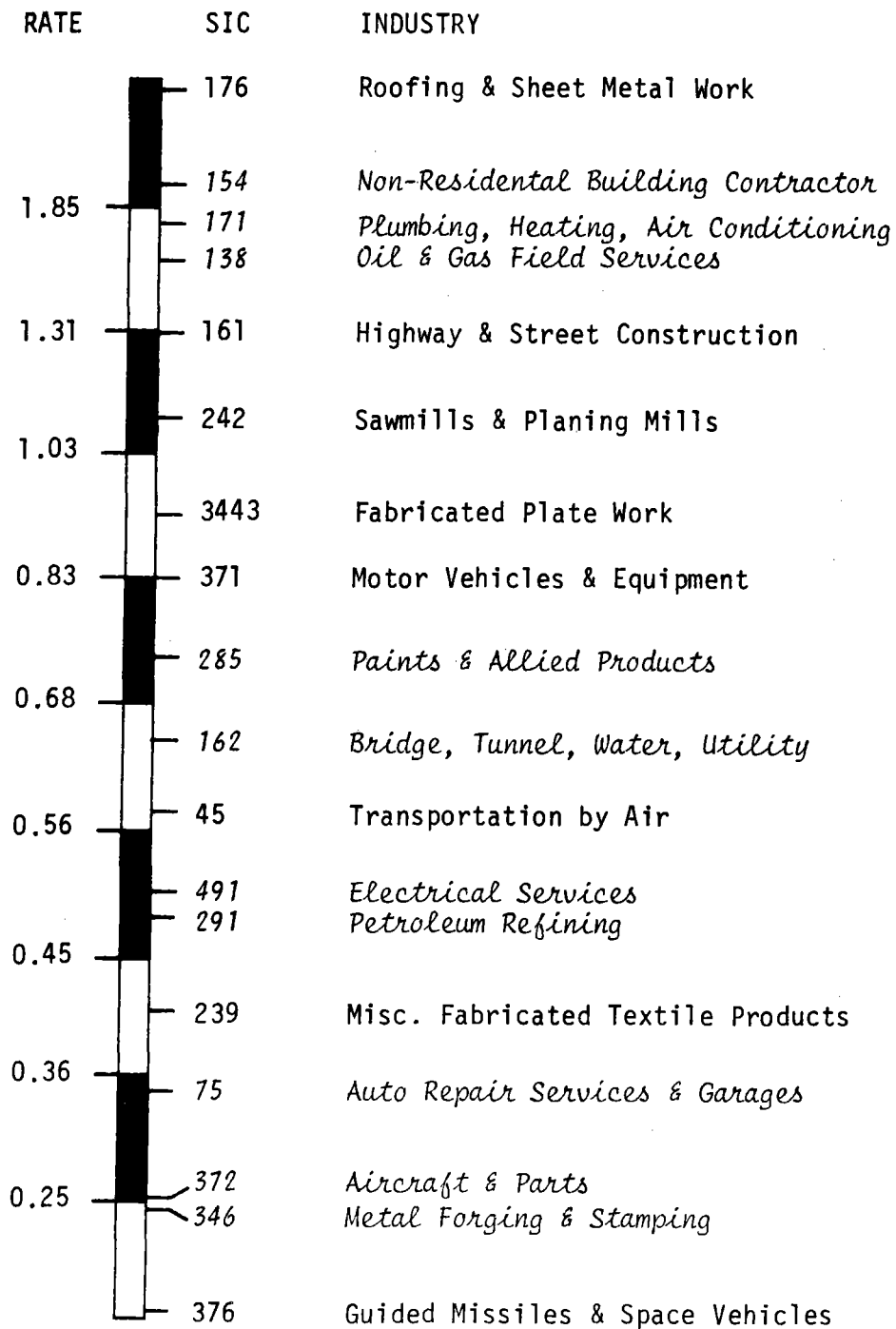


Figure 13

Injury Type: Fall From Elevation
(Injury Rate Per 100 Worker-Years)

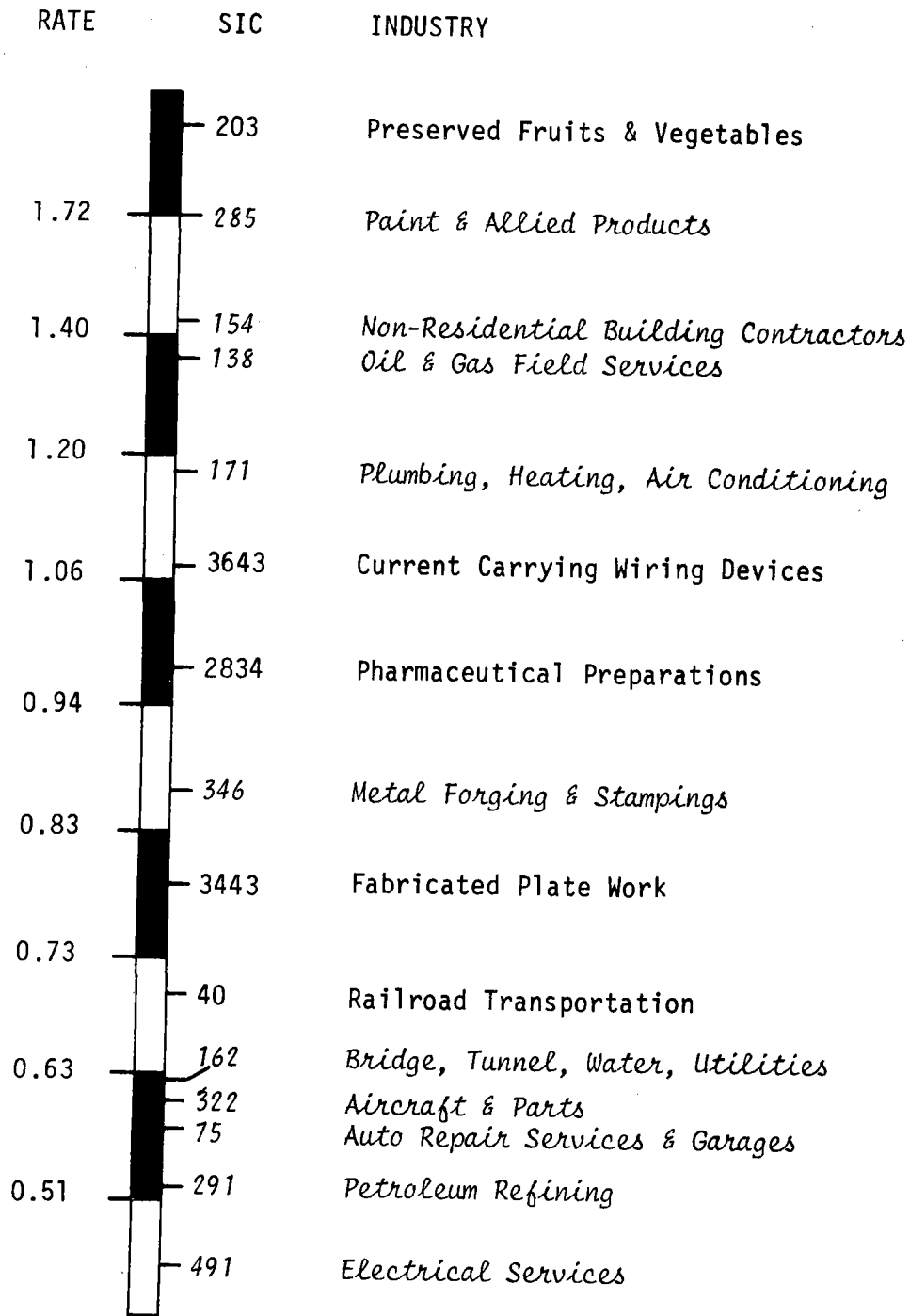


Figure 14

Injury Type: Fall on Same Elevation
(Injury Rate Per 100 Worker-Years)

