COST COMPARISON OF FALLING FROM FRAGILE ROOF TYPE ACCIDENTS IN TERMS OF OCCUPATIONAL HEALTH AND SAFETY

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ABSTRACT

COST COMPARISON OF FALLING FROM FRAGILE ROOF TYPE ACCIDENTS IN TERMS OF OCCUPATIONAL HEALTH AND SAFETY

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Occupational health and safety becomes more and more important day by day with increasing rate of supervisioning. Aim of the occupational health and safety is removing all and any kind of dangers, minimizing the risks and protecting the workers from occupational accidents and diseases, providing a safe production line by efficiency in time and maximum individual performance. Falling from fragile roof type of accidents are very common in construction sector. In this thesis, 195 occupational accident expert reports for construction sites from Ankara Courts are investigated and analyzed in order to show the current situation. Falling from fragile roof type of accidents are specifically evaluated in terms of costs that the responsible may face in case of an injury or death and the cost of precautions that should be taken to prevent these type of accidents.

Keywords: Occupational Health and Safety, Construction Accidents, Occupational Accidents, Falling From Fragile Roof, Cost Analysis

ÖZ

İŞ SAĞLIĞI VE GÜVENLIĞI AÇISINDAN

KIRILGAN ÇATILARDAN DÜŞME TİPİ KAZALARDA MALİYET KARŞILAŞTIRMALARI

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İş sağlığı ve güvenliği, denetimlerle birlikte gün geçtikte daha fazla önemli hale gelmektedir. İş sağlığı ve güvenliğinin temel amacı bütün ve her çeşit tehlikeyi ortadan kaldırmak, riski minimize ederek işçileri iş kazaları ve meslek hastalıklarından korumak, zamanında ve bireysel maksimum performansla güvenli bir üretim hattı kurmaktır. Çatıdan düşme şeklinde oluşan iş kazaları, inşaat sektöründeki en yaygın iş kazası gruplarından birisidir. Bu tez çalışmasında, çatıdan düşmeli iş kazalarına dikkat çekmek amacıyla Ankara Mahkemelerine gelen, şantiyelerdeki iş kazaları ile ilgili 195 adet iş kazası bilirkişi raporu incelenmiş ve mevcut durumu gösterebilmek amacıyla analiz edilmiştir. Özellikle çatıdan düşmeli iş kazalarının , yaralanma veya ölümle sonuçlanması durumunda sorumlunun karşılaşacağı maliyetler ve alınması gereken önlemlerin maliyetleri bu tez çalışması kapsamında karşılaştırılmıştır.

Anahtar Kelimeler: İş Sağlığı ve Güvenliği, Şantiyelerde İş Kazaları, Kırılgan Çatıdan Düşmeli İş Kazaları, Çatıdan Düşmeli İş Kazaları Önleme Maliyet Analizleri

To My Daughter, To My Wife...

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ILO	International Labor Organization
METU	Middle East Technical University
NIOSH	National Institute of Safety and Health
OHSAS	Occupational Health and Safety Advisory Services
OSHA	Occupational Safety and Health Administration
PPE	Personal Protective Equipment
SPSS	Statistical Package for Social Sciences
SSA	Social Security Administration
SSI	Social Security Institute
TCL	Turkish Criminal Law
TLL	Turkish Labour Law
TSI	Turkish Statistical Institute
UN	United Nations
WHO	World Health Organization

CHAPTER 1

INTRODUCTION

Importance of occupational health and safety becomes an ever increasing issue in workplaces due to growth in job opportunities and rise in occupational accidents. It is an important issue to research the reasons and depressing situations of occupational accidents in our country and why many other countries are one step further than Turkey.

Aims of the occupational health and safety can be given as removing all and any kind of dangers, minimizing the risks and protecting the workers from occupational accidents and diseases, providing a safe production line by efficiency in time and maximum individual performance, auditing any kind of tools, machines and instruments that may cause damages, training qualified staff who may provide safe and a healthy working area.

In accordance with the purpose, statistics and data are studied regarding with the issue, in order to show the current situation in Turkey. Besides, liability and sanction issues are annexed.

As a social responsibility, it is our goal to examine occupational health and safety on these two parties; the Employer and the State basis. Also the liabilities and indemnizations are examined on each party.

Falling from roof type of occupational accidents have the highest ratings of accidents in construction sector. It is the most risky working area in all kinds and parts of construction site, that’s why it has the highest ratio of fatal results.

As being one of the most dangerous, falling from fragile roof is tried to be examined in terms of occupational health and safety. Moreover, preventive precautions for falling type of accidents require more preventive actions compared to others, which means most expensive costs will be considered and examined for the comparison.

Regarding the cases of claims for indemnity and public cases, this study tries to explain the situation of the worker and the employer in case of a trial and the rights expected to be obtained for each party.

CHAPTER 2

CONCEPTS OF OCCUPATIONAL ACCIDENTS

2.1 Occupational Accidents in the World

As of 2003, 360.000 fatal occupational accidents have occurred in the world and in 2002 around 2 million people died as a result of occupation-related diseases. It is assumed that due to occupational accidents, every day more than 960.000 people have been injured and 5.330 employees have died. It can be seen also from Table 2.1 that as a result of occupational accidents and occupational diseases, more than half of the deaths have, occurred in Asia-Pacific and Southeast Asian countries (Karadeniz, 2012).

Occupational accidents and occupational diseases are one of the most important problem areas in working environment. International Labor Organization (ILO) anticipated that in 2003 worldwide, there are 358.000 deaths and 337 million injury, occurred due to the occupational accidents and 1.95 million people died as a result of occupation-related diseases. (ILO, 2009). In case of death to the survivors; and in case of injury to persons and families achieved revenue losses are enormous. The economic costs of occupational accidents and occupational diseases in the world are reaching 5% of national income (ILO, 2009).

Social protection as a broad concept comprises measurement against occupational accidents and occupational diseases; and also includes the compensation system for loss of income and increased expenses that occurs after an injury or illness. In the world, the first efforts towards the establishment of social security mainly seem to be related to the reimbursement of the loss, arising from occupational accidents and occupational diseases. In developed countries, the social insurance systems regarding to occupational accidents and occupational diseases are established after the Second World War. However, it is observed that in developing countries majority of employees still stay out of such security insurance. Occupational health and safety legislation is also implemented effectively in developed countries mainly (Hatipoğlu, 2006).

Table 2.1: Estimations Related to Occupational Accidents and Occupational Disease in Various Regions of the World (Karadeniz, 2013)

	Economically Active Population	Total Employment	Gross National Product ($)	Deadly Work Accident Reported ILO (2003)	Occupational Illness Caused Lack of Continuity at Leats 4 Days Reported to ILO (2003)	Deadly Work Accident (2003)	Occupational Illness Caused Lack of Continuity at Leats 4 Days (2003)	Death Due to Occupational Illness	Death Due to Ilness Related to Work (2002)
Africa-E	132,866,600	15,280,337	210,542	738	49,285	31,843	29,937,739	118,849	150,692
Africa-W	131,234,211	14,925,556	264,376	0	0	23,646	22,230,937	241,51	265,156
America-E	163,464,100	152,401,100	11,876,375	6,538	1,664,774	8,042	7,560,855	93,726	101,768
America-W	201,671,598	178,241,947	1,678,967	2,175	731,916	28,514	26,807,839	87,394	112,768
America-N	20,813,456	12,114,500	128,171	21	11,366	2,616	2,459,693	19,718	22,334
South East Asia	154,615,946	133,266,800	399,711	829	57,694	23,925	22,493,982	89,534	113,459
North East Asia	569,693,174	44,322,000	685,741	192	1,052	69,51	65,351,517	428,339	497,849
Europe-E	196,300,605	181,149,732	11,367,353	3,193	2,727,458	5,298	4,981,125	139,519	144,817
Europe-W	93,080,120	58,932,408	634,232	1,246	108,356	7,176	6,746,581	56,881	64,057
Europe-N	116,031,800	106,282,700	651,809	579	38,775	9,091	8,546,706	122,128	131,219
East Mediterranean	48,812,527	13,105,703	627,28	0	0	5,468	5,141,097	20,395	25,864
West Mediterranean	129,567,011	66,603,372	228,331	110	26,884	17,438	16,394,381	85,738	103,176
Asia Pacific-E	81,061,197	76,720,154	4,987,394	1,916	259,112	2,37	2,228,468	45,745	48,115
Asia Pacific-W	877,139,692	807,654,634	2,427,423	530	80,871	123,011	115,651,552	395,638	518,649
Turkey	23,641,000	21,147,000	----	----	---	2,099	1,973,423	----	14,47
World	2,916,253,037	1,862,000,943	36,167,705	18,067	5,757,542	357,948	336,532,471	1,945,115	2,303,064

