

**INDUSTRY SECTOR PROFILE
CHEMICAL INDUSTRY
2002/03**

For further details of the statistics in this profile contact:

**Health and Safety Executive
Hazardous Installations Directorate
Operational Intelligence Unit
2nd Floor
St Anne's House
University Road
Bootle
L20 3RA**

Tel: 0151 951 3587

CONTENTS

(Footnotes are on the pages with the tables)

INTRODUCTION	2
EMPLOYMENT IN THE INDUSTRY	2
FATAL INJURIES (Tables 1 and 2 and Figure 1)	3
MAJOR INJURIES (Tables 1 and 2 and Figure 2)	3
OVER 3-DAY INJURIES (Tables 1 and 2 and Figure 3)	3
INDUSTRIAL ACTIVITIES WITHIN THE CHEMICAL INDUSTRY (Tables 3 and 3a).....	3
KIND OF ACCIDENT (Table 4 and Figures 4 and 5)	4
NATURE AND SITE OF INJURY (Tables 5 and 6 and Figures 6 and 7)	4
PROCESS ENVIRONMENTS (Table 7).....	5
AGE AND SEX OF INJURED PEOPLE (Tables 8a and 8b)	5
INVESTIGATED INJURIES (Table 9).....	5
DANGEROUS OCCURRENCES (Table 10a and 10b)	5
ENFORCEMENT (Tables 11 and 12).....	6
Table 1: Injuries within the chemical industry ^(c) reported to all enforcing authorities, 1996/97 – 2002/03 .	7
Table 2: Employee injury rates ^(a) within the chemical ^(b) and manufacturing industries ^(e) , as reported to all enforcing authorities, 1996/97 – 2002/03.....	8
Table 3: Injuries to employees within the chemical industry as reported to all enforcing authorities, 1996/97 – 2002/03.....	9
Table 3a: Employee injury rates (per 100 000 employees) in the chemical industry ^(a) , 2002/03	10
Table 4: Injuries to employees in the chemical industry as reported to all enforcing authorities, 1996/97 – 2002/03.....	11
Table 5: Major Injuries to employees in the chemical industry as reported to all enforcing authorities, by nature and site, 2002/03	12
Table 6: Over 3-day injuries to employees in the chemical industry as reported to all enforcing authorities, by nature and site, 2002/03.....	13
Table 7: Injuries to employees in the chemical industry, by process environment, as reported to HSE 2002/03.....	14
Table 8a: Injuries to male employees in the chemical industry as reported to all enforcing authorities, 2002/03.....	15
Table 8b: Injuries to female employees in the chemical industry as reported to all enforcing authorities, 2002/03.....	16
Table 9: Percentage of major and over 3 day injuries to employees investigated by HSE's HID* in the chemical industry, by kind of accident, 2002/03	17
Table 9 (continued).....	18
Table 10: Dangerous Occurrences ¹ reported to HSE in the Chemical Industry, 1996/97- 2002/03	19
Table 11: Requirements of Enforcement Notices issued in the Chemical Sector by HSE ¹ , 1996/97 – 2002/03.....	20
Table 12: Proceedings instituted by HSE ¹ within the Chemical Sector, 1996/97 – 2002/03.....	20
Figure 1: Fatal injury incidence rates – manufacturing industries 2002/03.....	21
Figure 2: Major injury incidence rates – manufacturing industries 2002/03.....	22
Figure 3: Over 3-day injury incident rates – manufacturing industries 2002/03.....	23
Figure 4: Major injuries to employees – chemical industry/manufacturing 2002/03 (Percentage of total injuries)	24
Figure 5: Over 3-day injuries to employees – chemical industry/manufacturing 2002/03 (Percentage of total injuries)	25
Figure 6: Major injuries to employees - chemical industry/manufacturing 2002/03 (Percentage of total injuries)	26
Figure 7: Over 3-day injuries to employees - chemical industry/manufacturing 2002/03 (Percentage of total injuries)	27
APPENDIX 1.....	28
APPENDIX 2.....	29

INTRODUCTION

1. This profile provides key statistics on safety and enforcement matters for the chemical industry (as defined by Standard Industrial Classification 1980 Class 25 and Standard Industrial Classification 1992 Groups 241-246 from 1995/96). This includes basic industrial chemicals, specialised chemical products for industrial, agricultural and household use, pharmaceutical products, soap and toilet preparations and paints, varnishes and printing ink. It does not cover the production of man-made fibres, the extraction of mineral oil and natural gas or mineral oil processing.
2. The profile concentrates on details and trends for fatal, major and over 3- day injuries to employees in the chemical industry, and makes comparisons with those found in the manufacturing sector as a whole. Injury and dangerous occurrence figures for the years 1996/97 to 2002/03 are based on injuries and incidents reported under the Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 1995 (RIDDOR '95). These Regulations came into force on 1 April 1996. Definitions of a major and over 3-day injury reported under RIDDOR '95 are provided at Appendices 1 and 2.
3. As the number of injuries to self-employed people and members of the public in the chemical industry is relatively low, the profile does not provide any great detail of these injuries, other than the summary data given in Table 1.
4. HSE has recognised that there is widespread under-reporting of non-fatal injuries. This was confirmed in the Labour Force Survey (LFS) of 1990, and has been monitored via annual questions in the LFS from 1993/1994. The latest available figures show that in the manufacturing sector overall, the reporting of non-fatal injuries has risen from 46% in 1990, to 57% (based on the LFS for 1998/99, 1999/00, and 2000/01).
5. Although the 1990 LFS revealed considerable under-reporting under RIDDOR, the data did reflect the distribution by type of injury, confirming that in most cases the latter provides a representative reflection of the sort of injuries which are actually occurring in the workplace.
6. In 2002/03, figures showed there were 1965 injuries to employees reported to all enforcing authorities for the chemical industry (2 fatal injuries, 395 major injuries and 1568 over 3-day injuries), representing 5% of all injuries involving employees occurring in the manufacturing sector. The all reported injury rate for the industry was 861.4 per 100,000 employees, lower than the rate of 1122.9 for all manufacturing industries, reflecting the lower over 3-day injury incidence rate in the chemical industry. The all reported injury rate in the chemical industry has decreased (861.4 in 2002/03 compared to 913 in 2001/02 - see Table 2. Please note that in order to provide a comparison with 'Manufacturing' overall, Table 2 is based on a 2 digit SIC code, which will include the production of man-made fibres in the 'Chemicals' figures. Table 3a is sector-specific, and is based on a selection of 3 digit SIC codes, which do not include the production of man-made fibres.
7. Information on enforcement action is also included in this profile.

EMPLOYMENT IN THE INDUSTRY

8. The patterns of employment have been similar to the manufacturing sector as a whole, with the number of employees in the chemical industry and manufacturing both peaking at the end of the 1980s and then showing a steady downward trend to the present. Between 1986/87 and 1994/95, employment in the chemical industry decreased by 14%, slightly lower than the 16% decrease seen in manufacturing generally.
9. In 1994/95, the chemical industry consisted of about 6% of the employment total for the manufacturing sector as a whole. It had a workforce of 187 450 men, of whom 1% were part-time and 86 350 women of whom 12% were part time. The part time employee percentages for the manufacturing as a whole were 2% for men and 20% for women.

10. In 2000/01, the chemical sector still consisted of around 6% of the employment total for the manufacturing sector as a whole. It had a workforce of 166 684 men, of whom 1% were part time, and 67 989 women, of whom 4% were part time. The part time employee percentages for manufacturing as a whole were 2% for men and 6% for women. These figures are derived from the Annual Business Inquiry 2000/01 and the Annual Employment Survey 1999.

FATAL INJURIES (TABLES 1 AND 2 AND FIGURE 1)

11. There were 2 fatal injuries in the chemical industry in 2002/03, a decrease of 3, from 5 in 2001/02. Between 1996/97 and 2002/03, there have been an average of 2.6 fatal injuries per year. Over the seven-year period 1996/97 to 2002/03, the individual annual totals are too small to allow further analysis, but based on a three-year rolling average, the average fatal injuries per year vary from 2 to 3.
12. Between 1996/97 and 2002/03, the fatal injury rate in the chemical industry has fluctuated between 0 and 2.17 per 100 000 employees. During this period, the fatal injury rate in the manufacturing sector as a whole has fluctuated between 1 and 1.6 per 100 000 employees. Based on the three-year rolling average, the average injury rate per year varies between 1 and 1.3 for the chemical sector, compared with 1.13, to 1.66 for the manufacturing sector.

MAJOR INJURIES (TABLES 1 AND 2 AND FIGURE 2)

13. There were 395 major injuries in the chemical industry in 2002/03. This figure remains the same as in the previous year 2001/02. However, over the seven-year period, 1996/97 to 2002/03, the three-year rolling average for the number of major injuries per year reduced steadily from 484.6 to 393.
14. In 2002/03, the major injury rate for the chemical industry was 173.2 per 100 000 employees, compared to the manufacturing sector which was 186.7 per 100 000 employees. Based on a three-year rolling average, the average injury rate per year over the seven-year period for the chemical sector for major injuries has varied between 199.26, and 167.39, compared with 208, to 188.32 for the manufacturing sector. From 1996/97 to 2002/03, the chemical sector figure was consistently below the manufacturing figure as a whole.