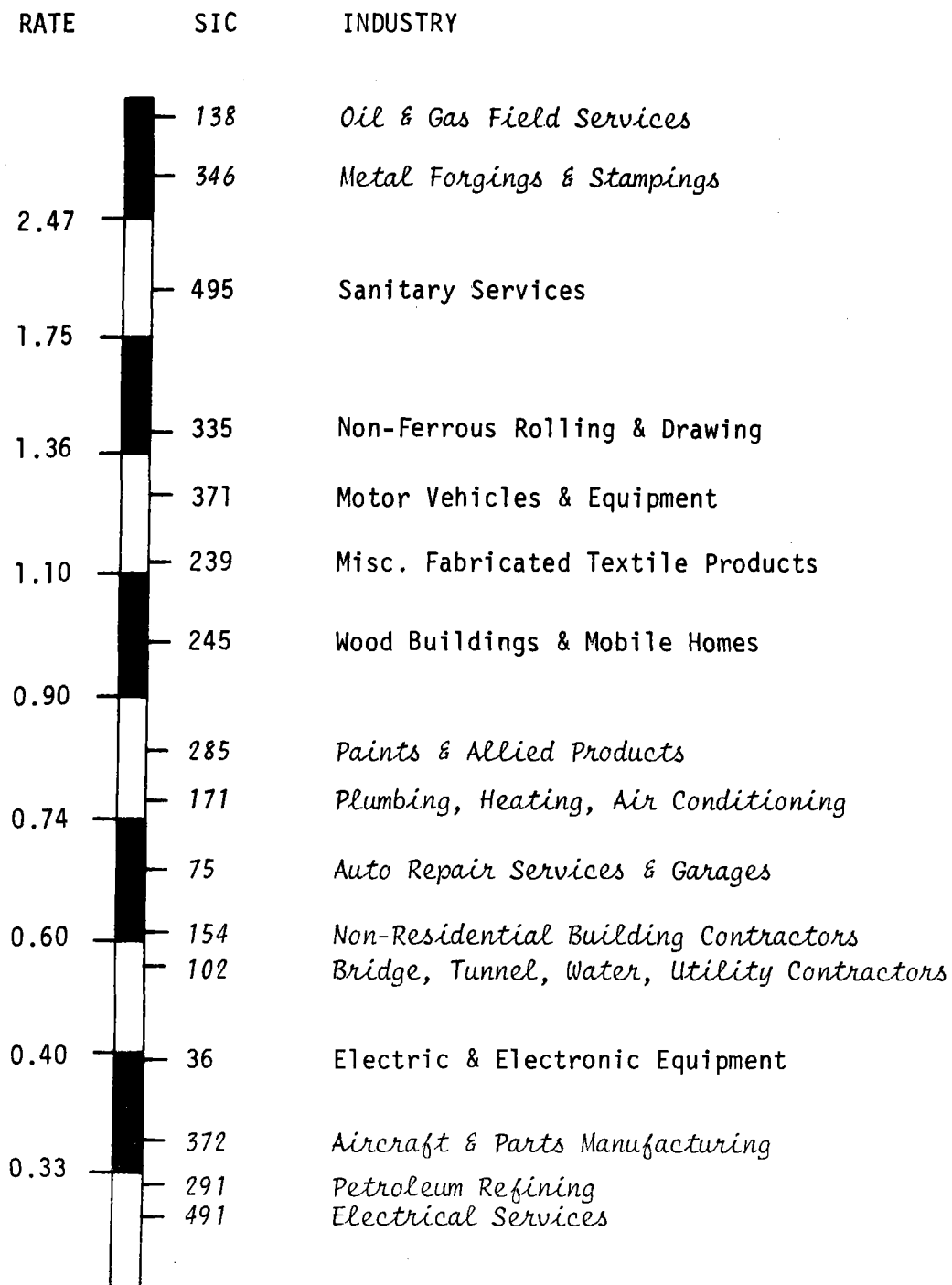


Figure 15

Injury Type: Caught In or Between
(Injury Rate Per 100 Worker-Years)

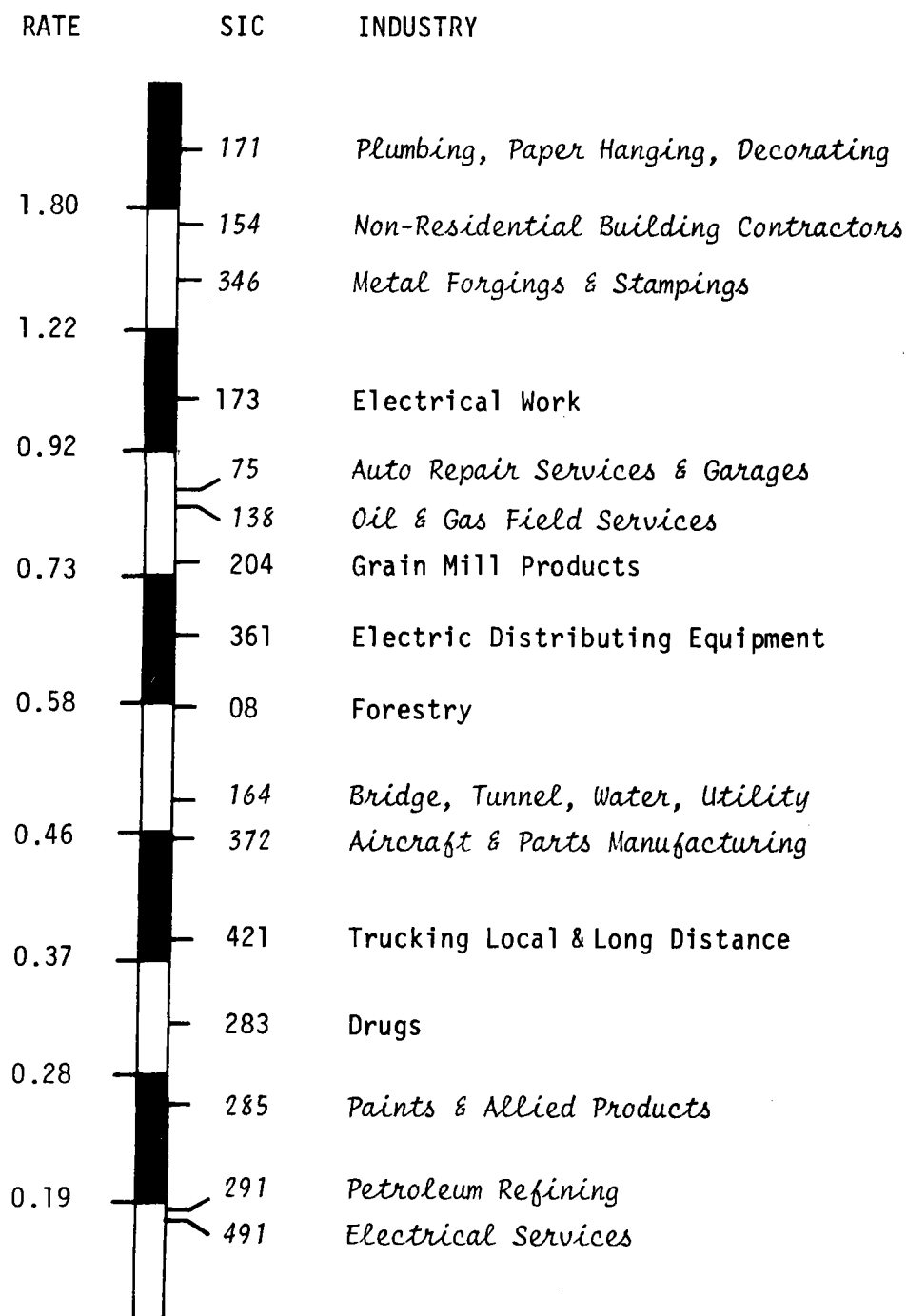


Figure 16

Injury Type: Rubbed or Abraded
(Injury Rate Per 100 Worker-Years)