2.2 Occupational Accidents in Turkey

Today; dazzling advances in technology, and great increases in production and competition in the market brings more consideration to the risk to employees' health and safety at working environment. In particular, industrialization and new production methods come to the fore in the 20th century, so deaths and loss of limbs as a result of occupational accidents caused by intensive mechanization has increased through this century.

As a result of globalization, hazards and risks brought about industrialization have started to be transferred from developed countries to developing countries. While the number of occupational accidents and occupational diseases in developing countries such as Turkey is increasing, employees in developed countries are faced with new risks due to adverse working conditions in the services sector. In developing countries, rapid migration from rural areas to cities; failure to adapt employees with low level of education to occupational environment; adverse conditions in the network of international companies; widespread informal sector and insufficient occupation control have caused to increase number of occupational accidents and occupational diseases.

2.2.1 Numeral Reviews in Occupational Accidents

In 2012, 74.871 insured employees had occupational accidents. 69.090 of these employees were male which is %93 and 5.781 were female which is %7. The number of occupational accidents had increased by %8 compared to a year ago. In 2011, the number of occupational accidents was 69.277 (SSI, 2012).

In 2012, the number of deaths due to the occupational accidents was 744; according to the statistics from SSI. The number of male was 735 and female was 9. The number of deaths due to occupational accidents had decreased by %56 compared to a year ago. In 2011, the number of deaths due to the occupational accidents was 1.700. These numerical values is shown in below Table 2.2 with occupational accidents in 2011 and 2012, separated by gender.

Table 2.2: The Occupational Accident Statistics for 2011 and 2012 (SSI, 2012)

Insured Employee	2011					2012				
	Number of Mandatory Insured (1)	Male	Female	TOTAL (2)	Rate (%) (2/1)	Number of Mandatory Insured (1)	Male	Female	TOTAL (2)	Rate (%) (2/1)
1000+	461.256	6.436	322	6.758	1,465	552.696	6.933	694	7.627	1,380
500-999	512.824	3.841	433	4.274	0,832	1.543.433	19.489	1.744	21.233	1,376
200-249	302.497	2.261	190	2.451	0,810	557.315	4.285	421	4.706	0,844
100-199	1.042.986	7.657	566	8.223	0,788	1.117.597	6.839	622	7.461	0,668
1-3	1.446.443	10.174	543	10.717	0,741	326.857	1.893	179	2.072	0,634
250-499	788.849	5.100	508	5.608	0,711	851.485	4.879	479	5.358	0,629
50-99	1.063.928	5.957	372	6.329	0,595	1.163.645	5.700	417	6.117	0,526
10-20	1.658.196	8.700	467	9.167	0,553	2.082.432	8.263	550	8.813	0,423
21-49	1.928.303	9.156	480	9.636	0,500	1.779.095	6.211	387	6.598	0,371
4-9	1.824.756	5.776	287	6.063	0,332	1.965.065	4.598	288	4.486	0,279
Unknown	0	1	0	1	0,000	0	0	0	0	0,000
TOTAL	11.030.939	65.059	4.168	69.227	0,628	11.939.620	69.090	5.781	74.871	0,627

Occupational accidents weight rate and frequency rate are two concepts that are used to compare occurring of occupational accidents in the sector and in the country as well as with the other countries of the world. When calculating the frequency rate of occupational accidents, generally two methods are used. In the first method, occurring occupational accidents are calculated within the period of one million working hour and in the second method, the number of employees who had accidents in every 100 people is calculated. In 2011, the number of occupational accidents within every one million working hour (occupational accidents frequency rate) was 2.61 and the number of employees who had accidents in every 100 people (occupational accidents frequency rate) was 0.55. In 2012 the number of occupational accidents within every one million working hour (occupational accidents frequency rate) was calculated as 2.43 and the number of employees who had accidents in every 100 people (occupational accidents frequency rate) was calculated as 0.55 (İşlek, 2010).

The weight rate of occupational accidents is also calculated by two methods. In the first method, total number of workday loss within the period of one million working hour is calculated and in the second method, how many hours is lost due to occupational accidents in every 100 working hours is calculated. In 2011, total number of workday loss within the period of one million working hour (occupational accidents weight rate) was 721 and total number of working hours that is lost due to occupational accidents in every 100 working hours (occupational accidents weight rate) was 0.58. In 2012, total number of workday loss within the period of one million working hour (occupational accidents weight rate) was calculated as 395 and total number of working hours that is lost due to occupational accidents in every 100 working hours (occupational accidents weight rate) was calculated as 0.32. 2012 values are the latest data available.

Occupational accidents in Turkey are examined below under various headings.

2.2.1.1 Occupational Accidents by Years

The progress of occupational accidents as per frequency rate and weight rate in Turkey is shown by year in the graph below. The data in this graph is normalized as number of occupational accidents per 100 employees and number of deaths and permanent disabilities per 100.000 employees. Although there is not any significant change in other parameters, death rate has decreased dramatically by 56 % when compared to 2011.

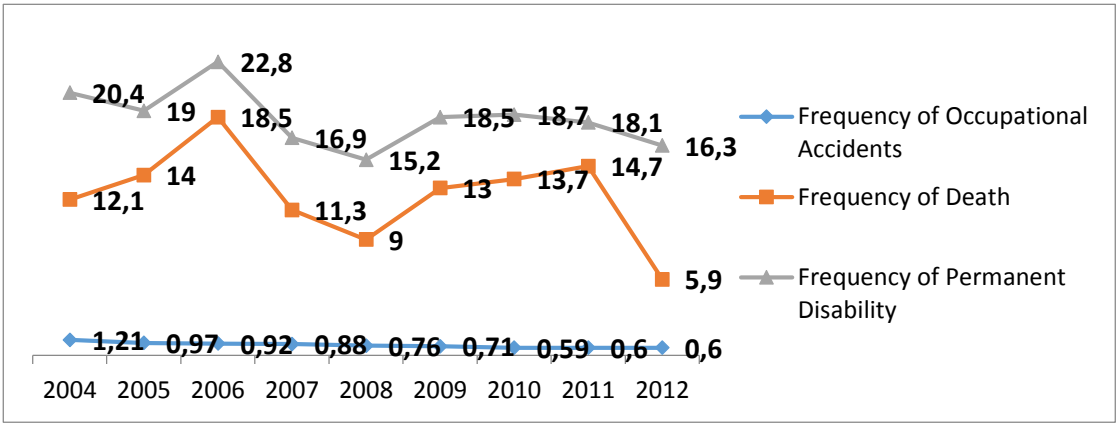

Figure 2.2: Frequencies of Occupational Accidents by Year (SSI, 2012)

2.2.1.2 Occupational Accidents According to Industries

In terms of industries, probability rate of occupational accidents that the worker may face in mining and quarrying is 10.4%, in electricity, gas, steam, water and sewerage sector is 5.2%; and in construction industry is 4.3%. This statistics should not be confused with that the rates of occupational accidents in terms of professions in Turkey. In other words, Figure 2.2a below shows that, 4.3 workers has an occupational accident over 100 workers working in construction. Therefore, in order to get the idea about the occupational accidents comparison between the job groups, number of worker that are working for that job should be considered with these ratios.