OVER 3-DAY INJURIES (TABLES 1 AND 2 AND FIGURE 3)

15. The total number of over 3-day injuries in the chemical industry decreased by 7.6% from 1697 in 2001/02 to 1567 in 2002/03, and represents a 26% reduction since 1996/97. The three-year rolling average for this period smoothes this trend, with the average number of over 3-day injuries per year dropping from 1960 to 1694.3.
16. In 2002/03, the over 3-day injury rate in the chemical sector was 26% lower than in the manufacturing sector (687.3 compared to 934.8). Based on the three-year rolling average, the average injury rate per year over the seven-year period for the chemical sector for over 3-day injuries varied from 804.1 to 734.7 compared with 1001.2, to 951.59 for the manufacturing sector. From 1996/97 to 2002/03, the chemical sector figure was consistently below the manufacturing figure as a whole.

INDUSTRIAL ACTIVITIES WITHIN THE CHEMICAL INDUSTRY (TABLES 3 AND 3a)

17. Tables 3 and 3a show injuries and rates respectively from 1996/97 by SIC 92 group.
18. In 2002/03 there were 2 work-related deaths in the chemical industry. The groups with the highest percentage of non-fatal injuries (major and over 3- day) in 2002/03 were: the manufacture of other chemical products (25.1%); the manufacture of basic chemicals (23.2%); and the manufacture of pharmaceuticals, medicinal chemicals and botanical products (21%). Major injuries remained the same and over 3-day injuries decreased in 2002/03 from the previous year.

19. The more detailed breakdowns provided in most of the subsequent tables and figures are based on those injuries reported to HSE's Field Operations Directorate; Hazardous Installations Directorate, Land Division (formerly the Chemicals and Hazardous Installations Division); Nuclear Safety Division (for conventional safety) and local authorities.

KIND OF ACCIDENT (TABLE 4 AND FIGURES 4 AND 5)

20. The analysis of major injuries in the chemical sector shows that the most common cause in 2002/03 was a slip, trip or fall on the same level (32%).
21. Over the seven-year period 1996/97 – 2002/03, the number of major injuries caused by exposure to a harmful substance decreased by 44% (103 to 58). There were notable reductions in falls from height (down from 87 to 51 (41%)), and handling accidents (down from 53 to 49 (7.5%)).
22. A comparison with major injuries in the manufacturing sector as a whole shows that slips, trips or falls on the same level accounted for 32% in the chemical industry and 28% in manufacturing overall. Major injuries caused by exposure to a harmful substance were nearly four times as common in the chemical industry (15%) than in manufacturing generally (3.8%). The percentage distribution of the most common kinds of major injury to employees in the chemical industry, in comparison with those in the manufacturing sector as a whole in 2002/03, are shown in Figure 4.
23. The analysis of over 3-day injuries shows that injuries whilst handling, lifting or carrying decreased by 13% from last year's figure but still remain the most common cause in 2002/03 (38.3%).
24. Over the seven-year period 1996/97 – 2002/03, the number of over 3-day injuries caused by being struck by moving or falling objects decreased by 46.1%; the number of exposures to a harmful substance also fell over this period (20.1%). Handling accidents also fell by 22.5%. Slips, trips or falls on the same level increased by 8% from the previous year.. There was a decrease in the number of over 3-day injuries caused by falls from a height, with 51.5% more people injured in 1996/97 than in 2002/03.
25. A comparison with over 3-day injuries in the manufacturing sector as a whole shows that handling accidents were by far the most common, and were the cause of over a third of all reported. However, injuries caused by exposure to a harmful substance were three times more common in the chemical industry (9%) than in manufacturing generally (3%), whereas those caused by machinery accidents (4.4% compared with 9%) and being struck by a moving/falling object (9% compared with 14%) were proportionately less common in the chemical industry. The distribution of over 3-day injuries for the chemical industry (shown in Figure 5) is more similar to manufacturing as a whole than the distribution of major injuries.

NATURE AND SITE OF INJURY (TABLES 5 AND 6 AND FIGURES 6 AND 7)

26. The analysis of major injuries in the chemical sector shows that the most common were fractures to the wrist (56) upper limbs (49); hand (28); lower limb (27), ankle (25), foot (22) and trunk (14). There were 19 amputations of fingers, 7 dislocated upper limbs and a total of 20 lacerations. There were a total of 52 burns (31 of which were burns to the eye). Major injuries occurring in the chemical industry in 2002/03 are broken down by nature and site of injury in Table 5.
27. A comparison with major injuries in the manufacturing sector as a whole shows that the proportion of burns in the chemical industry (13%) was three times more than that for manufacturing generally (4%), whilst asphyxiation injuries accounted for 2% of major injuries in the chemical sector and 0% in manufacturing. Amputated fingers represented 6% of major injuries in the manufacturing sector compared to 5% in the chemical industry. However, lacerations were proportionately less common in the chemical industry (5%) compared to manufacturing overall (9%). A percentage breakdown of major injuries by specific common nature and site combinations, together with comparisons for manufacturing as a whole is shown in Figure 6.

28. The analysis of over 3-day injuries in the chemical sector shows that the most common were sprains and strains to the back (360), wrist (78) and ankle (77). Injuries to torso and upper limbs also ranked highly. There were 284 contusions, 130 lacerations; and 74 fractures (of which 61 involved fractures of the fingers). Over 3-day injuries occurring in the chemical industry in 2002/03 are broken down by nature and site of injury in Table 6.
29. A comparison with over 3-day injuries in the manufacturing sector as a whole shows that the proportion involving burns was higher in the chemical industry (7%) compared with 3% in manufacturing generally, whilst lacerations were less common (8% compared with 15%). Sprains and strains were the most common type of over 3 day injury in the chemical industry, accounting for 46.5% of the reports received, proportionately higher than in manufacturing generally (37.5%).

PROCESS ENVIRONMENTS (TABLE 7)

30. Table 7 sets out the actual activity causing injury at the time of the accident. Care must be taken in the interpretation of these figures as those activities and processes with the greatest number of attributed injuries may also have the highest levels of employment.
31. Of all reported injuries in 2002/03, general handling accounting for 12%, and general maintenance for 7.5%. Of the specific chemical processes, filling and discharging was the most common cause of injury, accounting for 69 (3.5%) of all reported injuries. The transfer of chemicals caused 2.3% of all reported injuries; mixing of chemicals 2.1%, and the shaping of chemicals 1%. However, 51% of all injuries were assigned to the general category "other".

AGE AND SEX OF INJURED PEOPLE (TABLES 8A AND 8B)

32. There were 2 fatal injuries in the chemical industry in 2002/03. Both were to male employees.
33. There were 395 major injuries in the chemical industry in 2002/03. 330 were to male employees and 65 to female employees.
34. There were over 1568 over 3-day injuries in the chemical industry in 2002/03. 1265 were to male employees and 303 to female employees.
35. In addition to the breakdown by sex of injured person, Tables 8(a) and (b) also provides figures by severity of injury for various age bands in the chemical industry. The most common age group of male employees who suffered an injury was 35 - 39, with 50 - 54 the most common amongst female employees.

INVESTIGATED INJURIES (TABLE 9)

36. Within the chemical industry in 2002/03, all major injuries in the categories of drowning and asphyxiation and exposure to an explosion were investigated. 77% of major injuries and 39% of over 3 day injuries caused by contact with moving machinery were investigated.

DANGEROUS OCCURRENCES (TABLE 10A AND 10B)

37. Dangerous occurrences are certain kinds of incident, defined within RIDDOR, with a high potential to cause injury, and which are reportable whether or not that potential is realised. RIDDOR '95 updated the list of reportable dangerous occurrences. It includes general provisions as well as additional occurrences.
38. In 2002/03, the most common type of dangerous occurrence within the chemical industry involved "the accidental release or escape of any substance in a quantity sufficient to cause the death, major injury or any other damage to the health of any person" (RIDDOR 95 – Ref Code 21). This type of dangerous occurrence accounted for 26% of all reported dangerous occurrences within the chemical industry.

39. The “explosion or fire occurring in any plant or premises, which results in the stoppage of that plant for more than 24 hours” (RIDDOR 95 – Ref Code 19) was the second most common type of dangerous occurrence and accounted for 17.4% of all dangerous occurrences in the chemical industry. The “failure, collapse or overturning of lifting machinery, excavator, pile driving frame or mobile powered access platform” (RIDDOR 95 – Ref Code 01) accounted for a further 17% of all dangerous occurrences in the chemical industry and was the third most common type.

ENFORCEMENT (TABLES 11 AND 12)

40. In the chemical industry the number of enforcement notices (requirements) issued by HSE was 255 in 2002/03, compared to 321 in 2001/02. Notices in 2002/03 consisted of 191 improvement notices, 9 deferred prohibition notices, 53 immediate prohibition notices and 2 COMAH prohibition notices. There was a 20.5% decrease in the number of notices issued in the chemical industry in 2002/03, this figure will be partially driven by the inspection initiatives chosen for the year, and may not follow a trend. In the manufacturing sector the number of enforcement notices issued increased by 81% from 5301 in 2001/02 to 9599 in 2002/03.
41. In 2002/03, the number of informations laid (prosecutions under individual breaches of legislation) for offences occurring in the chemical industry increased to 42 compared with the 2001/02 figure of 40. Over the same period in the manufacturing sector, there was been a decrease in the numbers of informations laid from 723 in 2001/02 to 577 in 2002/03.
42. In 2002/03, of the 42 informations laid for offences occurring in the chemical industry, 36 resulted in a conviction. The average fine imposed for these convictions was £7381, an increase compared to the previous year (£4902).