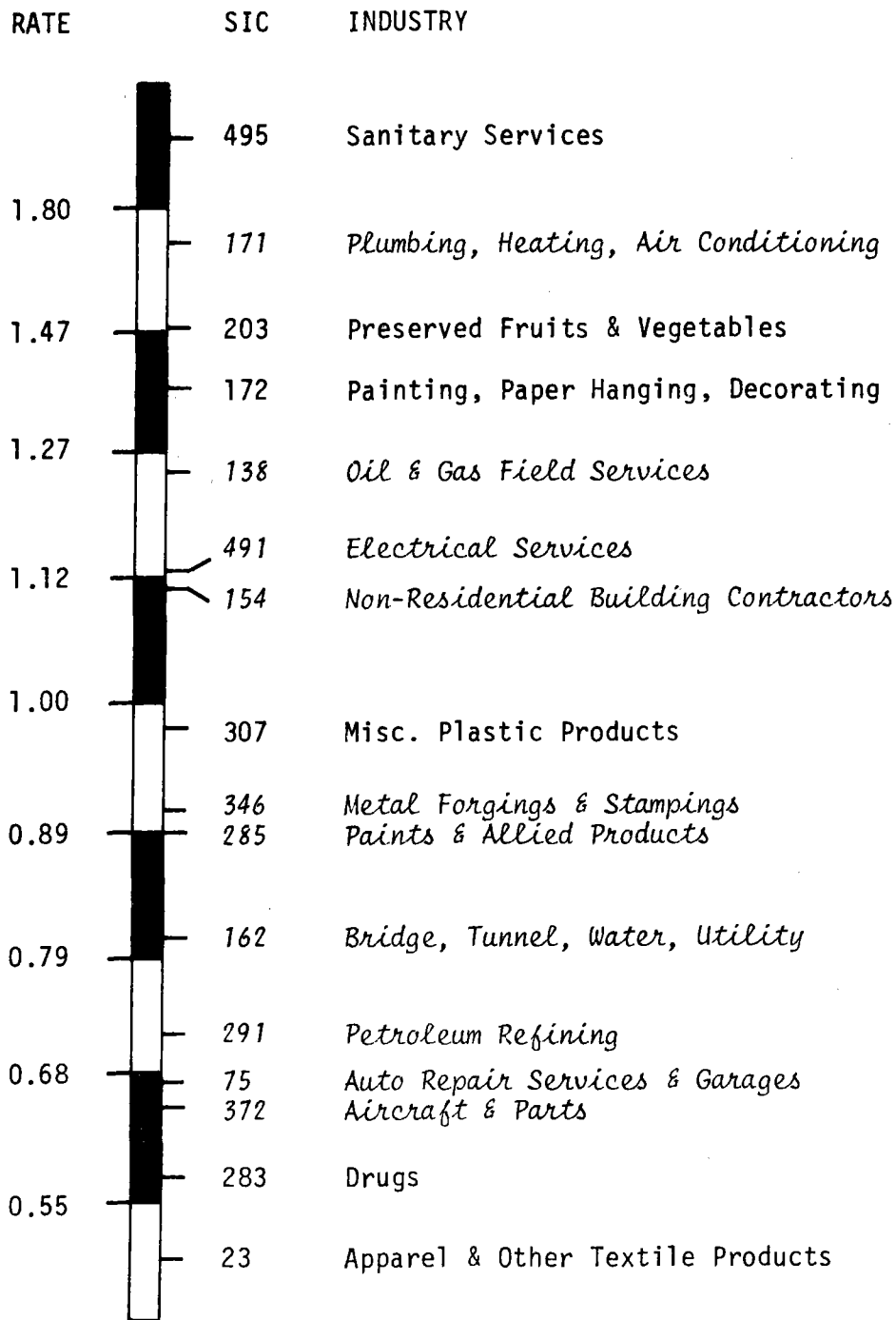


Figure 17

Injury Type: Bodily Reaction
(Injury Rate Per 100 Worker-Years)

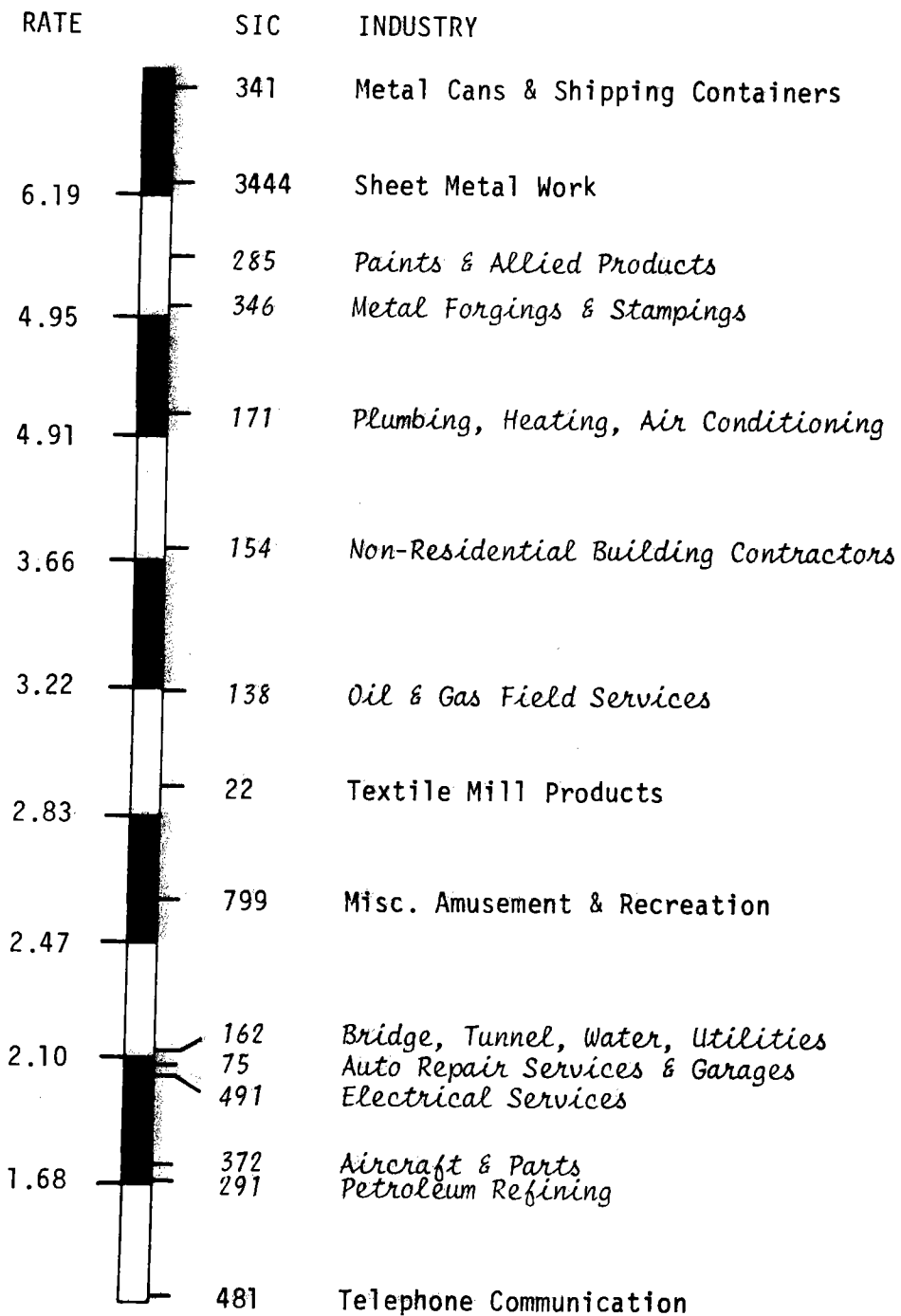


Figure 18

Injury Type: Overexertion
(Injury Rate Per 100 Worker-Years)

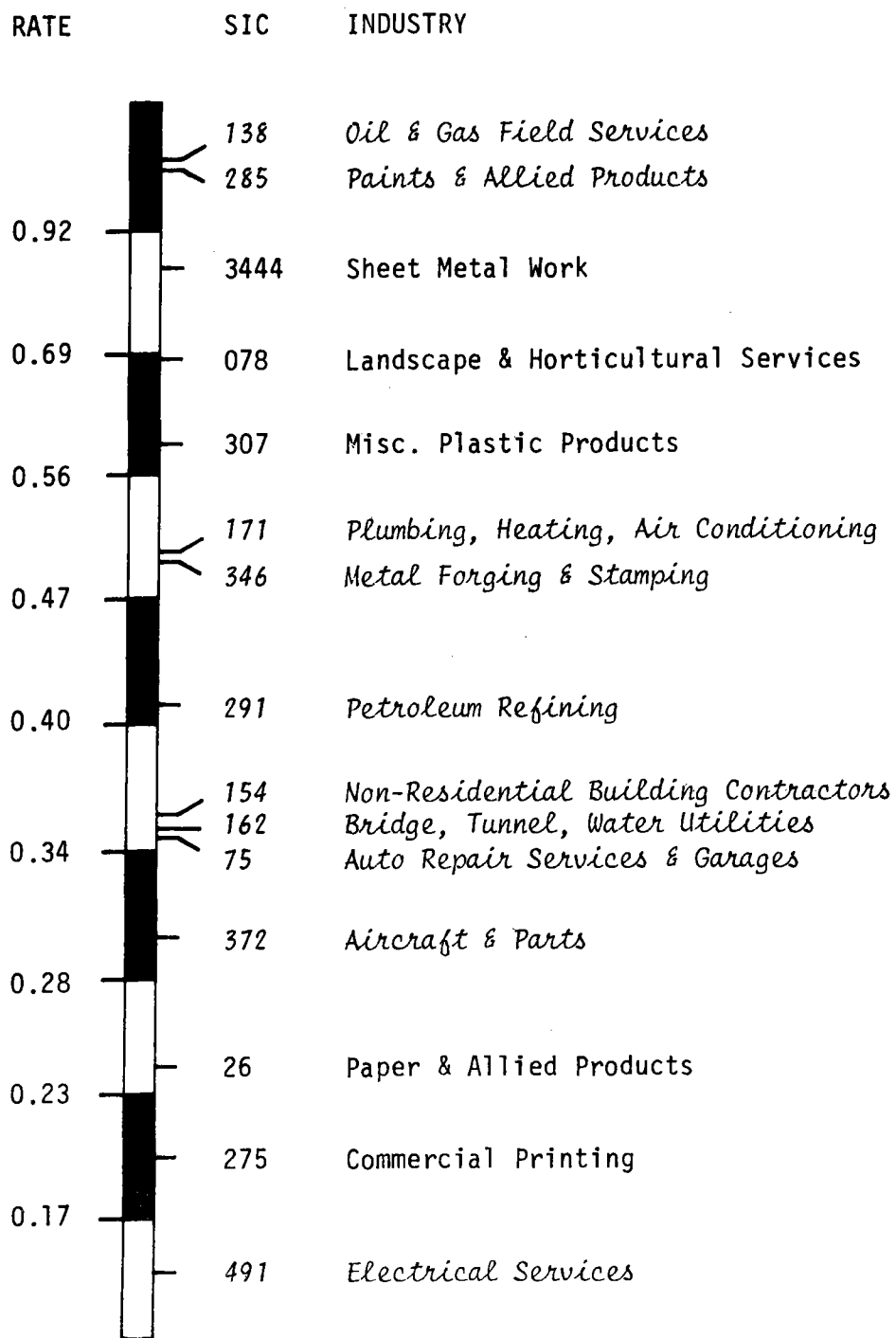


Figure 19

Injury Type: Inhalation & Absorption
(Injury Rate Per 100 Worker-Years)