When these results by industries are compared with results of the year 2007, occupational accidents had increased 0.1 point in mining and quarrying sector but had decreased 0.2 point in construction industry.

The rate of occupational accidents in electricity, gas, steam, and water and sewerage sector had not been changed between these years. Besides, in manufacturing industry which has the largest share in terms of occupational accidents, the rate had decreased 1.8 point and become 3.3%.

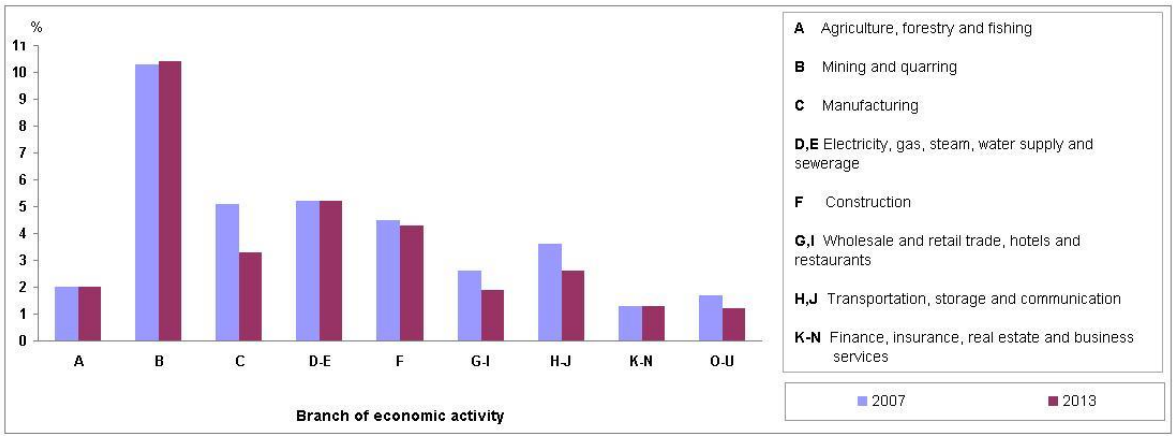

Figure 2.2a: Rate of Occupational Accidents According to Industries (SSI, 2013)

Table 2.2a: Occupational Accidents and Occupational Diseases According To Professions (SSI, 2012)

Occupational Group	Workers Who Are Employed In Last 12 Months		Job Accident				Employed Workers Or Who Used To Work		Work-Related Health Problems			
			Workers Who Have Job Accidents In Last 12 Months						Workers Who Has Work-Related Health Problems In Last 12 Months			
	Number		Number		%		Number		Number		%	
	2007	2013	2007	2013	2007	2013	2007	2013	2007	2013	2007	2013
Total	**24470**	**30614**	**725**	**706**	**3**	**2,3**	**33014**	**43655**	**1217**	**895**	**3,7**	**2,1**
Legislators, Senior Officials	1539	1377	32	14	2,1	1	1761	1572	63	29	3,6	1,8
Professionals	1722	2515	20	22	1,2	0,9	1978	2778	65	68	3,3	2,4
Subsidiary Professionals	1307	1541	25	27	1,9	1,8	1510	1762	50	37	3,3	2,1
Office And Customer Service Workers	1346	1864	15	15	1,1	0,8	1620	2304	41	39	2,5	1,7
Service And Sales Workers	3859	5588	77	75	2	1,3	4432	6644	138	126	3,1	1,9
Skilled Agricultural, Animal Husbandry, HuntIng, Forestry And Fishery Products Workers	4756	5511	99	121	2,1	2,2	5279	6214	184	140	3,5	2,3
Artisans And Who Works In Related Jobs	3814	4267	218	204	5,7	4,8	4378	4916	209	159	4,8	3,2
MachIne Operators And Assemblers	2457	2781	140	109	5,7	3,9	2835	3224	119	90	4,2	2,8
Unskilled Workers	3670	5171	99	120	2,7	2,3	4359	6381	179	148	4,1	2,3
Resigned Before Eight Years	-	-	-	-	-	-	4862	7860	169	60	3,5	0,8

The Table 2.2a above shows the occurrence of occupational accidents and occupational diseases according to occupation groups. According to this table legislators and senior managers, professionals and associate professionals are significantly less exposed to occupational accidents. Besides these, for both occupational accidents and work related health problems can be analyzed and compared for all type of occupations for 2007 and 2013. For instance, comparing with 2007, job accidents ratio for the last 12 months decreased in 2013 for all occupation groups, except skilled agricultural, animal husbandry, hunting, forestry and fishery products group of workers. For that workers, the ratio has increased from 2.1% to 2.2%.

2.2.1.3 Occupational Accidents According to the Age of the Victims

Most of the time, age of the workers represents the workers experience on their jobs. With this general acception, Table 2.2b below shows the occupational accident distributions according to victim's ages and gender at the same time. For instance, 26% of occupational accidents have occurred among employees with 3 months – 1 year work experience and 19% of occupational accidents have occurred among employees with an experience of more than 5 years. However, there is not any information or statistics about how much of these had job safety or vocational training.

In order to get more clear results from the statistics, analyzing the Table 7 deeply, the occupational accidents ratio for the ages between 25 and 34 is about 44,9% in 2011 and 43,4% in 2012. This can be considered as an expected situation since according to Turkish Statistical Institution the average age of the population of Turkey is 30 (TSI, 2013).

Table 2.2b: Occupational Accidents According to Age Groups (SSI, 2012)

Age Groups	2011			2012		
	Male	**Female**	**Total**	**Male**	**Female**	**Total**
-14	7	1	8	9	0	9
15-17	312	29	341	436	63	499
18-24	9.852	958	10.810	10.815	1.228	12.043
25-29	15.100	777	15.877	15.096	1.089	16.185
30-34	14.382	818	15.200	15.197	1.111	16.308
35-39	10.731	709	11.440	11.251	1.000	12.251
40-44	7.714	521	8.235	8.220	700	8.920
45-49	4.895	245	5.140	5.453	363	5.816
50-54	1.410	70	1.480	1.776	155	1.931
55-59	495	25	520	608	43	651
60-64	104	3	107	161	13	174
65+	57	12	69	68	16	84
Total	**65.059**	**4.168**	**69.227**	**69.090**	**5.781**	**74.871**
Weighted Average Age	33	32	33	33	32	33

Another demonstration of the same distribution is the bar chart given as Figure 2.2b. Under Article 4-1/a of Turkish Labor Law 5510 active cases of occupational accidents of the insured employees' distribution by age group and gender distribution is shown and it is clearly seen from the figure that employees in the 25-39 age range were involved in occupational accidents more than others.