TABLE 1: INJURIES WITHIN THE CHEMICAL INDUSTRY ^(c) REPORTED TO ALL ENFORCING AUTHORITIES, 1996/97 – 2002/03

Year ^(a)	EMPLOYEES				SELF-EMPLOYED				MEMBERS OF PUBLIC		TRAINEE	
	Fatal	Major	Over 3- Day	Total	Fatal	Major	Over 3-Day	Total	Fatal	Major ^(b)	Over 3-Day	Total
1996/97 ^(d)	3	544	2125	2672	-	5	5	10	-	5	-	-
1997/98	2	496	2006	2504	-	5	5	10	-	-	-	-
1998/99	4	414	1749	2167	-	5	1	6	-	1	-	-
1999/00	2	416	1887	2305	-	4	4	8	-	2	-	-
2000/01	-	389	1819	2208	-	4	4	8	-	4	-	-
2001/02	5	395	1697	2097	-	6	2	8	-	3	3	3
2002/03	2	395	1567	1964	-	10	2	12	-	1	1	1

(a) Years commencing 1 April.

(b) From 1996/97 this includes all non-fatal injuries.

(c) The injury figures do not include those occurring in the manufacture of man-made fibres.

(d) As defined by SIC92 1995/96 – 2002/03.

TABLE 2: EMPLOYEE INJURY RATES ^(a) WITHIN THE CHEMICAL ^(b) AND MANUFACTURING INDUSTRIES ^(e), AS REPORTED TO ALL ENFORCING AUTHORITIES, 1996/97 – 2002/03

Year ^(c)	Fatal		Major		Over 3-Day		Total	
	Chemicals	Manufacturing	Chemicals	Manufacturing	Chemicals	Manufacturing	Chemicals	Manufacturing
1996/97 ^(d)	1.6	1.3	228.5	206.4	895.2	1002.8	1125.4	1210.5
1997/98	0.8	1.3	205.8	216.1	822.0	1026.1	1028.6	1243.5
1998/99	1.6	1.6	163.5	201.5	695.1	969.8	860.2	1172.8
1999/00	0.8	1.0	172.3	204.0	780.4	1007.7	953.6	1212.7
2000/01	0.0	1.21	166.39	190.91	777.35	984.27	943.74	1176.39
2001/02	2.17	1.18	171.73	187.37	739.13	935.72	913.03	1124.27
2002/03	0.9	1.4	173.2	186.7	687.7	934.8	861.8	1122.9

(a) Incidence rates per 100,000 employees.

(b) Rates for chemical industry from 1995/96 include manufacture of man-made fibres.

(c) Years commencing 1 April.

(d) Injury figures from 1996/97 - the introduction of RIDDOR 95.

(e) As defined by SIC92 for 1995/96 – 2002/03.

TABLE 3: INJURIES TO EMPLOYEES WITHIN THE CHEMICAL INDUSTRY AS REPORTED TO ALL ENFORCING AUTHORITIES, 1996/97 – 2002/03

Standard Industrial Classification (1992) - Group	Fatal							Major							Over 3 Day							Total						
	96/97	97/98	98/99	99/00	00/01	01/02	02/03	96/97	97/98	98/99	99/00	00/01	01/02	02/03	96/97	97/98	98/99	99/00	00/01	01/02	02/03	96/97	97/98	98/99	99/00	00/01	01/02	02/03
241 Manufacture of basic chemicals	1	-	3	2	-	1	-	186	160	142	140	109	130	130	634	635	529	571	447	385	326	821	795	674	713	556	516	456
242 Manufacture of pesticides and other agro-chemical products	-	-	-	-	-	1	-	5	6	3	9	5	10	12	14	11	10	8	19	18	21	19	17	13	17	24	29	33
243 Manufacture of paints, varnishes and similar coatings, printing ink and mastics	-	1	1	-	-	2	-	55	64	57	46	53	33	39	242	247	257	276	231	249	209	297	312	315	322	284	284	248
244 Manufacture of pharmaceuticals, medicinal chemicals and botanical products	-	-	-	-	-	1	-	81	75	58	80	83	67	75	400	426	352	395	411	366	338	481	501	410	475	494	434	413
245 Manufacture of soaps and detergents, cleaning and polishing preparations, perfumes and toilet preparations.	-	-	-	-	-	-	-	105	105	80	67	63	65	50	382	319	292	286	353	317	270	487	424	372	353	416	382	320
246 Manufacture of other chemical products	2	1	-	-	-	-	2	112	86	80	74	76	90	89	453	368	310	351	358	365	404	567	455	390	425	434	455	495
TOTAL	3	2	4	2	-	5	2	544	496	420	416	389	395	395	2125	2006	1750	1887	1819	1700	1568	2672	2504	2174	2305	2208	2100	1965

TABLE 3a: EMPLOYEE INJURY RATES (PER 100 000 EMPLOYEES) IN THE CHEMICAL INDUSTRY ^(a), 2002/03

Standard Industrial Classification	Fatal and Major Injury Rate	All Reported Injury Rate
241 Manufacture of basic chemicals	209.3	734.3
242 Manufacture of pesticides and other agro-chemical products	260.9	717.4
243 Manufacture of paints, varnishes and similar coatings, printing ink and mastics	183.1	1164.3
244 Manufacture of pharmaceuticals, medicinal chemicals and botanical products	104.3	574.4
245 Manufacture of soaps and detergents, cleaning and polishing preparations, perfumes and toilet preparations.	131.6	842.1
246 Manufacture of other chemical products	298.4	1623.0
TOTAL	173.8	860.3

(a) As reported to all enforcing authorities.

TABLE 4: INJURIES TO EMPLOYEES IN THE CHEMICAL INDUSTRY AS REPORTED TO ALL ENFORCING AUTHORITIES, 1996/97 – 2002/03

KIND OF ACCIDENT	FATAL							MAJOR							OVER 3 DAY							TOTAL						
	96/97	97/98	98/99	99/00	00/01	01/02	02/03	96/97	97/98	98/99	99/00	00/01	01/02	02/03	96/97	97/98	98/99	99/00	00/01	01/02	02/03	96/97	97/98	98/99	99/00	00/01	01/02	02/03
Contact with moving machinery	-	-	-	-	-	-	1	31	40	30	38	27	20	27	98	104	105	88	82	76	69	129	144	135	126	109	96	97
Struck by moving inc flying/falling object	-	-	-	-	-	-	-	71	59	54	48	41	43	25	271	210	190	211	188	150	146	342	269	244	259	229	193	171
Struck by moving vehicle	-	-	-	-	-	1	-	11	9	9	16	11	15	22	44	40	43	53	48	48	41	55	49	52	69	59	64	63
Strike against something fixed or stationary	-	-	-	-	-	-	-	30	29	36	28	23	21	15	157	109	129	111	93	85	78	187	138	165	139	116	106	93
Injured whilst handling, lifting or carrying	-	-	-	-	-	-	-	53	50	42	26	38	31	49	776	714	607	684	672	692	601	829	764	649	710	710	723	650
Slip, trip or fall on same level	-	-	-	-	-	-	-	129	140	97	113	129	123	126	374	371	341	357	318	346	374	503	511	438	470	447	469	500
Fall from a height:																												
Up to and inc 2m	-	-	-	-	-	-	-	58	53	36	43	31	20	37	101	94	81	109	118	48	33	159	147	117	152	149	68	70
Over 2m	-	-	2	1	-	-	-	17	21	17	22	16	12	7	13	11	5	13	10	15	8	30	32	24	36	26	27	15
Height not stated	-	-	-	-	-	-	-	12	7	10	10	7	8	7	14	20	12	15	23	16	21	26	27	22	25	30	24	28
Total falls	-	-	2	1	-	-	-	87	81	63	75	54	40	51	128	125	98	137	151	79	62	215	206	163	213	205	119	113
Trapped by something collapsing/overturning	-	-	-	-	-	-	-	3	1	3	2	-	1	1	5	5	2	6	3	-	2	8	6	5	8	3	1	3
Drowning or asphyxiation	-	-	-	-	-	-	-	7	-	1	5	2	1	1	2	1	1	-	2	-	2	9	1	2	5	4	1	3
Exposure to or contact with harmful substances	-	-	-	1	-	-	-	103	77	68	54	46	72	58	179	237	168	163	164	151	143	282	314	236	218	210	223	201
Exposure to fire	-	1	-	-	-	1	-	1	1	-	1	3	3	1	12	10	3	5	2	5	2	13	12	3	6	5	9	3
Exposure to an explosion	2	1	1	-	-	-	1	2	3	1	1	2	5	4	8	8	3	4	1	5	-	12	12	5	5	3	10	5
Contact with electricity or electrical discharge	1	-	1	-	-	-	-	1	1	2	3	-	1	3	4	7	6	5	6	8	5	6	8	9	8	6	9	8
Injured by an animal	-	-	-	-	-	-	-	1	-	-	-	-	-	-	2	6	-	2	2	-	1	3	6	-	2	2	-	1
Injuries caused by assault or violence	-	-	-	-	-	-	-	2	-	1	-	-	-	2	4	1	-	1	4	1	6	6	1	1	1	4	1	8
Other kind of accident	-	-	-	-	-	3	-	11	5	5	6	11	16	9	56	51	45	55	73	41	32	67	56	50	61	84	60	41
Injuries not classified by kind	-	-	-	-	-	-	-	1	-	2	-	2	3	1	5	7	8	5	10	13	4	6	7	10	5	12	16	5
TOTAL	3	2	4	2	-	5	2	544	496	414	416	389	395	395	2125	2006	1749	1887	1819	1700	1568	2672	2504	2167	2305	2208	2100	1965