Appendix A: Percentile plots of Accident sources and injury types

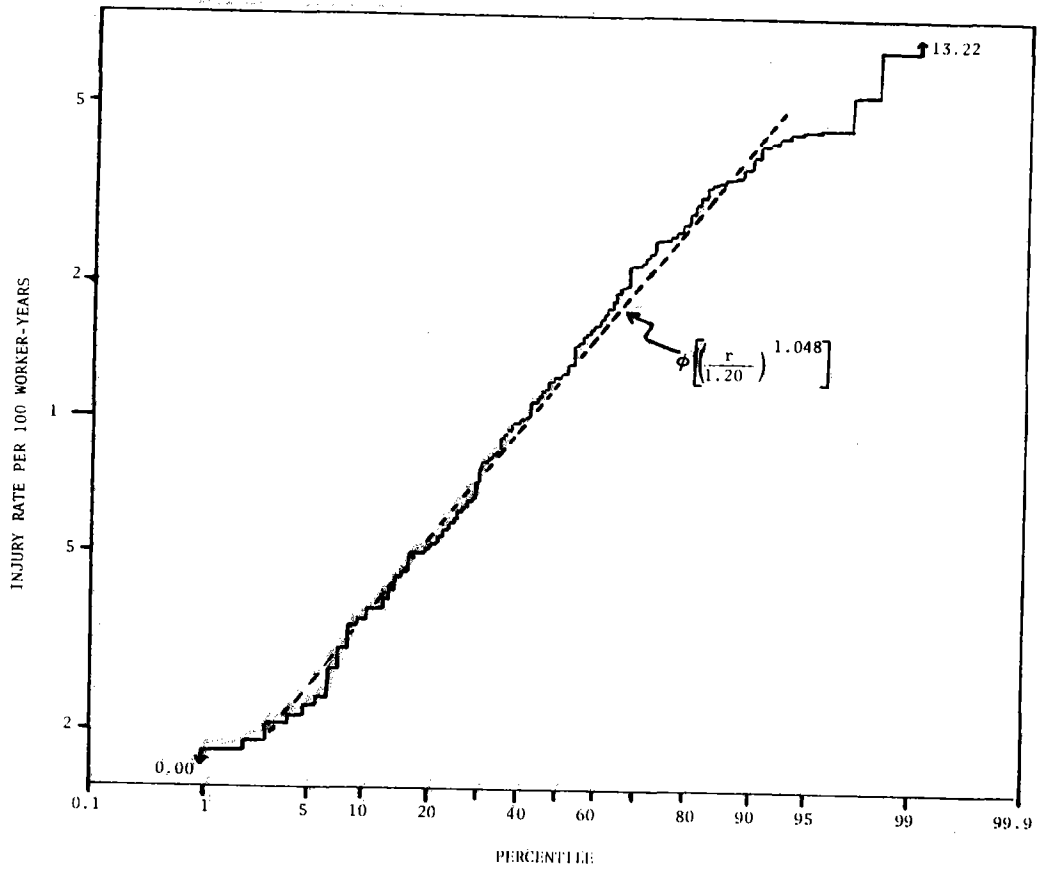


Fig. A-1: Accident sources: Containers

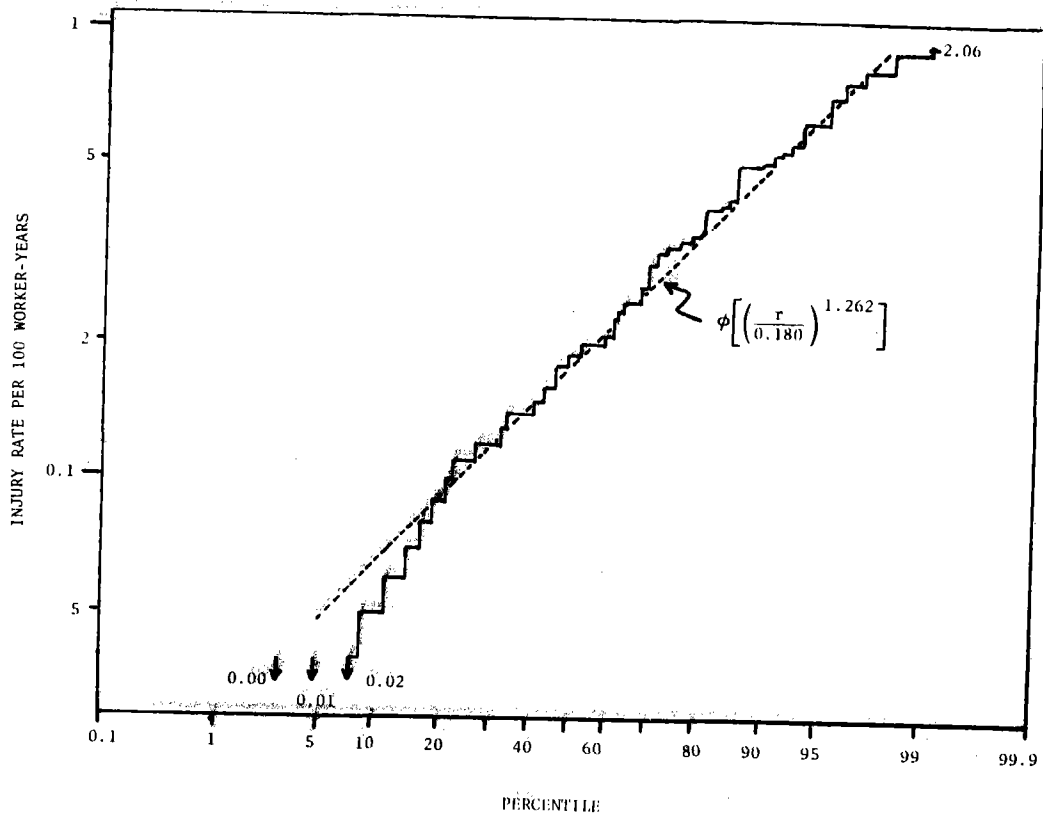


Fig. A-2: Accident source: Chemicals

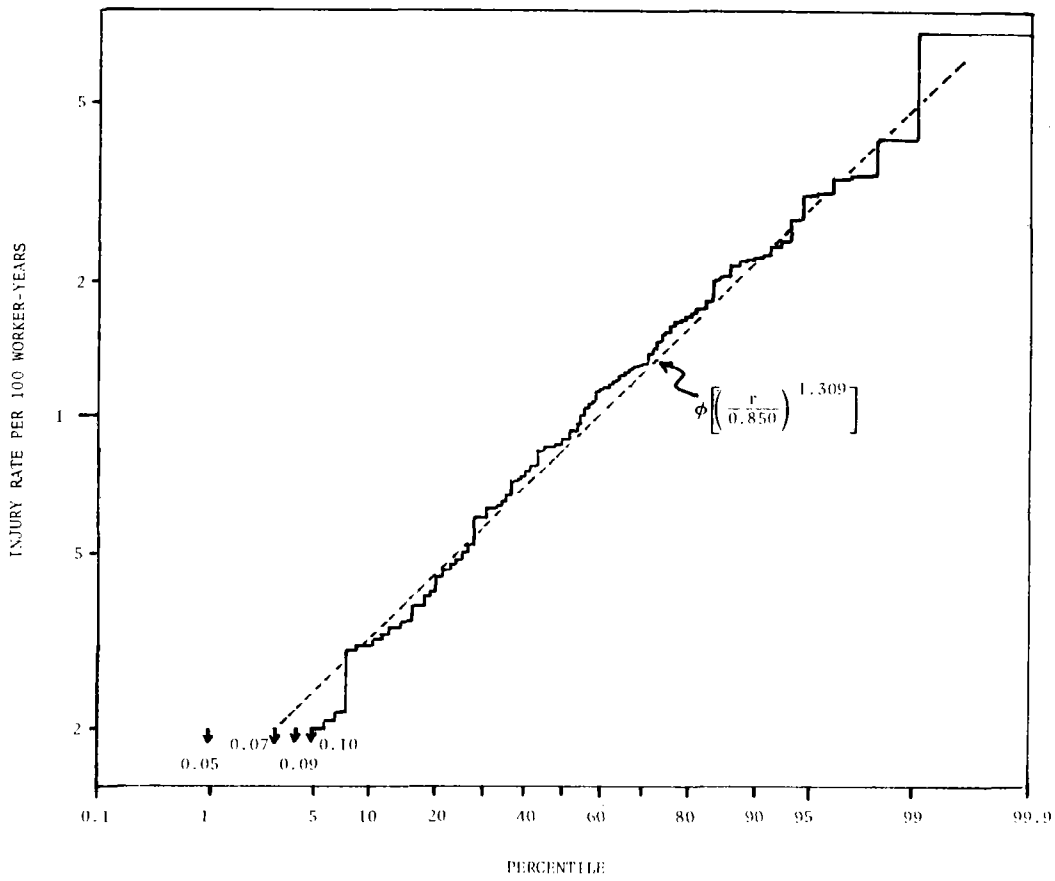