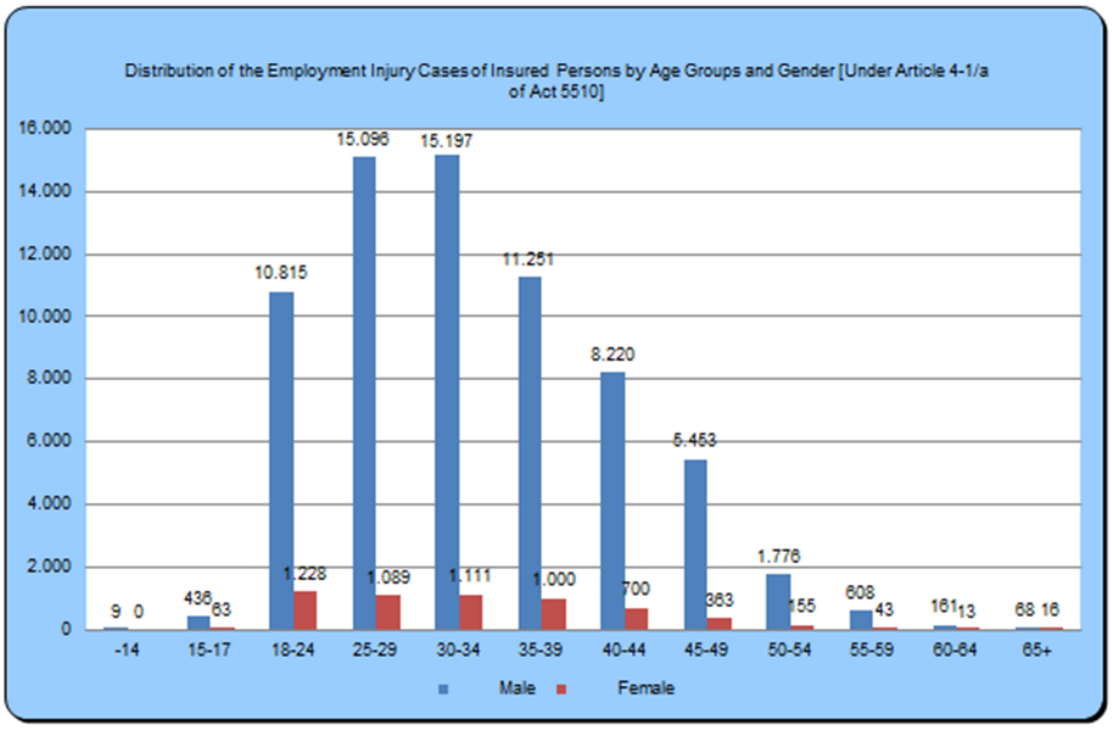

Figure 2.2b: Distribution of the Insured Workers by Age Groups and Gender (SSI, 2012)

2.2.1.4 Occupational Accidents with Deaths and Injuries

Table 2.2c: Occupational Accidents Occurring in the Construction Sector in Turkey (Müngen, 2011)

Year	Total Number		Permanent Total Disability		Death	
	Total	Construction Sector	Total	Construction Sector	Total	Construction Sector
2005	73923	6480	1374	322	1072	290
2006	79027	7143	1953	425	1592	397
2007	80602	7615	1550	359	1043	359
2008	72963	5574	1452	373	886	297
2009	64316	6891	1668	282	1171	156
Avg.	**74166**	**6441**	**1599**	**352**	**1153**	**300**

According to given table above and considering the average values of these five years and assuming working 300 days per year and 8 hours per day in construction sector in Turkey:

In average, about 22 occupational accidents occur in every working day and 3 occupational accidents occur in every working hour and 1 occupational accident occurs in every 20 minutes.

Every working day about 1.2 persons become unable to work constantly and 1 person has died as a result of occupational accidents.

Another negative feature of occupational accidents in construction sector in Turkey is about the fatality rate. In Turkey, although 1.6% of all occupational accidents result in death, this rate is 4.7% for occupational accidents in the construction sector, which is very high.

On the other hand, between 2005 and 2009, 8.7% of all occupational accidents are occurred in the construction sector in Turkey. Moreover; 22% of occupational accidents resulting in permanent incapacity for work and 26% of occupational accidents resulting in death are also occurred in construction sector.

It should be noted that SSI data covers only occupational accidents suffered by the insured employees and the severe cases. Therefore, the number of accidents in the sector should be considered further.

2.2.1.5 Occupational Accidents by the Time of Job

Occupational accidents have frequently occurred with the first starting time of the work and also recent times of the work. However, the interesting aspect here; after the 8th hour of work occurrence of occupational accidents is almost diminish. Although it is illegal, employees are forced to work more than 8 hours and this situation increase the occupational accidents and resulted in deaths.

Table 2.2d: Occupational Accidents by the Time of Job (SSI, 2012)

Code	Hours		2011			2012		
			Male	Female	Total	Male	Female	Total
00	00:00	00:59	527	47	574	1.095	82	1.177
01	01:00	01:59	1.645	119	1.764	2.399	374	2.773
02	02:00	02:59	1.657	82	1.739	1.055	76	1.131
03	03:00	03:59	1.244	56	1.300	1.029	84	1.113
04	04:00	04:59	1.030	62	1.092	924	65	989
05	05:00	05:59	1.029	69	1.098	967	98	1.065
06	06:00	06:59	1.172	73	1.245	1.016	97	1.113
07	07:00	07:59	1.319	153	1.472	1.547	181	1.728
08	08:00	08:59	3.818	276	4.094	6.127	499	6.626
09	09:00	09:59	4.919	286	5.205	5.212	423	5.635
10	10:00	10:59	6.192	353	6.545	6.208	442	6.650
11	11:00	11:59	5.987	380	6.367	6.493	431	6.924
12	12:00	12:59	3.894	294	4.188	4.779	545	5.324
13	13:00	13:59	3.433	233	3.666	4.146	344	4.490
14	14:00	14:59	5.186	295	5.481	5.266	385	5.651
15	15:00	15:59	5.667	306	5.973	5.009	337	5.346
16	16:00	16:59	3.917	275	4.192	4.188	313	4.501
17	17:00	17:59	3.085	209	3.294	3.193	258	3.451
18	18:00	18:59	2.068	140	2.208	2.085	171	2.256
19	19:00	19:59	1.568	112	1.680	1.564	129	1.693
20	20:00	20:59	1.497	90	1.587	1.283	109	1.392
21	21:00	21:59	1.429	91	1.520	1.291	113	1.404
22	22:00	22:59	1.434	73	1.507	1.111	112	1.223
23	23:00	23:59	1.339	94	1.433	1.102	113	1.215
99	unknown		3	0	3	1	0	1
Total			**65.059**	**4.168**	**69.227**	**69.090**	**5.781**	**74.871**

Table 2.2d above shows the breakdown of occupational accidents by the time for a workday within the scope of Article 4-1/a of Turkish Labor Law no 5510 of insured employees. It should be examined with Figure 2.2c below, which is the bar chart representation of the same analyze, and just to understand easily, time codes are given to both Table 2.2d and Figure 2.2c, which shows the total number of accident distribution according to the hours. Briefly, they present the distribution of hours of occupational accidents. One more important inference is that, there is an intensity at the beginning and end of the working hours.

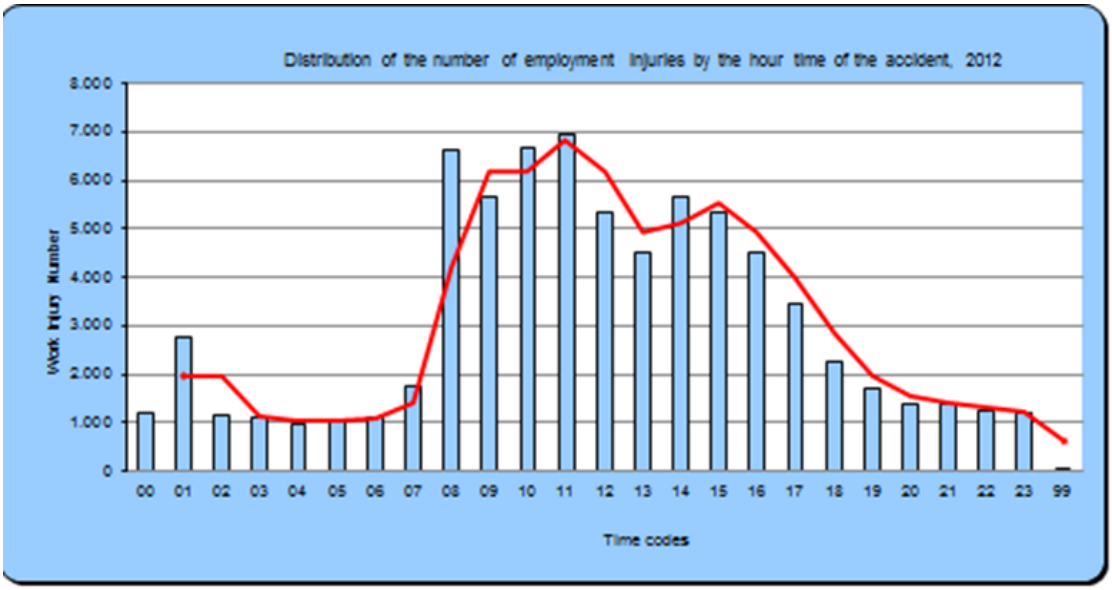

Figure 2.2c: The Distribution of Hours of Occupational Accidents (SSI, 2012)

The same analyze can be shown by a pie chart, in order to remark that the third hour of the working duration is the most risky hours.