TABLE 5: MAJOR INJURIES TO EMPLOYEES IN THE CHEMICAL INDUSTRY AS REPORTED TO ALL ENFORCING AUTHORITIES, BY NATURE AND SITE, 2002/03

Site of Injury	Nature of Injury																
	Amputati on	Loss of sight	Fracture	Dislocati on	Concuss Internal	Laceratio n	Contusio n	Burn	Asphyxia tion	Strain	Superfici al	Multiple	Electricit y	Natural Cause	Other Known	Other NK	Total
Eye	-	1	-	-	-	1	-	31	-	-	3	-	-	-	3	-	39
Ear	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Face-other parts	-	-	3	-	-	1	-	2	-	-	-	-	-	-	-	-	6
Head	-	-	3	-	2	3	1	-	-	-	-	1	-	-	-	-	10
Several head	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total: head	-	1	6	-	-	5	1	33	-	-	3	1	-	-	3	-	55
Neck	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	1
Back	-	-	3	-	-	-	1	-	-	1	-	-	-	-	-	-	5
Trunk	-	-	14	-	-	-	-	-	-	1	-	-	-	-	2	-	17
Several torso	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	1
Total: torso	-	-	17	-	-	-	2	-	-	3	-	-	-	-	2	-	24
Finger	19	-	3	1	-	8	-	-	-	-	-	1	-	-	-	-	32
Hand	1	-	28	-	-	3	-	1	-	-	-	1	-	-	-	-	34
Wrist	-	-	56	-	-	-	-	-	-	-	-	-	-	-	1	-	57
Upper limb	-	-	49	7	-	2	-	4	-	-	-	1	-	-	-	-	63
Several upper limb	-	-	2	1	-	-	-	4	-	-	-	-	-	-	-	-	7
Total: upper limb	20	-	138	9	-	13	-	9	-	-	-	3	-	-	1	-	193
Toe	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Foot	-	-	32	-	-	-	-	2	-	-	-	-	-	-	-	-	34
Ankle	-	-	25	-	-	-	-	-	-	-	-	-	-	-	-	-	25
Lower limb	-	-	27	3	-	1	-	-	-	2	-	-	-	-	1	-	34
Several lower limb	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	1
Total: lower limb	-	-	84	3	-	1	-	3	-	2	-	-	-	-	1	-	94
Several locations	-	-	2	-	-	1	-	7	-	-	-	4	-	-	-	-	14
General locations	-	-	-	-	-	-	1	-	6	-	-	-	2	-	3	-	12
Unspecified locations	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	1	3
GRAND TOTAL	20	1	247	12	2	20	4	52	8	5	3	8	2	-	10	1	395

TABLE 6: OVER 3-DAY INJURIES TO EMPLOYEES IN THE CHEMICAL INDUSTRY AS REPORTED TO ALL ENFORCING AUTHORITIES, BY NATURE AND SITE, 2002/03

Site of Injury	Nature of Injury																
	Amputati on	Loss of sight	Fracture	Dislocati on	Concuss Internal	Laceratio n	Contusio n	Burn	Asphyxia tion	Strain	Superfici al	Multiple	Electricit y	Natural Cause	Other Known	Other NK	Total
Eye	-	-	-	-	1	-	-	6	-	-	12	-	-	-	7	1	27
Ear	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	2
Face-other parts	-	-	1	-	-	5	2	11	-	-	3	1	-	-	3	-	26
Head	-	-	-	-	8	17	13	-	-	-	6	1	-	-	1	2	48
Several head	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total: head	-	-	1	-	9	22	15	17	-	-	21	2	-	-	13	3	103
Neck	-	-	-	-	-	-	-	1	-	20	-	-	-	-	3	-	24
Back	-	-	-	1	-	-	32	2	-	360	4	1	-	-	7	4	411
Trunk	-	-	1	-	3	-	31	3	-	34	3	-	-	-	1	1	77
Several torso	-	-	-	-	-	-	2	-	-	4	-	-	-	-	-	-	6
Total: torso	-	-	1	1	3	-	65	6	-	418	7	1	-	-	11	5	518
Finger	1	-	61	8	-	57	22	5	-	4	19	2	-	-	-	-	179
Hand	-	-	-	1	-	21	23	14	-	7	4	1	-	-	-	-	71
Wrist	-	-	2	1	-	2	6	3	-	28	3	1	-	-	2	-	48
Upper limb	-	-	2	-	-	13	24	22	-	78	8	1	-	-	6	1	155
Several upper limb	-	-	-	-	-	-	3	1	-	2	1	2	-	-	5	-	14
Total: upper limb	1	-	65	10	-	93	78	45	-	119	35	7	-	-	13	1	467
Toe	-	-	6	-	-	-	3	-	-	-	-	-	-	-	-	-	9
Foot	-	-	-	-	-	2	30	15	0	12	3	1	-	-	1	-	64
Ankle	-	-	-	-	1	-	14	4	-	77	-	1	-	-	-	1	98
Lower limb	-	-	-	-	1	12	32	11	-	66	7	4	-	-	5	-	138
Several lower limb	-	-	1	-	-	1	4	2	-	3	-	-	-	-	1	-	12
Total: lower limb	-	-	7	-	2	15	83	32	-	158	10	6	-	-	7	1	321
Several locations	-	-	-	-	-	-	43	15	-	31	12	12	-	-	7	2	122
General locations	-	-	-	-	2	-	-	-	16	-	1	-	4	-	5	1	29
Unspecified locations	-	-	-	-	-	-	-	-	3	3	-	-	-	-	1	1	8
GRAND TOTAL	1	-	74	11	16	130	284	115	19	729	86	28	4	-	57	14	1568

TABLE 7: INJURIES TO EMPLOYEES IN THE CHEMICAL INDUSTRY, BY PROCESS ENVIRONMENT, AS REPORTED TO HSE 2002/03

Process Environment	Fatal	Major	Over 3 Day	Total
Admin	-	4	12	16
Chemical Drying Processes	-	-	-	-
Chemical Filling/Discharging	-	16	53	69
Chemical Mixing	1	4	37	42
Chemical Shaping	-	5	13	18
Chemical Size Reduction	-	-	-	-
Chemical Sterilising	-	-	-	-
Chemical Storage	-	-	-	-
Chemical Transfer	-	12	34	46
General Amenities	-	2	16	18
General Assembly	-	-	-	-
General Examination	-	-	-	-
General Handling	-	43	197	240
General Installing	-	-	-	-
General Laboratory Services	-	1	5	6
General Labouring	1	11	26	38
General Maintenance	-	39	110	149
General Other	-	-	-	-
General Packing	-	4	29	33
General Services	-	-	-	-
General Sorting	-	-	-	-
General Storing	-	14	107	121
General Waste Disposal	-	-	1	1
Heating Processes	-	-	-	-
Loading/Unloading	-	11	47	58
On-site transfer	-	-	-	-
Other Chemical Reaction	-	22	51	73
Other Plant Processes	-	-	-	-
Personnel Services	-	-	-	-
Sulphonation	-	-	-	-
Travel/Delivery	-	8	23	31
Other	-	199	807	1006
Total	2	395	1568	1965

TABLE 8a: INJURIES TO MALE EMPLOYEES IN THE CHEMICAL INDUSTRY AS REPORTED TO ALL ENFORCING AUTHORITIES, 2002/03

Age of injured person	Fatal	Major	Over 3 Day	Total
01-15	-	-	-	-
16-19	-	6	28	34
20-24	-	22	93	115
25-29	-	25	139	164
30-34	-	49	177	226
35-39	-	49	192	241
40-44	-	33	177	210
45-49	1	38	152	191
50-54	-	46	132	178
55-59	1	32	91	124
60-64	-	11	46	57
65 plus	-	1	4	5
Not known	-	18	34	52
Total	2	330	1265	1597

TABLE 8b: INJURIES TO FEMALE EMPLOYEES IN THE CHEMICAL INDUSTRY AS REPORTED TO ALL ENFORCING AUTHORITIES, 2002/03

Age of injured person	Fatal	Major	Over 3 Day	Total
01-15	-	-	-	-
16-19	-	1	6	7
20-24	-	8	20	28
25-29	-	6	37	43
30-34	-	7	33	40
35-39	-	5	44	49
40-44	-	6	43	49
45-49	-	6	29	35
50-54	-	10	40	50
55-59	-	8	38	46
60-64	-	3	1	4
65 plus	-	1	1	2
Not known	-	4	11	15
Total	-	65	303	368

TABLE 9: PERCENTAGE OF MAJOR AND OVER 3 DAY INJURIES TO EMPLOYEES INVESTIGATED BY HSE'S HID* IN THE CHEMICAL INDUSTRY, BY KIND OF ACCIDENT, 2002/03