Fig. A-3: Accident Source: Hand tools

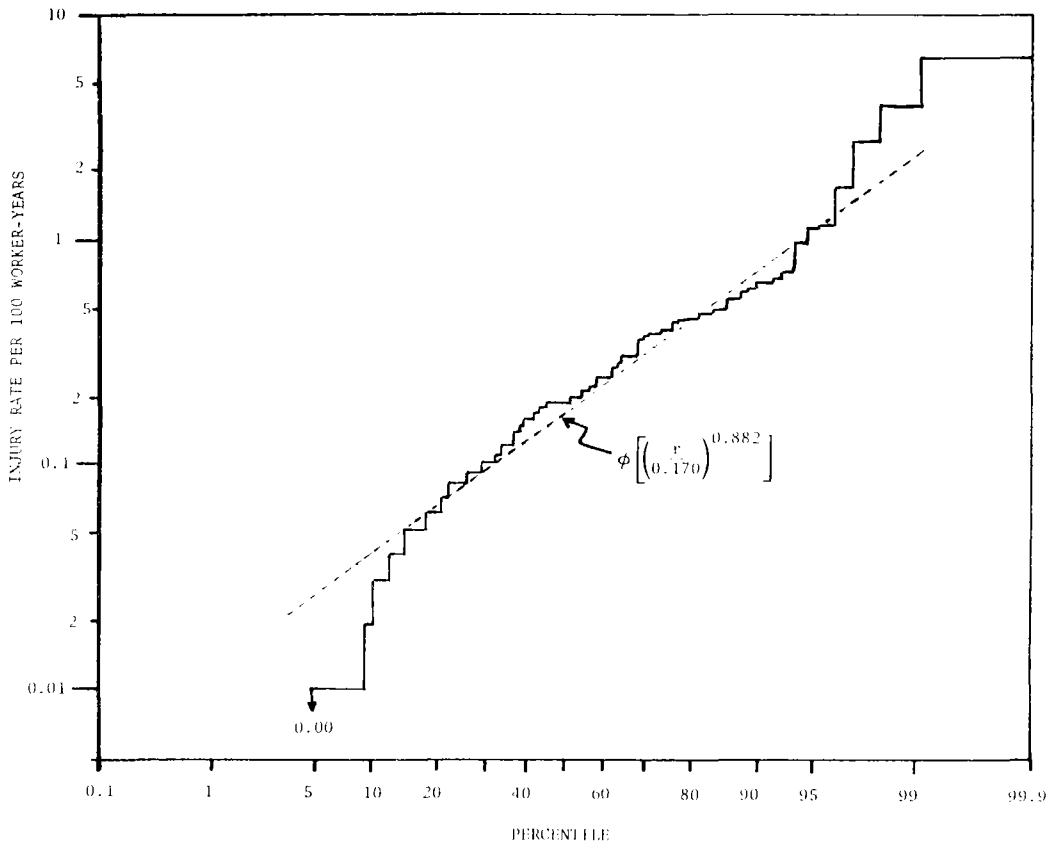


Fig. A-4: Accident source: Hoisting apparatus and Conveyors

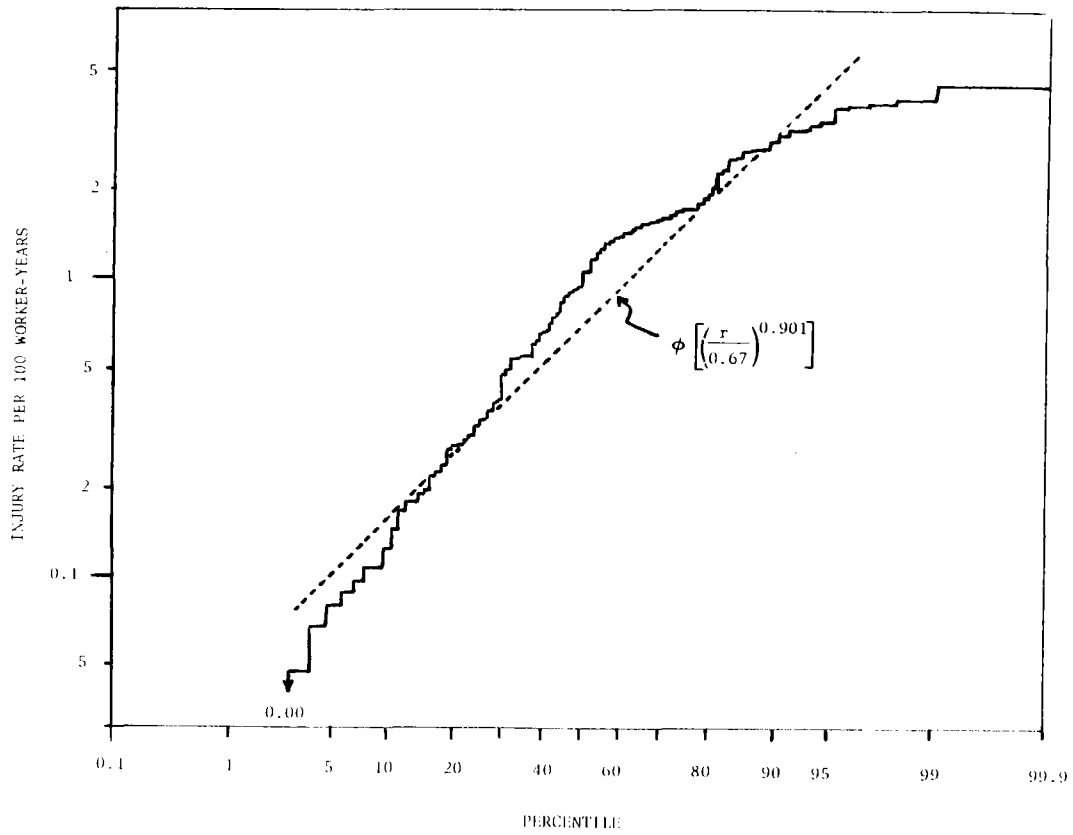


Fig. A-5: Accident source: Machines

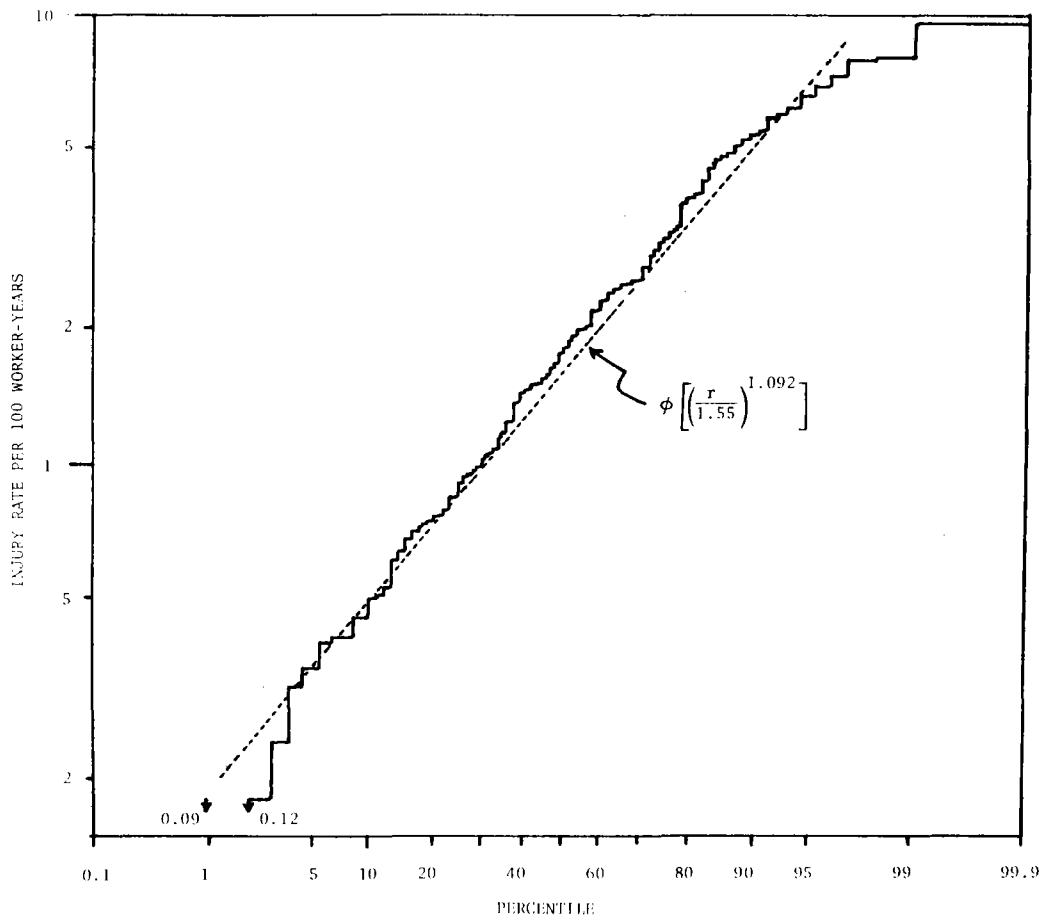