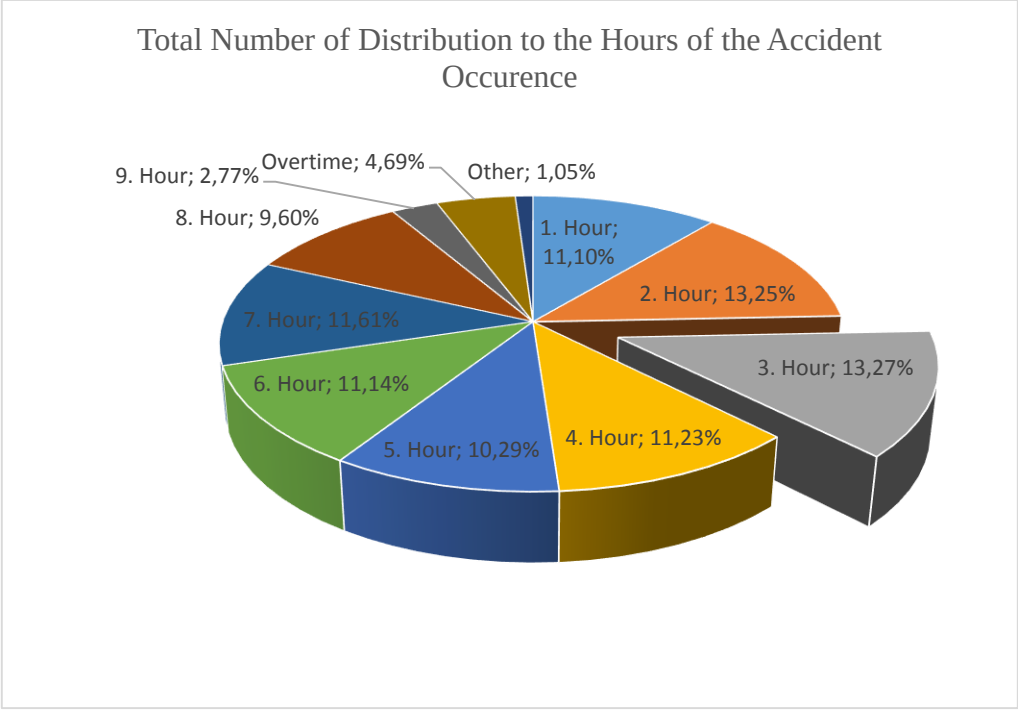

Figure 2.2d: Accident Distribution According to the Hours of the Accident Occurrence

2.2.1.6 Major Types of Occupational Accidents in the Construction Sector

Major types of occupational accidents in construction sector are represented in the following table and it is remarkable that falling type of accidents are the most risky group that resulting in deaths. Moreover, sticking to hand and catching up in type of accidents have the minimal death ratio. Both for injury and death results, material hitting type of accidents has the minimal occurrence rate with 0,8% in total.

Table 2.2e: Major Types of Occupational Accidents in the Construction Sector (Müngen, 1993)

NO	Main Groups	Death		Injury		Total	
	Accident Type	Number	%	Number	%	Number	%
1	Falling of People	1028	42,9%	934	32,9%	1962	37,4%
2	Falling of Material	251	10,5%	278	9,8%	529	10,1%
3	Skipping of Material	10	0,4%	211	7,4%	221	4,2%
4	Land sliding	138	5,8%	53	1,9%	191	3,6%
5	Down falling	167	7,0%	73	2,6%	240	4,6%
6	Electric Shocking	293	12,2%	80	2,8%	373	7,1%
7	Explosion of Material	50	2,1%	82	2,9%	132	2,5%
8	Heavy Machine Accidents	206	8,6%	97	3,4%	303	5,8%
9	Catching up in	1	0,0%	604	21,3%	605	11,5%
10	Sticking Hand	1	0,0%	200	7,0%	201	3,8%
11	Material Hitting	0	0,0%	42	1,5%	42	0,8%
12	Ceasing or Sticking	0	0,0%	75	2,6%	75	1,4%
13	Nonstructural Traffic Accidents	168	7,0%	38	1,3%	206	3,9%
14	Other Accidents	85	3,5%	74	2,6%	159	3,0%
	TOTAL	**2398**	**100,0%**	**2841**	**100,00%**	**5239**	**100,0%**

2.3 Reasons of the Occupational Accidents

According to the research, all of the accidents caused by five basic factors named "Accident Chain". Five factors of accident chain can be listed as (Yıldırım, 2011):

- Natural and social structure
- Personal flaws
- Unsafe situation
- Wounding
- Accidental event

These five factors are reveals some truths. These can be sorted as:

- Weakness of the humans against the nature is inevitable. Completely avoiding the accidents is impossible.
- In every accident there is absolutely a faulty behavior from humans. This is inevitable.
- Unsafe behaviors and conditions are important factors which causes accidents. Occupational safety is reducing or eliminating the unsafe conditions and behaviors (Yıldırım, 2011).

Especially in preventing occupational accidents, it is important to direct safety precautions to third party, because, it is easier to eliminate this link of the accident chain. There are a lot of agents like legislation, control, education that takes part in employee health and removal of occupational safety problems. There will be a reduction in occupational accidents according to the extent of the precaution. In order to reduce occupational accidents, there is an effort to increase the reforming factors like legislations, standardization, control, technique, psychological, statistical research, education, believing, and insurance by employer and employee syndicates, related public institutes and with support of the whole public (Karakule, 2012).