	CHEMICAL INDUSTRY						MANUFACTURING					
	Major Injuries	Number of major injuries investigated	Percentage of major injuries investigated	Over 3-day Injuries	Number of over 3-day injuries investigated	Percentage of over 3-day injuries investigated	Major Injuries	Number of major injuries investigated	Percentage of major injuries investigated	Over 3-day Injuries	Number of over-3-day injuries investigated	Percentage of over 3-day injuries investigated
Contact with moving machinery	27	21	78	69	27	39	819	483	59	2789	627	22
Struck by moving, including flying/falling object	25	5	20	146	19	13	1086	241	22	4337	190	4
Struck by moving vehicle	22	8	36	41	10	24	188	98	52	624	140	22
Strike against something fixed or stationary	15	4	27	78	7	9	267	30	11	1623	35	2
Injured whilst handling, lifting or carrying	49	12	24	601	46	8	951	147	15	12516	388	3
Slip, trip or fall on same level	126	13	10	374	10	3	1792	110	6	6522	96	1
Falls from a height of which:												
- up to and including 2 metres	37	13	35	33	6	18	413	86	21	716	49	7
- over 2 metres	7	3	43	8	0	0	138	97	70	108	38	35
- height not stated	7	2	29	21	0	0	122	33	27	258	14	5
Total Falls	51	18	35	62	6	10	673	216	32	1082	101	9
Trapped by something collapsing/overturning	1	0	0	2	0	0	36	16	44	62	11	18
Drowning or asphyxiation	1	1	100	2	1	0	2	1	50	3	1	33

TABLE 9 (CONTINUED)

	CHEMICAL INDUSTRY						MANUFACTURING					
	Major Injuries	Number of major injuries investigated	Percentage of major injuries investigated	Over 3 day Injuries	Number of over 3 day injuries investigated	Percentage of over 3 day injuries investigated	Major Injuries	Number of major injuries investigated	Percentage of major injuries investigated	Over 3 day Injuries	Number of over 3 day injuries investigated	Percentage of over 3 day injuries investigated
Exposure to, or contact with, a harmful substance	58	31	53	143	58	41	242	88	36	925	138	15
Exposure to fire	1	0	0	2	1	50	9	5	56	73	18	25
Exposure to an explosion	4	4	100	0	0	0	17	11	65	19	8	42
Contact with electricity or electrical discharge	3	1	33	5	2	40	24	16	67	101	37	37
Any injury by an animal	0	0	0	1	0	0	12	2	17	27	0	0
Acts of violence	2	0	0	6	0	0	22	0	0	56	0	0
Other kind of accident	9	3	33	32	6	19	160	39	24	848	53	6
Injuries not classified by kind	1	1	100	4	0	0	36	15	42	119	8	7
TOTAL	395	122	31	1568	193	12	6336	1518	24	31726	1851	6

TABLE 10: DANGEROUS OCCURRENCES¹ REPORTED TO HSE IN THE CHEMICAL INDUSTRY, 1996/97- 2002/03

Part 1	(Notifiable in relation to any place of work)	1996/97	1997/98	1998/99	1999/00	2000/01	2001/02	2002/03
1	Failure, collapse or overturning of lifting machinery, excavator, pile driving frame or mobile powered access platform.	57	47	58	37	39	44	38
2	The failure of any closed vessel including boiler or of any associated pipework, in which the internal pressure was above or below atmospheric pressure.	27	33	15	9	14	15	21
3	The failure of any freight container in any of its load-bearing parts while it is being raised, lowered or suspended.	4	3	2	3	-	-	1
4	Plant or equipment either comes into contact with overhead electric line in which the voltage exceeds 200 volts or causes an electrical discharge.	3	4	3	7	3	3	0
5	Electrical short circuit, which results in the stoppage of the plant for more than 24 hours.	12	13	6	8	8	13	9
6	Unintentional ignition or explosion of explosives.	2	10	3	3	4	4	1
7	The release or escape of a biological agent likely to cause human infection or illness.	8	11	3	3	1	4	3
8	The malfunction of radiation generators.	1	-	-	-	-	-	-
9	Failure of breathing apparatus in service.	9	6	9	4	3	4	3
10	Failure of any lifting or life support equipment during a diving operation, which puts a diver at risk.	-	1	-	-	-	-	-
11	Complete or partial collapse of scaffold over 5m high.	-	4	2	1	1	1	1
12	Any unintended collision of a train with any other train or vehicle (other than one recorded in part 4 of this table), which caused, or might have caused the death of or major injury to any person.	1	-	-	-	-	-	-
13	Incidents in relation to a well (other than a well sunk for the purpose of the abstraction of water).	-	-	-	-	-	-	-
14	Incidents in respect of a pipeline or pipeline works.	11	15	7	8	11	12	5
15	Failure of fairground equipment in use or under test.	-	-	-	-	-	-	-
16	Overturning or serious damage to a tank while conveying by road prescribed dangerous substances, or the uncontrolled release or fire involving the substance being	2	4	1	2	2	6	1
17	Uncontrolled release or escape of a dangerous substance, or a fire involving the dangerous substance, when being conveyed by road in a vehicle.	2	4	8	4	11	17	9
18	Collapse or partial collapse of any building or structure under construction involving over 5 tonnes of materials or any floor or wall of a building used as a place of work.	2	3	2	5	2	3	5
19	An explosion or fire occurring in any plant or premises, which results in the stoppage of that plant for more than 24 hours.	44	37	30	25	34	39	39
20	The sudden, uncontrolled release of flammable substances.	56	63	55	45	32	35	27
21	The accidental release or escape of any substance in a quantity sufficient to cause the death, major injury or any other damage to the health of any person.	111	92	81	76	63	80	59
41	The collapse of any storage bunker.	-	-	-	-	1	1	-
43	An incident in which any person suffers an injury (not otherwise reportable under these regulations) which results from an explosion or from the discharge of any explosives for which he receives first-aid or medical	-	-	-	-	-	1	2
44	Any incident in which any substance is ascertained to have been projected beyond a quarry boundary as a result of blasting operations in circumstances in which any person was or might have been endangered.	-	-	-	-	-	1	-
	Total	352	350	285	240	229	283	224

¹ Full definitions of dangerous occurrences can be found in *A Guide to the Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 1995*.

TABLE 11: REQUIREMENTS OF ENFORCEMENT NOTICES ISSUED IN THE CHEMICAL SECTOR BY HSE¹, 1996/97 – 2002/03

Year	Improvement	Deferred Prohibition	Immediate Prohibition	COMAH Prohibition Notice	Total
1996/97	139	6	62	-	207
1997/98	216	2	81	-	299
1998/99	361	14	75	-	450
1999/00	324	7	107	-	438
2000/01	227	13	39	-	279
2001/02	241	25	50	5	321
2002/03	191	9	53	2	255

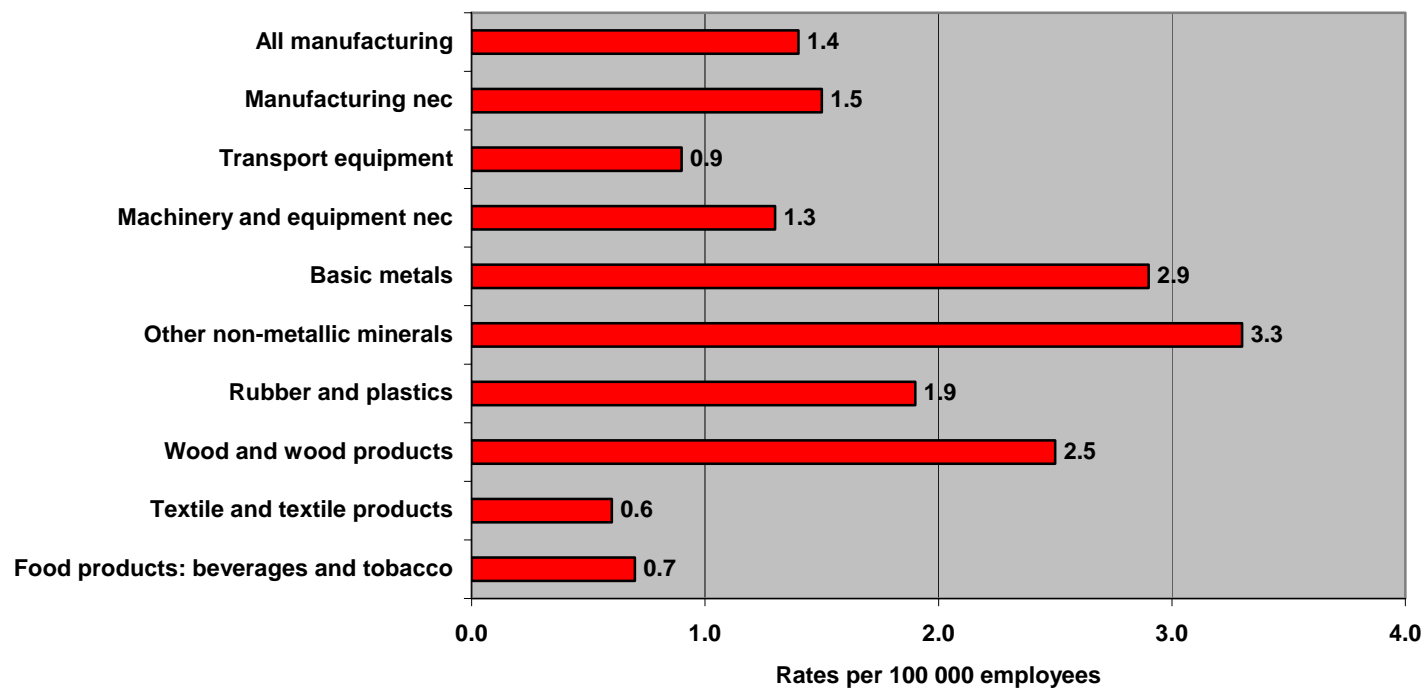
1 Prior to 1996/97 notices exclude those issued by the Explosives Inspectorate.