Fig. A-6: Accident source: Metal items

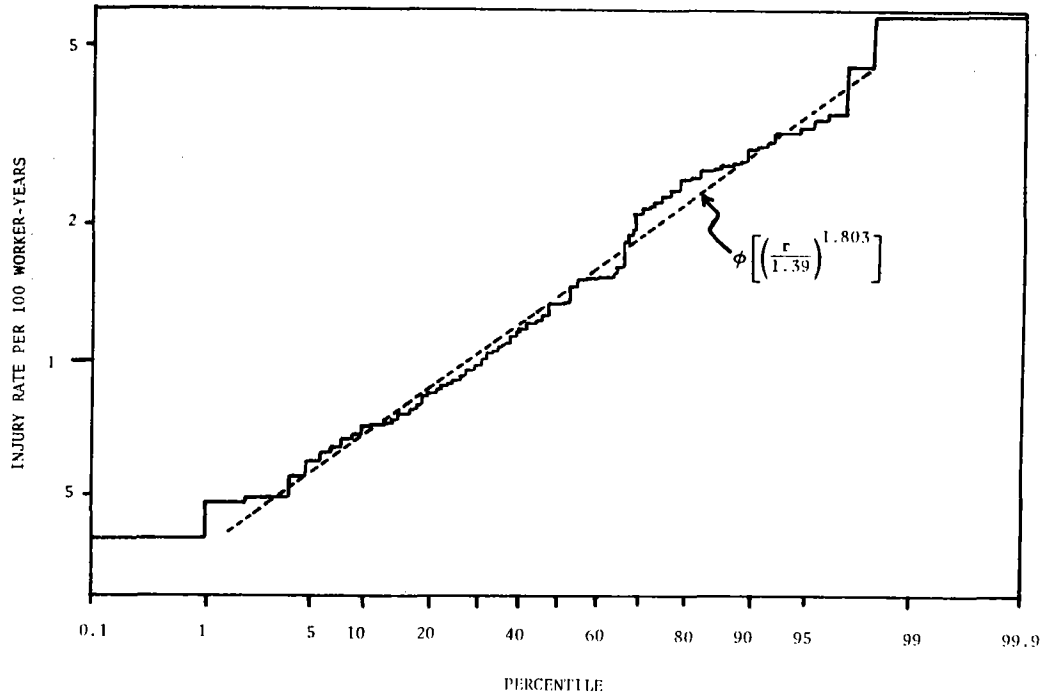


Fig. A-7: Accident source: Working surfaces

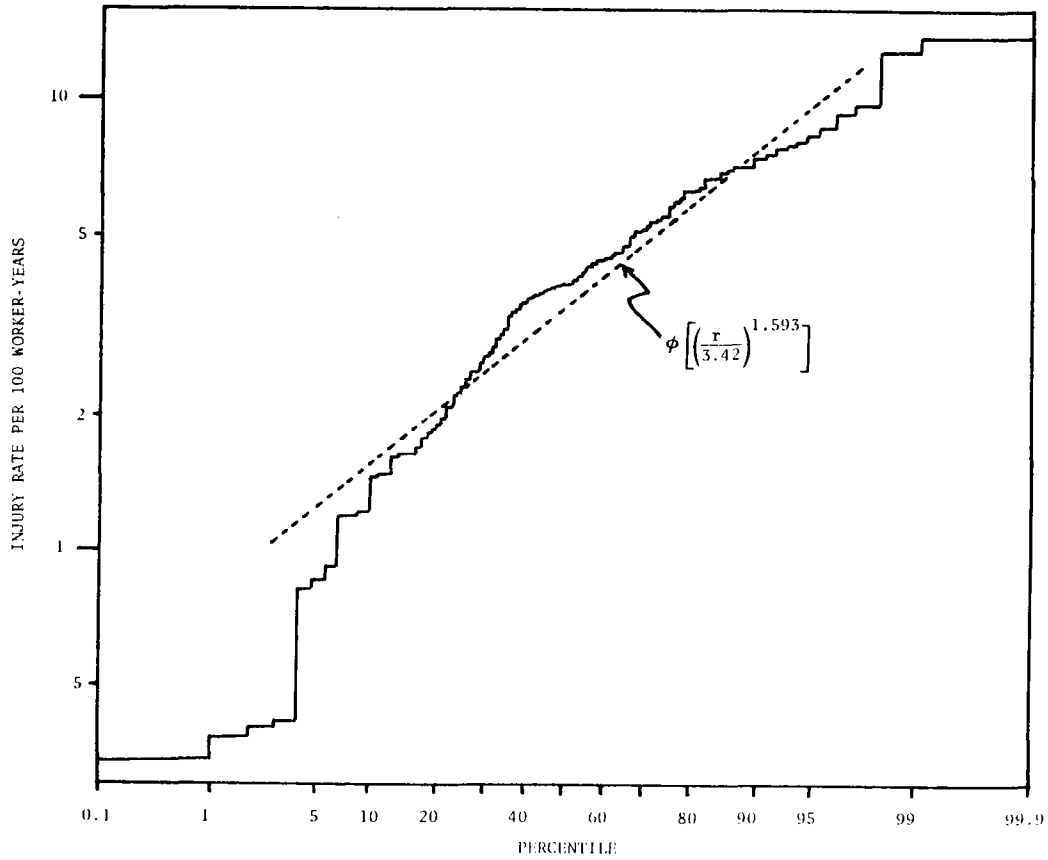


Fig. A-8: Injury type: struck by or against

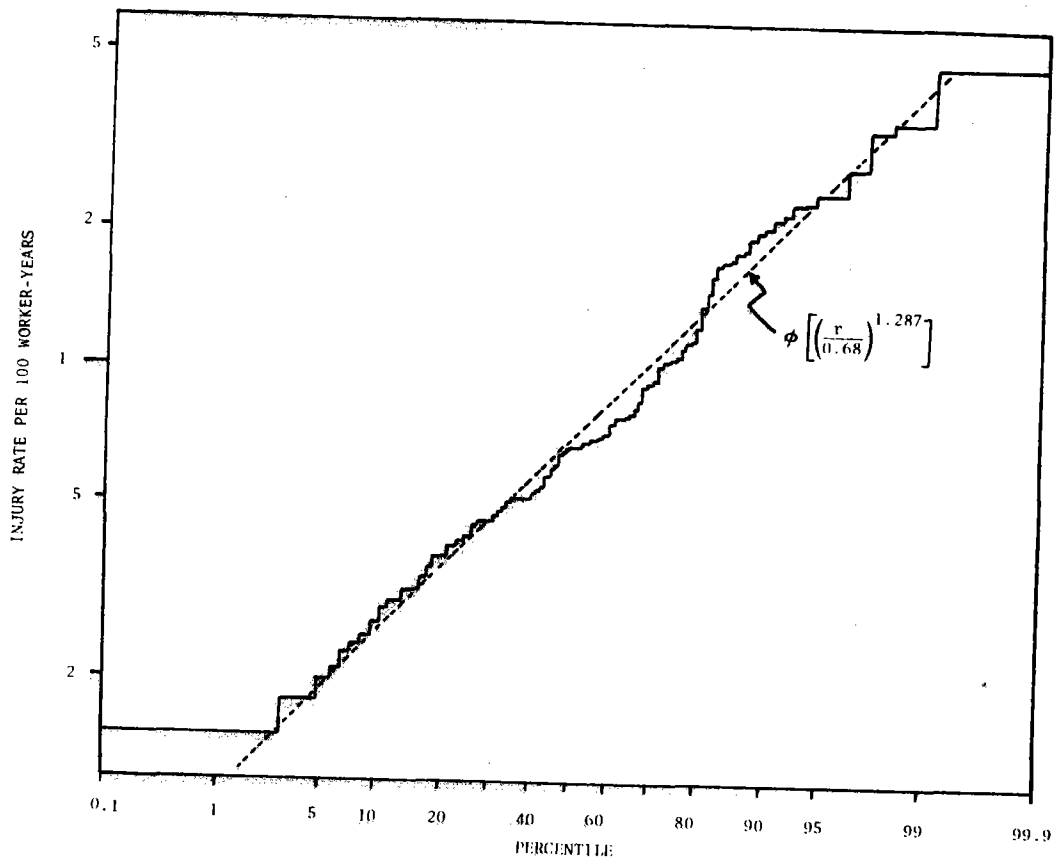