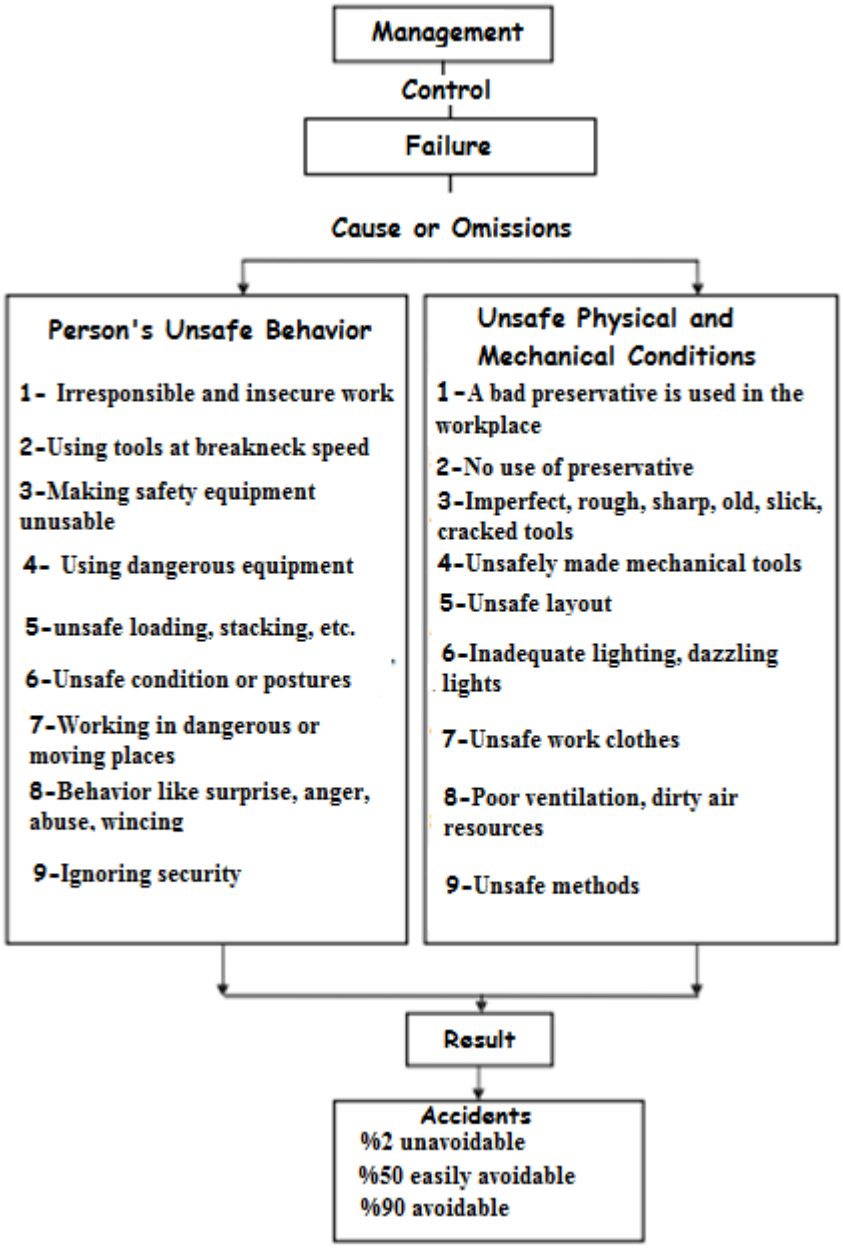

Figure 2.2e: Direct or Indirect Causes of the Accidents (Yıldırım, 2011)

In addition to the research given above, basic factors that increase occupational accidents can be sorted as:

1. Lack of supervision and control,
2. Usage of old technology,
3. Lack of education(including workplace education),

4. Lack of protective precaution, not following up these accurately, paying no attention about neglect and work has been done,
5. Not favorable conditions for health and safety,
6. Employment of inexperienced personnel (cheap worker and personnel)
7. Failing to investigate the reason of the accident, not having serious precautions to prevent the same accident from happening again by responsible foremen, engineers, workplace security chief and proxy of the employer at the sight (Tiryaki, 2011).

2.3.1 Unsafe Behaviors and Situations

In order to understand the reason why occupational accidents happen although everyone knows the importance of the issue, deeper investigation on human beings have been done. The main reason of unsafe behaviors can be understood by realizing the human behavior in terms of neutral system. Working and producing are directly proportionate to functionality of the breathing, circumvolution, muscle metabolism, digestion, secretion and central nervous systems. Well and enough functionality of perceptive organs of humans help their physiological functions to operate regularly and enough. As its natural structure, human body possesses an ability to work and spend an amount of energy by working. Excessing this amount and this ability to work, causes to weariness and this weariness causes to slow its movements (Yılmaz, 2009).

A person has to constantly percept and react in the process of production by using various tools, by controlling, regulating his/her movements. Therefore, it is necessary for working people to have vigilant nervous system and perceptive organs and ability to execute the functions in question. Due to humans' natural structure, it is impossible to exceed these abilities' limits. As a result of regulating humans' workload and working pace without considering its physical and mental strength, humans' harmony with the machines affects negatively and causes unsafe behaviors (Yılmaz, 2009).

Unsafe behaviors are caused by humans' physiological and psychological structure and environmental conditions. Genetic disorders, organic weariness, ergonomic order incompetence and unhealthy environmental conditions of working people cause unsafe behaviors. Lack of balance sense, underdevelopment of muscles or some organs or lack of ability caused by various disorders, lack of craftsmanship, faults and deficiency that prevents to proper function of organs conducted by nervous system causes unsafe behaviors (Karakurt, 2012).

It is inevitable to prevent unsafe behaviors if a person who participates to process of production, loaded above its physical and mental strength, if his/her work regulated monotonously to cause contemplativeness, if he/she isn't provided food he/she needs to continue doing his/her job (Yılmaz, 2009).

If a person isn't educated enough about his/her job, if he/she thinks his/her job dirty or hard, if the job doesn't fit his/her personality, this causes unsafe behaviors and occupational accidents. Along with humans' personality, physiological and psychological structure, workload, work quality and working methods, physical and chemical factors of workplace also causes unsafe behaviors. Workplace and environmental conditions which gains different qualities varied according to job done, effects working human health temporarily or permanently (Akalın, 2012).

Environmental effects that affect working people includes lots of factors, like structure and problems of his/her family, house he/she resides in, vehicle he/she uses to go to work, length of the way. Also, payment method at work, payment value, shift system, business magnitude and administration way affects working humans' behaviors positively or negatively. Most of the people may show unsafe behavior caused by negative effects of factors above them (Gemalmaz, 2009).

Most of the factors at work that affect employees are temperature, damp, dust, light, noise, vibration, toxic liquid and solids, atmospheric pressure and ionizing radiation. Usually chemical factors that changes environmental suitability, enter the working environment by air, food or employees body which contacts outdoors. Change of chemical structure of working environment may be caused by solvent used at workplace, paint, various dusts

and also physical events such as separation of radon from ozone and radioactive particles by ultraviolet rays. Negative physical and chemical factors at workplace such as temperature, dump, draughts, lack of light, noise and polluted air, causes tiredness, lack of attention, slow movement and insufficiency of perceptive organs and this causes unsafe behaviors. A workplace is not only a place which includes machines but it also has people to conduct, repair, and control them. Therefore, physical and chemical factors which mentioned above, damage employees and also causes them to lose organic abilities in long term. In an environment like this, occupational accidents are always possible. It is not possible to prevent occupational accidents without correcting these conditions (Gemalmaz, 2009).

Kulaksız, Y., mentions in his article that, "Along with unsafe behaviors, unsafe situations at workplace are one of the primary reasons of occupational accidents. Unsafe situations at work may be caused by various factors like quality of production tools and technology of production process, irregularity of work, lack of maintenance and controls, supervision and administration failures, storage mistakes and unhealthy environmental conditions". Moreover, he states that, "Unsafe situations and occupational accidents are inevitable if the tools and machines aren't compatible with the abilities of the employee, the machines don't have any protective precautions, signs aren't clear, directing mechanisms aren't safe and easily manageable, their maintenance aren't done in time and as required and used out of purpose and above their limits" (Kulaksız, 2011).

Table 2.2f: The Causes of Accidents at Work (Hunt, 2014)

UNSAFE BEHAVIORS	**UNSAFE CONDITIONS**
Doing business unconscious	Unsafe working method
Thoughtfulness and carelessness	Unsafe and unhealthy environment
Removing protective equipment	Ungrounded electric machines
Work fast in dangerous way	Incapable hand appliances
Doing jobs apart from the business	Uncontrolled autoclaves
Not obeying business discipline	Stacking at dangerous heights
Not using proper machines for the work	Unclosed spaces
Not using personnel protectors	Workplace irregularities
Driving at dangerous speeds	Preservative free machinery and machines
	Explosives

The negative environment caused by physical chemical factor leads to unsafe behaviors with the effect to the workers and it is the leading condition in businesses.