TABLE 12: PROCEEDINGS INSTITUTED BY HSE¹ WITHIN THE CHEMICAL SECTOR, 1996/97 – 2002/03

Year	Informations Laid	Convictions	Total Fines (£)	Average Fine per Conviction (£)
1996/97	40	31	163 000	5 258
1997/98	53	46	506 150	11 003
1998/99	35	35	170 000	4 857
1999/00	58	49	947 300	19 333
2000/01	53	43	290 100	14 946
2001/02	40	22	107 850	4 902
2002/03	42	36	265700	7381

1 Prior to 1996/97 notices exclude those issued by the Explosives Inspectorate.

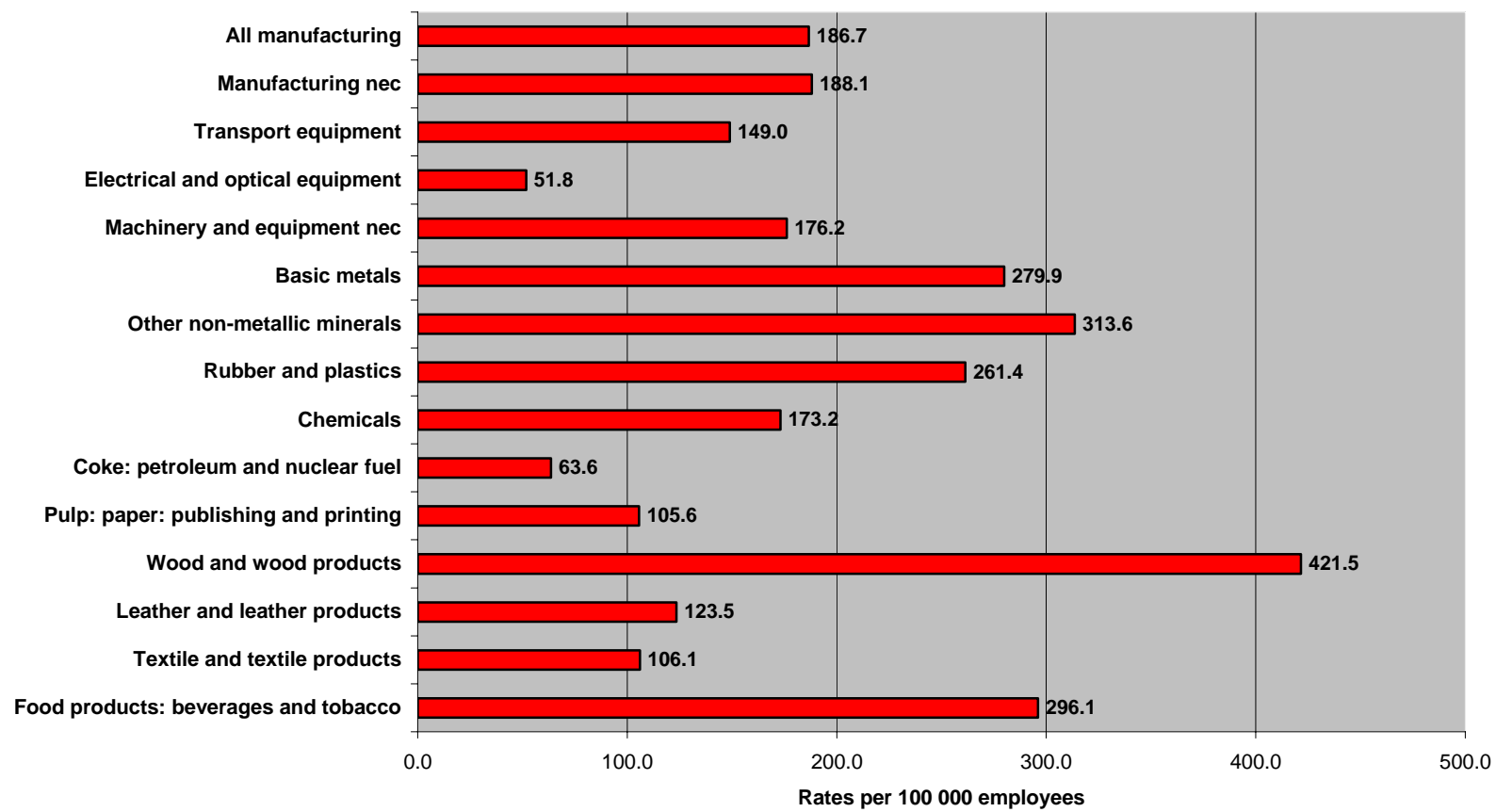
FIGURE 1: FATAL INJURY INCIDENCE RATES – MANUFACTURING INDUSTRIES 2002/03



nec – not elsewhere classified

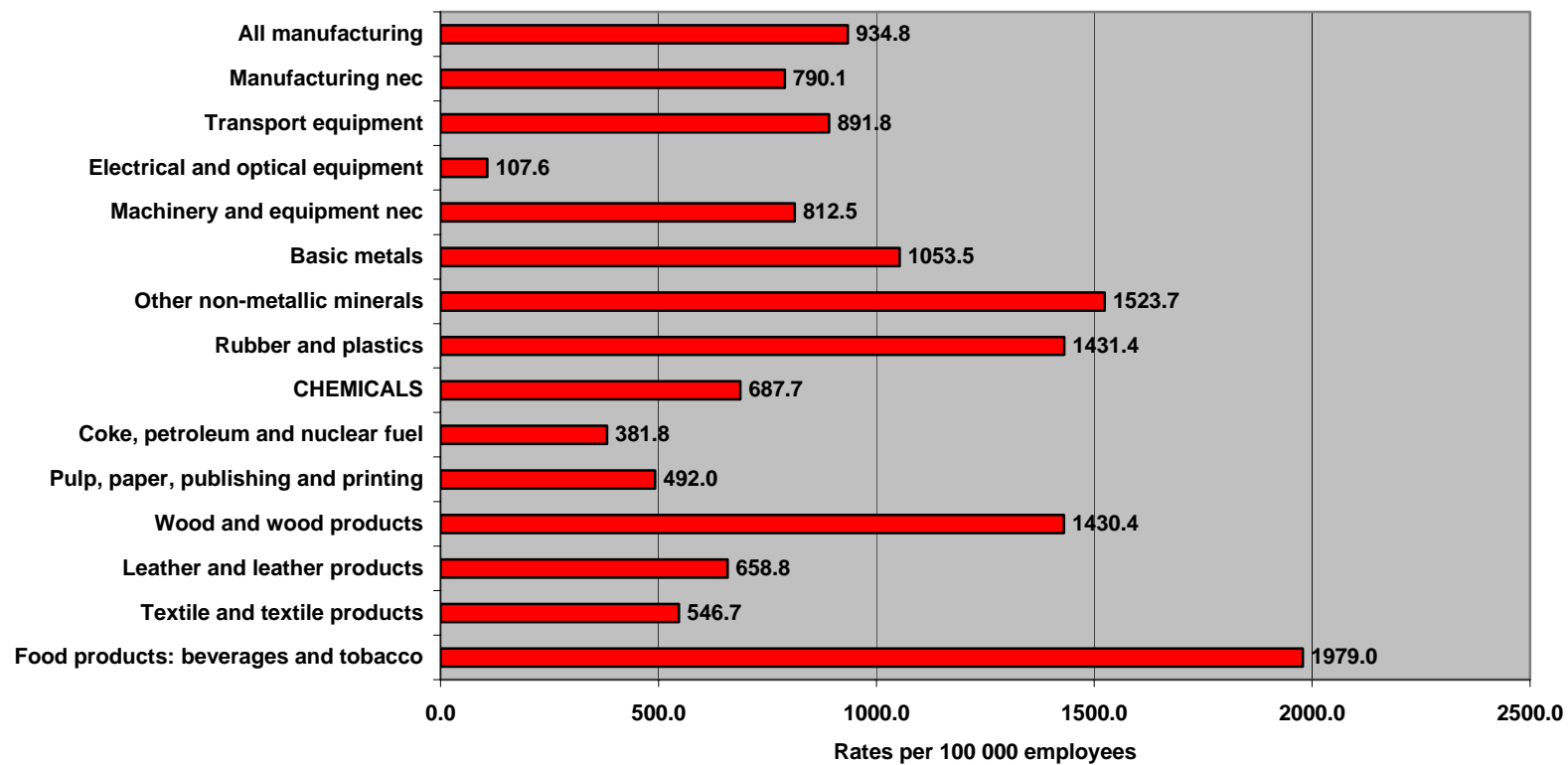
Four subsections of manufacturing (including the chemical industry) have rates of 0 and are not included here