Fig. A-9: Injury type: fall from an elevation

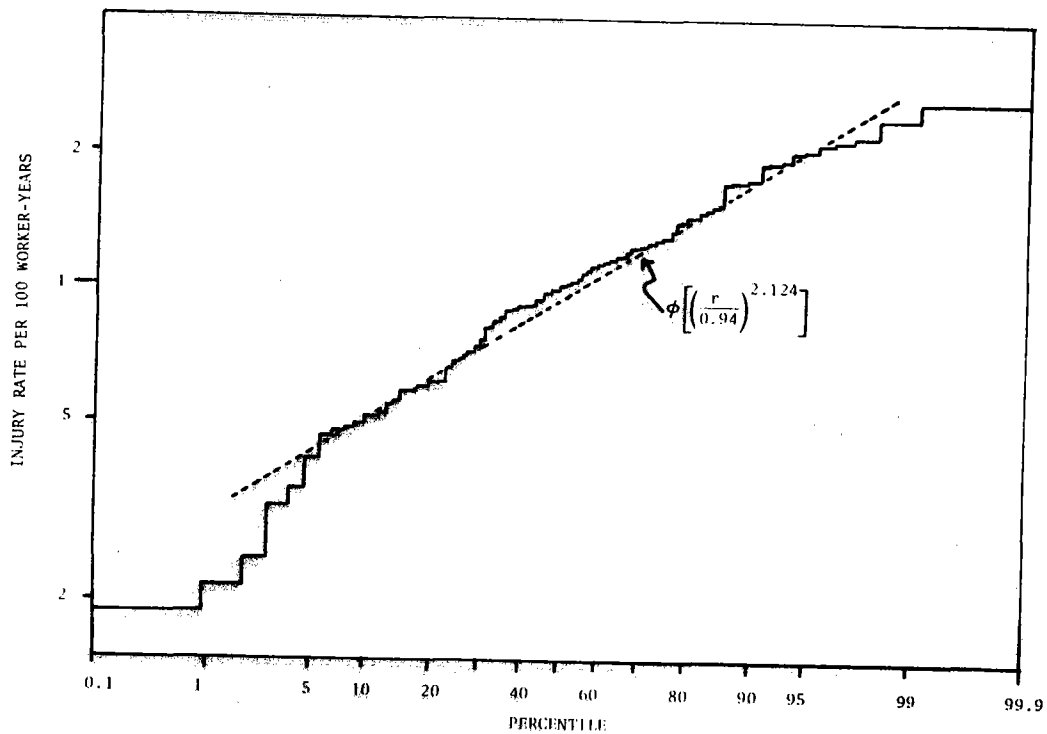


Fig. A-10: Injury type: Fall on the same level

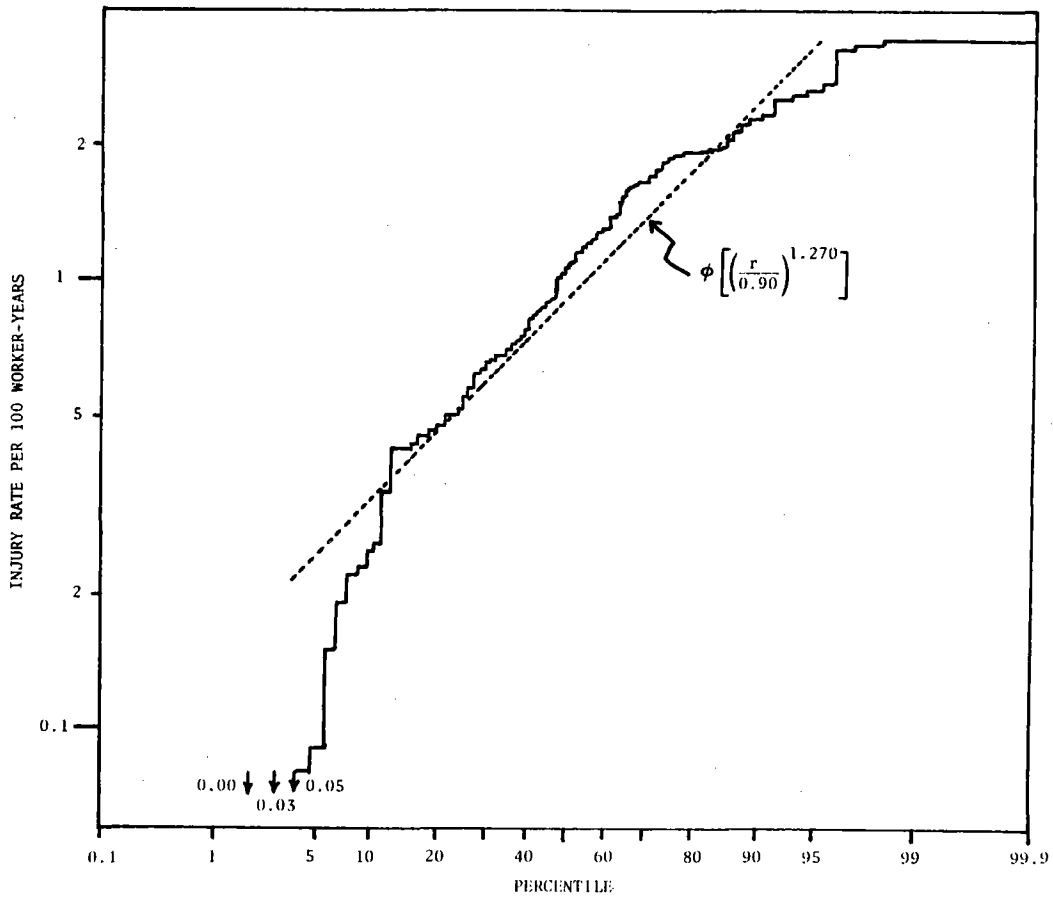


Fig. A-11: Injury type: Caught in or between

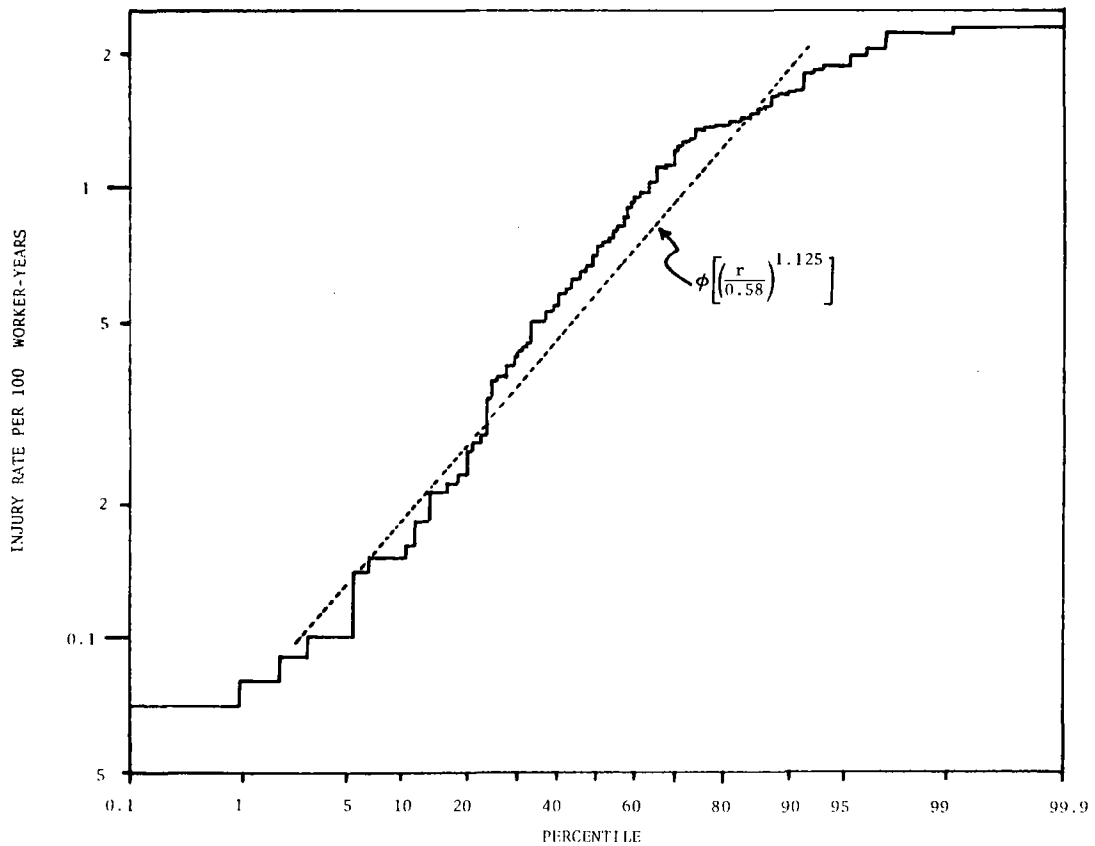


Fig. A-12: Injury type: Rubbed or abraded