The technology that is used in production is one of the leading unsafety reasons. It is clearly understood that occupational accidents happen more in companies who use old technology devices. It is much more expensive to renew the technology after installing the factory with old technology machinery than starting with the latest technology devices. Therefore, if a business started with unhealthy and unsafe situations, usually these negative conditions go on and occupational accidents in these places are becomes significant (Yılmaz, 2009).

Gemalmaz, A., in her article about old technology with lack of safety systems states that "Unsafe situations can be caused at various levels from technology used for production to machinery, from various tools and devices to hand tools and auxiliary equipment, from workplace order and storage to maintenance and controls and these result as occupational accidents. Along with machinery without safety systems, using these out of purpose and above limits, not carrying out their maintenance in time and as required causes unsafe conditions. Mistakes and inadequacy about machinery placement, storing and loading raw material and products and workplace disorder cause unsafe situations.". And she mentions that primary reasons of occupational accidents are administrative and inspectional inefficiency, employees' and employers' lack of awareness of labor safety on a variable form of production. Unsafe behaviors and situations, which is a result of primary reasons, form secondary reasons of occupational accidents. It is not possible to prevent occupational accidents, unless these reasons are ruled out (Gemalmaz, 2009).

CHAPTER 3

CONCEPT OF JOB SAFETY, LEGAL REGULATIONS & HISTORY

3.1 Concepts of Job Safety

Job safety can be defined as, “the state of being safe from harm or danger at work” or “the working, performed without causing any physical loss for the worker”. The concept of job safety is making working places safer and better by working systematically by warning off the dangers due to the execution of work and protecting the workers from events that can harm their health (Oğuz, 2010).

Job safety consists of a lot of disciplines. The fundamentals of job safety are, eliminating unsafe and dangerous condition in the workplace, minimizing the dangerous or unsafe behavior of the workers. Because of these reasons, it can be defined as the effort for protecting workers from the physical losses or occupational accidents while doing his/her work. Avoiding the accidents is possible by controlling the performance of the worker, machines and physical environment. Insecureness can be prevented by annihilating the mechanical dangers caused by surround and an unsafe personal movement before the accident happens (Oğuz, 2010).

Occupational health and safety, the similar but not the same concept with job safety, can be explained as minimizing or eliminating the risks for the workers that might be caused by the work place and the tools. Another approach for occupational health and safety is danger prevention by eliminating the possible hazards of vehicles/tools used during work

and providing a safe business environment in physical, social and mental aspects of health for the workers. In other words, occupational health and safety is described as "supervisory responsibility" to prevent accidents at work and occupational diseases. Virtually, occupational health and safety laws apply the technical specifications for danger prevention of all vehicles & tools used during work and the workers' liaison with these instruments at work, occupational accidents and occupational diseases (Malbelegi, 2013).

3.2 Development of Occupational Health and Safety in the World

At the beginning, the idea about the occupational health and safety arised with the famous historian Herodotus. He cites that, the worker should be fed with high energy foods for productivity for the first time. In B.C. 370 Hippocrates talks about the bad effects of lead, define the lead colic and identify the symptoms as weakness, constipation, seizures and visual disturbances and clearly expose the relation with the lead. Nicander who developed the researches of Hippocrates B.C. 200 researches about the lead colic and lead anemia and defines the properties of symptoms. The researches those days were not stopped by determining the security problems but they also have developed ways to be protected. Hence between A.D. 23 and 79 a man called Plini has proposed his workers to put on a bag on their head like a mask. An Italian Bernardino Ramazzini recommends protective safety measures in workplaces to prevent occupational accidents in his book “De Morbis Artificum Diatriba” published in 1713. In the beginning of 18th century, social security policies have started to develop and in 19th century, it becomes widespread and various insurance institutions are established and occupational accidents and occupational disease insurance starts to apply. After the 19th century syndicates conduct series of activities in order to ensure the correction of adverse working conditions because of the industrial revolution (Durmaz, 2009).

Syndicates have a big role in preventing the occupational diseases and accidents by their workings. International Labor Organization (ILO) which has been established in 1919 also does some studies and becomes specialized agency with the accord with United Nations

(UN) in 1946. ILO and UN and a lot of foundations working with them do a lot of researches about labor and job safety (Durmaz, 2009).

3.2.1 International Developments and International Labor Organization

The International Labor Organization (ILO) was established in 1919, as the part of the Treaty of Versailles that ended World War I. The same article was added on Sevres Treaty which was signed between the Ottoman Empire and the winning parties on August 19th, 1920.

The ILO was used to be a part of League of Nations, previously known as forerun of United Nations (UN). League of Nations was liquidated during World War II. In 1946, the ILO became a specialized agency of the newly formed United Nations. Declaration of Philadelphia Meeting of the International Labor Conference held in 1944 is a subsidiary driving force of the ILO. In 1998, the ILO Declaration on Fundamental Principles and Rights at Work is adopted. After the collapse of the Soviet Union in 1990/1991, significant changes occurred in employers attitudes in the ILO. The ILO employers tried -and still try- to act more like a technical cooperation. International laws accepted by the ILO are described as The Agreement and the Recommendations.

The labor need for manufacturing processes increased accordingly, after mass production replaced family businesses. As a result, immigration from rural areas to cities has started. These cities did not meet the standards in terms of infrastructure needs, therefore healthy housing and environmental standards were not covered, feeding problems occurred and epidemics increased. These negative impacts that were caused by industrial revolution, has also been seen in work life. The workers were forced to work for 16-18 hours in factories and mines with very bad conditions that can cause occupational accidents and occupational illnesses. The machinery speeds has increased according to the manufacturing technology improvements, however the necessary precautions were not implemented. Besides, the fact that the workers were not educated to use technologic machinery for that time and they were mainly consisting of immigrants from villages, lacking experience resulted in an increase in occupational accidents. The worker that was

used to work in a pace and method that he chose, faced difficulties in getting used to the machinery and tools with the fast work pace in factory production and as a result many workers lost their lives in occupational accidents.

3.3 Development of Occupational Health and Safety in Turkey

At the times before Turkish Republic, in Ottoman Empire there was no law about the safety and the health of the labor. There were only some works about the workers in mining sector, soldiers and officers. Dilaver Pasha Regulations in 1865 was made in order to increase coal production and was limited with the Ereğli Coal Region. There were some statements about labor in these regulations. Business relations were discussed in the second book of Mecelle which was brought in force in 1877. But these statements were not capable for all the business relations. As in Roman law, Mecelle has also organized working in the rental contract and worker was defined as someone who rents his/her soul. In Maadin Regulations in 1906 there were some statements about job safety. With these regulations no one was forced to work in mines, preventive and protective measures taken against occupational accidents, having a doctor and necessary medicine became a must. If an accident happened in the mine, the officer or the mining engineer should have been informed about the accident (Şiviloğlu, 2010).

At the times of Turkish Republic, after the proclamation of the Republic Law n. 394 Week Vacation law was made in 1924 and Code of Obligations in 1926. Public Health Law of Turkey in 1930 and law no. 3008 labor law are other important laws. The establishment of Ministry of Labor in 1946 seems to be the biggest development issue for occupational safety and health at work. The laws before 1936 indirectly effect the workers but one of the most important laws about the risks of workers was Code of Obligations in 1926. This law involved some rules about protecting the labor that there was no sign of in Mecelle. Some of these rules were; the employer should take necessary measures for workers life and protection of health, in case of not taking the necessary measures and at death of a worker indemnity should be paid to the family of the worker, if a worker cannot work because of something other than military service or some other health problems the payment should be paid. In the beginning of 1930's, the need for a law that will arrange

the relations between businesses started to show up with the establishment of nations industry. After some law drafts, law no. 3008 labor law has been made in 08.06.1936. This law remained in force for 30 years. The execution area of this law was limited by the corporations which are less than 10 workers (Şiviloğlu, 2010).