FIGURE 2: MAJOR INJURY INCIDENCE RATES – MANUFACTURING INDUSTRIES 2002/03



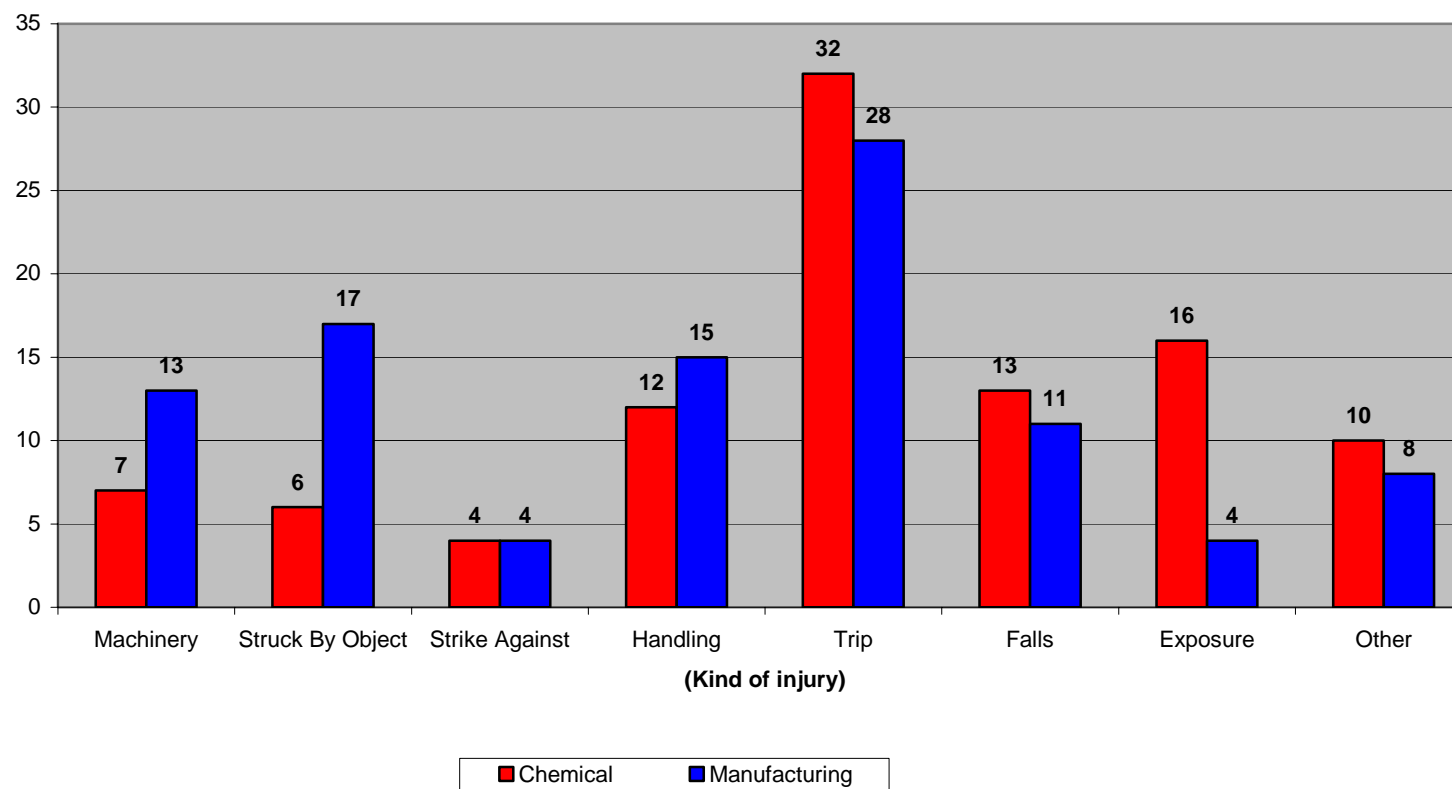
nec – not elsewhere classified

FIGURE 3: OVER 3-DAY INJURY INCIDENT RATES – MANUFACTURING INDUSTRIES 2002/03



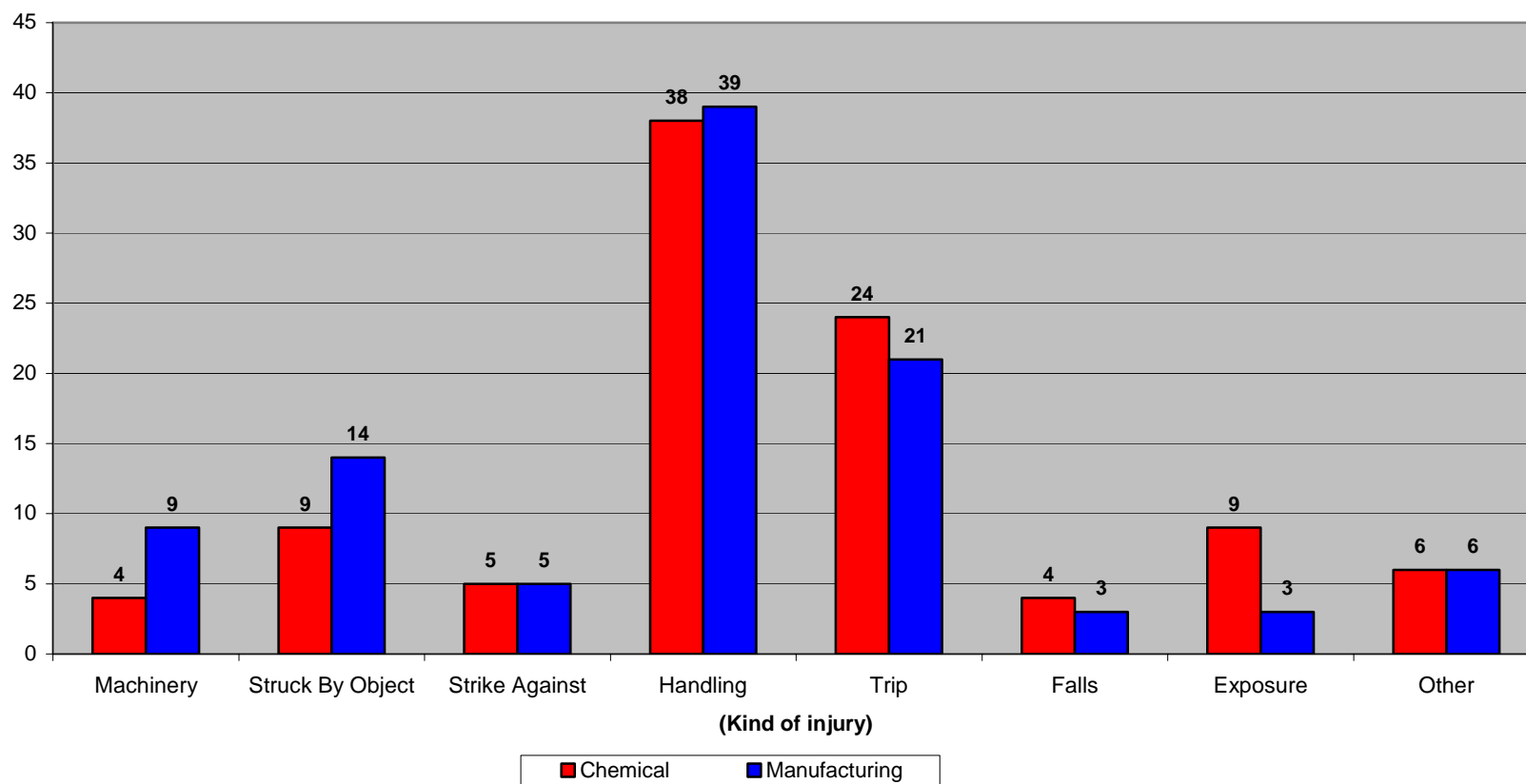
nec – not elsewhere classified

FIGURE 4: MAJOR INJURIES TO EMPLOYEES – CHEMICAL INDUSTRY/MANUFACTURING 2002/03 (PERCENTAGE OF TOTAL INJURIES)



*Other' category includes: struck by moving vehicle; collapse/overturn; drowning/asphyxiation; exposures (fire/explosion); contact with electricity; animal injuries; violence; other kinds; kind not known.

FIGURE 5: OVER 3-DAY INJURIES TO EMPLOYEES – CHEMICAL INDUSTRY/MANUFACTURING 2002/03 (PERCENTAGE OF TOTAL INJURIES)



Other' category includes: struck by moving vehicle; collapse/overturn; drowning/asphyxiation; exposures (fire/explosion); contact with electricity; animal injuries; violence; other kinds; kind not known

FIGURE 6: MAJOR INJURIES TO EMPLOYEES - CHEMICAL INDUSTRY/MANUFACTURING 2002/03 (PERCENTAGE OF TOTAL INJURIES)