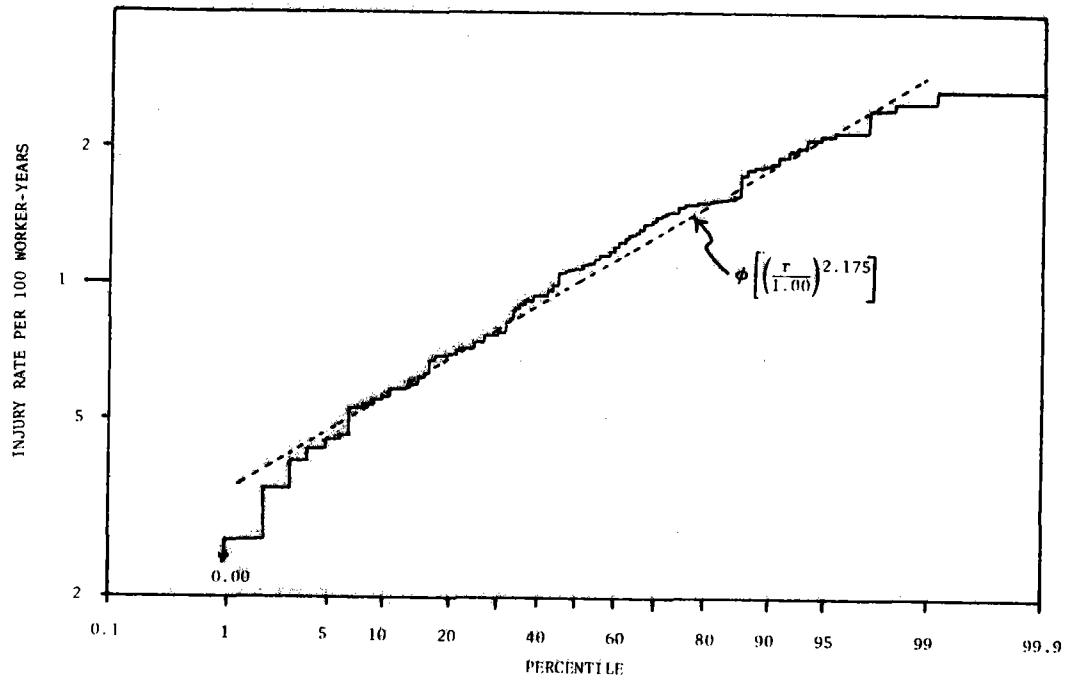


Fig. A-13: Injury type: bodily reaction

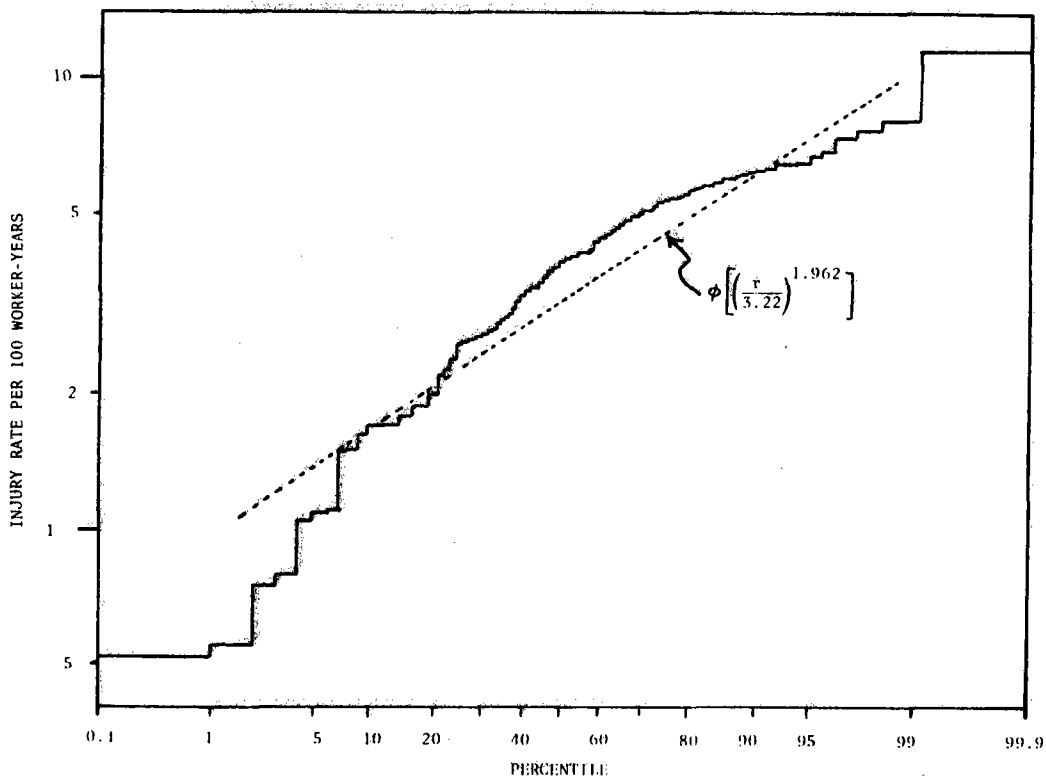


Fig. A-14: Injury type: Overexertion

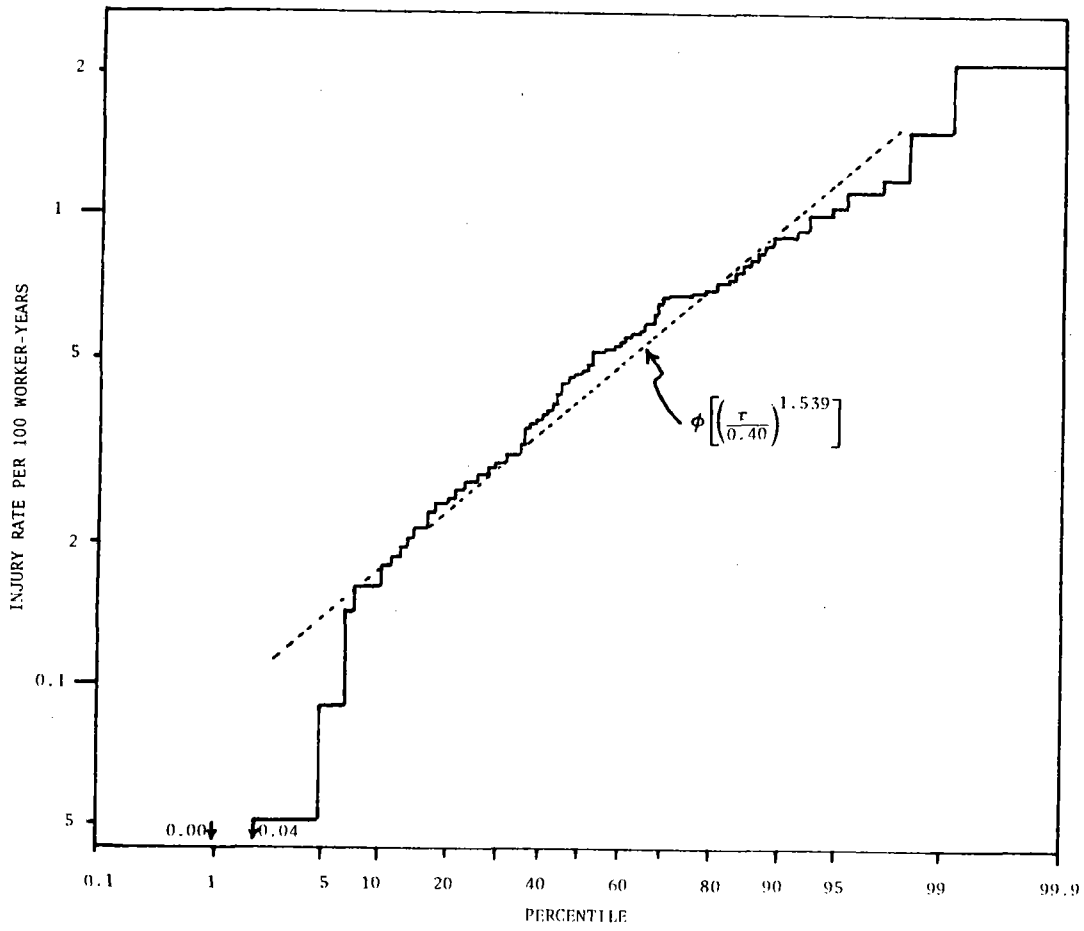


Fig. A-15: Injury type: Inhalation and absorption