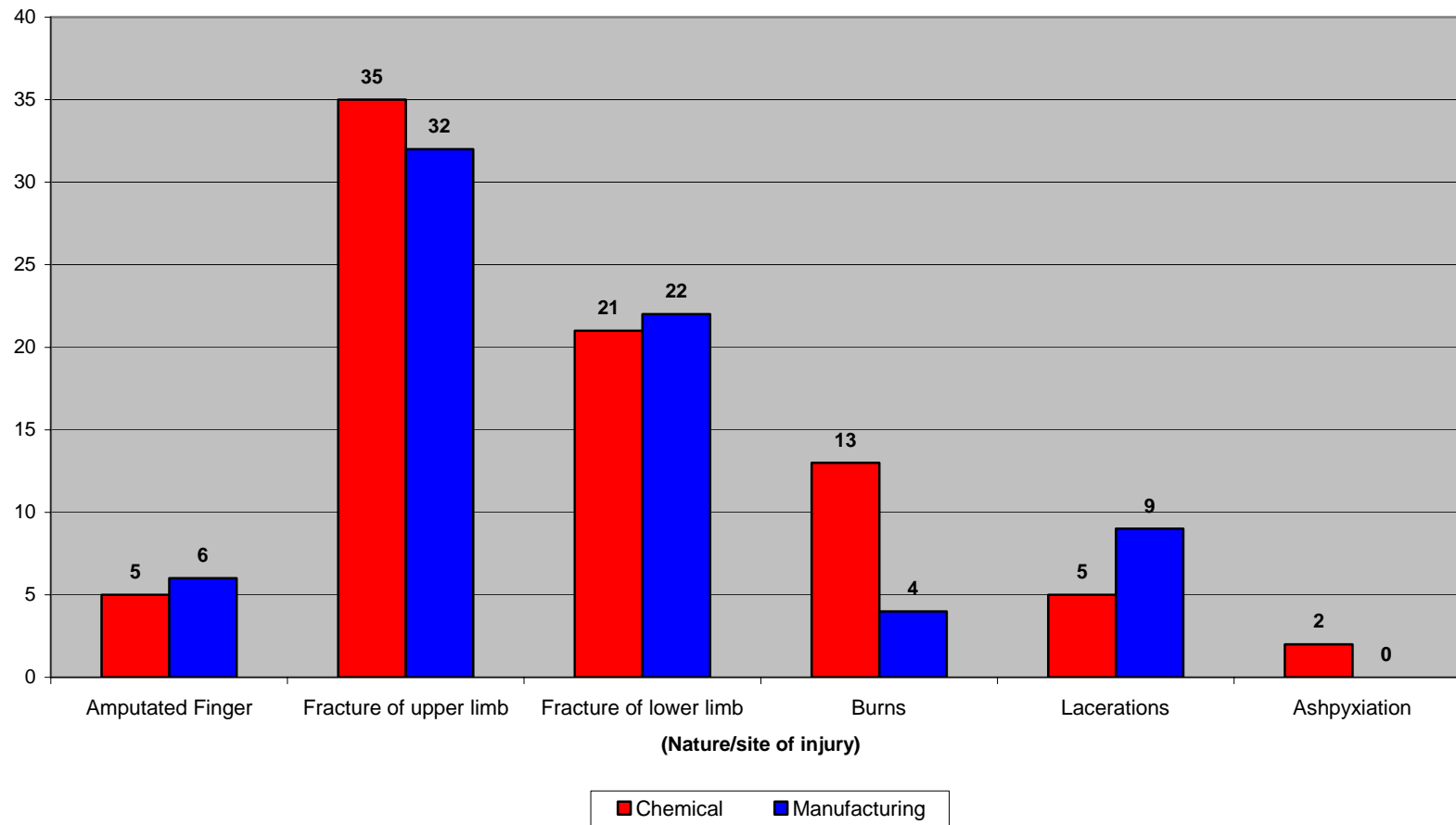
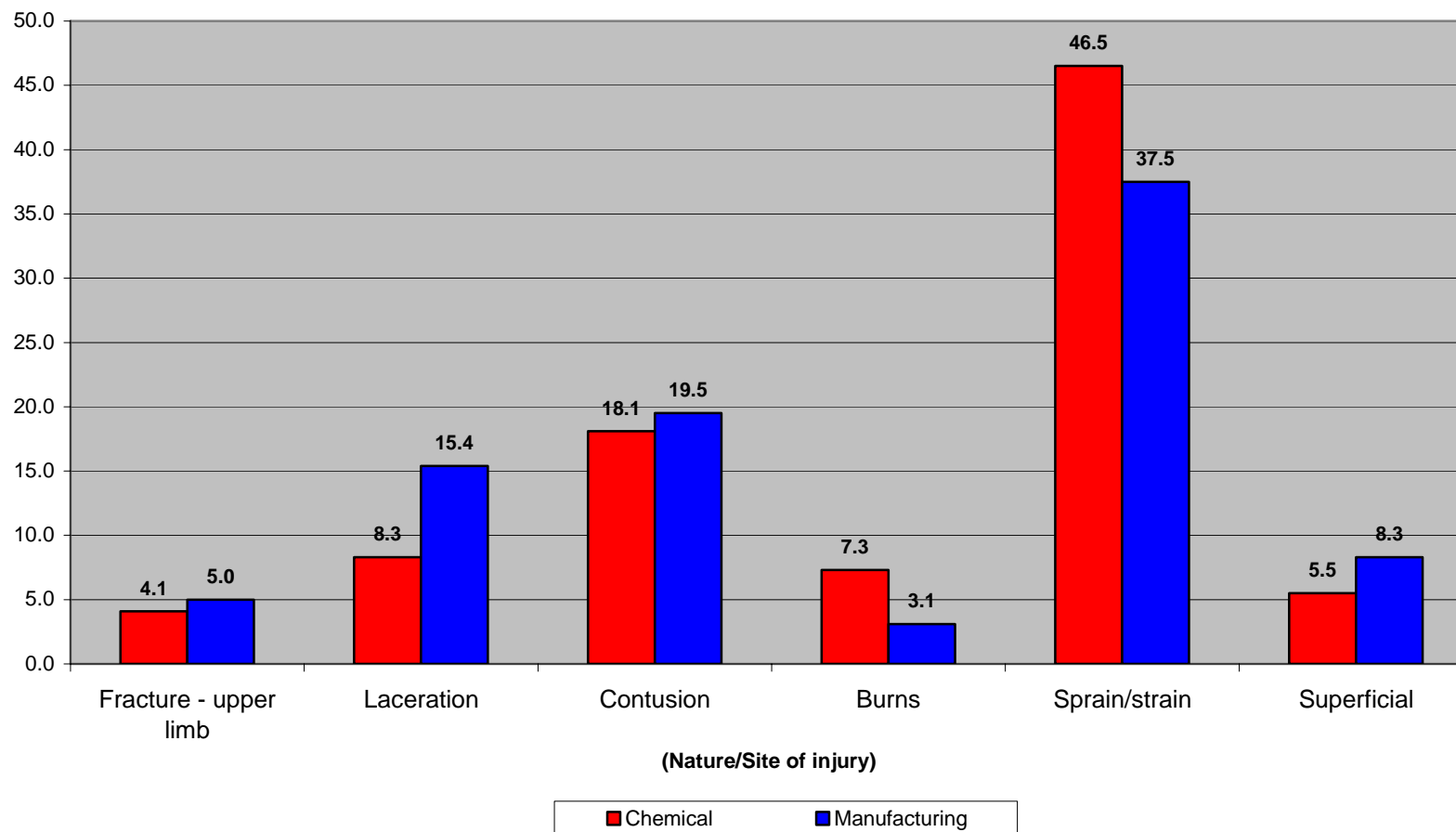


FIGURE 7: OVER 3-DAY INJURIES TO EMPLOYEES - CHEMICAL INDUSTRY/MANUFACTURING 2002/03 (PERCENTAGE OF TOTAL INJURIES)



APPENDIX 1

MAJOR AND OVER 3-DAY INJURY DEFINITIONS UNDER RIDDOR – REPORTING OF INJURIES, DISEASES AND DANGEROUS OCCURRENCES REGULATIONS 1995

MAJOR INJURIES

- a) Any fracture, other than to the fingers, thumbs or toes.
- b) Any amputation.
- c) Dislocation of the shoulder, hip, knee or spine.
- d) Loss of sight (whether temporary or permanent).
- e) A chemical or hot metal burn to the eye or any penetrating injury to the eye.
- f) Any injury resulting from an electric shock or electrical burn (including any electrical burn caused by arcing or arcing products) leading to unconsciousness or requiring resuscitation or admittance to hospital for more than 24 hours.
- g) Any other injury:
 - i) leading to hypothermia, heat-induced illness or to unconsciousness;
 - ii) requiring resuscitation; or
 - iii) requiring admittance to hospital for more than 24 hours.
- h) Loss of consciousness caused by asphyxia or by exposure to a harmful substance or biological agent.
- i) Either of the following conditions which result from the absorption of any substance by inhalation, ingestion or through the skin:
 - i) acute illness requiring medical treatment; or
 - ii) loss of consciousness.
- j) Acute illness which requires medical treatment whether there is a reason to believe that this resulted from exposure to a biological agent or its toxins or infected material.

OVER 3-DAY INJURIES

An over 3-day injury is an injury causing incapacity for *normal* work for **more** than 3 days.

APPENDIX 2

EFFECT OF RIDDOR 95 ON NUMBERS OF INJURIES AND DANGEROUS OCCURRENCES REPORTED IN 1996/97

Background to the change in regulations

Injury and dangerous occurrences statistics for 1996/97 and 1997/98p were compiled from reports made to HSE and local authorities under the Reporting of Injuries, Diseases and Dangerous Occurrence Regulations 1995 (RIDDOR 95), which came into force on 1 April 1996. There are a number of differences between RIDDOR 95 and the previous reporting regulations, RIDDOR 85. These changes resulted in substantial differences in the number of injuries and dangerous occurrences reported in 1996/97 compared with trends in previous years.

Keys changes under the new regulations

In 1996/97:

- Fatal, major and over 3-day injuries resulting from acts of physical violence at work became reportable;
- Acts of suicide or trespass which lead to a fatality on railways or other relevant transport systems became reportable;
- The list of reportable major injuries was simplified and expanded slightly. A number of additional injuries became reportable as major injuries, including fractures of the hand and foot and dislocations of the spine, knee, hip and shoulder;
- The definition of a non-fatal injury to a member of the public was changed. Any injuries caused by accidents arising out of or in connection with work activity which cause a person to be taken from the site of the accident to a hospital became reportable;
- The list of dangerous occurrences was expanded and made clearer.