It was the first time that there was a systematic works about the worker health and business safety with the law no. 3008 dated in 1936. Second World War had big effects for Turkey just like other countries. Standards of livings in a big cities have been decreased compared to the times before war. Therefore a security system was necessary for the country more than always. After the war, social policy had some effects in our country and occupational accidents and occupational diseases and maternity insurance have been established. Social insurance was present in the no 4841 dated 28 January 1946 the Board of the Ministry of Labor of the first article of the law. After this, this job was assigned to Directorate General of Health for keeping all the records under the same roof. The law of no. 5690 that would approve No. 31 of the International Labor Convention's 9th clause was made in 13 December 1950. Another law was made for hiring technical personnel like physicians, chemists and engineers to guide and make warnings, supervise workers in terms of health and safety. In terms of occupational health and safety audit work has been focused after 12th January 1963 in Istanbul, Ankara, Zonguldak and Izmir after these cities in Bursa, Adana and Erzurum by increasing the number of Secure Business Inspectors Group Presidencies (Durmaz, 2009).

3.3.1 Occupational Life and Arrangements in Law in Turkey

Audits about occupational safety and all facilities regarding with the situation are carried by Labor Inspection Board, subsidiary of Minister of Labor and Social Security. Besides, quite a few public bodies are responsible about occupational audits. For instance, Social Security Board, Municipals, Ministry of National, Ministry of Health and Ministry of Energy are partly liable in audits.

The occupational audits carried by mentioned public bodies are described as external audit, and occupational health and safety boards carry internal audits. Developments of

mentioned public boards grew parallel to occupational health and safety audits. One is based on being a "social state" and its interfering characteristics in occupational life, as described in the Constitution of 1961 – 1982. Second one is based on the State's liabilities in occupational audits, as described in Labor Law no. 4857, article 91.

Basis of audit mandates and regulations of internal audit bodies are described in Labor Law no. 4857, article 80. And, regulations about occupational health and safety arranged with Code of Occupational Health and Safety Boards, mentioned in prior Labor Law no. 1475, article 76.

In Labor Law no. 1475, section V, article 76 effectuated on September 1st, 1971 after issued on official gazette, in order to carry occupational health and safety facilities, a committee of occupational safety and worker's health is established and this committee's duties and responsibilities are mentioned on a regulation issued by the Ministry of Labor of Social Security. Regulation about Occupational Safety and Worker's Health Board is issued in the official gazette and effectuated on February 19th, 1973 with the by-law dated January 31st, 1973.

In the light of this information; it is possible to say that the first legal regulations about occupational health and safety and relevant boards were arranged in 1973. But, Boards about occupational health and safety were described first time in Labor Law no. 1475 (Demir, 2006). Because of that, Labor Law no 1475 has an important role in development of occupational health and safety.

On regulation about occupational boards based on Labor Law no. 1475, in which workplaces and how these boards will be established, board members, duties and responsibilities, work methods and liabilities of the workers and employers are described.

Article II of the regulation; it's described that the employer of a workplace with 50 workers in minimum and has continuous working period more than 6 months is obliged to establish an Occupational Board. The other rulings and the differences between the Regulation and the Rule will be examined but not in details (Demir, 2006).

Labor Law no. 4857 that was issued on Turkish Official Gazette dated on June 10th, 2003 caused too many changes in Labor Law no. 1475.

In the new Labor Law, Occupational Health and Safety issue is described in 5 (five) sections, annexed a few new regulations, as it was described in previous Labor Law.

Previously, issue was mentioned in items 73 to 82 in the prior Labor Law, where the issue is mentioned in items 77 to 89 in the present Labor Law. Accordingly, items are increased.

Issue about Occupational Health and Safety Boards is described in Turkish Labor Law no. 4875, Article 80.

Law's preamble of article 80 is described about occupational boards, as well as the other articles in the law. Accordingly; starting point is the workplace to prevent occupational accidents and diseases, necessary regulations are described in Labor Law in the scope of the organization about occupational health and safety in a workplace.

An industrial workplace with 50 workers in minimum, which has a continuous work more than 6 months, is obliged to establish an Occupational Health Board. The clause for "continuously 50 workers in minimum in a workplace" is described as that the workplace has never had less than 50 workers. According to the regulation; these occupational boards are described as consultant boards and their decisions are not obligatory and they are toothless boards. With the new regulations, employers are obliged to carry the decisions of the Occupational Health and Safety Boards, accordingly; the rules are activated more effectively (Demir, 2006).

In Labor Act of Turkey, article 77, it is stated that, "With a view to ensure occupational health and safety in their establishments, employers shall take all the necessary measures and maintain all the needed means and tools in full; and employees are under the obligation to obey and observe all the measures taken in the field of occupational health and safety. In order to ensure compliance with and supervision of the measures taken for occupational health and work safety at the establishment, the employer must inform the employees of the occupational risks and measures that must be taken against them as well

as employees' legal rights and obligations and, in this connection, he must provide the employees with the necessary training on occupational health and safety."

In Labor Act of Turkey, article 78, it is stated that, The Ministry of Labor and Social Security, after taking the opinion of the Ministry of Health, shall issue by laws and regulations, with a view to ensure the adoption of occupational health and safety measures in the establishments, the prevention of occupational accidents and occupational diseases which may arise from the use of machinery, equipment and tools as well as the arrangement of working conditions for persons who must be protected because of their age, sex and special circumstances. Furthermore, a regulation to be prepared by the Ministry of Labor and Social Security, after taking the opinion of the Ministry of Health, shall indicate, in view of the number of employees, size, the nature and the precariousness and dangers posed by the operations, in which establishments covered by this Act an opening permit should be obtained from the Ministry of Labor and Social Security upon submitting to the relevant authorities of the Ministry operation plans before setting up the establishment as well as for which establishments an operations permit should be obtained from the same authority after the setting up of the establishment.

The Law no. 506 that is effectuated in 1964 and titled as "Social Insurances Law" brought some assurances against various risks for the workers. After that, Law no. 4958 titled as "Social Insurances Institution Law" has been accepted in 2003 (Yıldırım, 2011).

The Law no. 6331 which is a product of tiring six years effort, has referred to many regulations that is needed in terms of occupational health and safety in an ever developing and expanding work life. It is anticipated that some problems might occur with the effectuation of the law (like any new regulation). However, it is natural that some of these problems will be eradicated during implementation. On the other hand, the law maker had postponed the implementation of these regulations for certain time periods according to the danger classification of the work places like six months, one year, two years, taking into consideration that a preparation period is needed for these regulations. In other words, it proposed a progressive effectuation of these regulations (Akalın, 2012).

According to this;

1 – The 6th Article about "Occupational Health and Safety Service", the 7th Article about "The support of Occupational Health and Safety Service"; the 8th Article about "Workplace Doctors and Occupational Safety Specialists"

a- Two years after the publication of the law for Public institutions and the workplaces that are in less dangerous class and have less than 50 workers,
b- One year after the publication of the law for Public institutions and the workplaces that are in very dangerous class and have less than 50 workers,
c- It will be effectuated six months after the publication of the law for other workplaces. In this bullet, the workplaces that have less than 50 workers and are not in dangerous class or the workplaces that have more than 50 workers and are not exceptional, will be subjected to these regulations of the law after six months later than the publication of the law, on 01.01.2013.

2 – Finally, the 9th Article about "Identification of the danger class", the 31st Article about "Documentation, Warning and Cancellations", the 32nd, 33rd, 34th, 35th, 36th Articles about "Changed Provisions" and the 38th Article about "Validity", also temporary 4th, 5th, 6th,7th and 8th Articles will be effectuated on the publication date of the law.

3 – Finally, the articles that are not aforementioned, will be effectuated after six months later than the publication of the law.

In this sense, the actions that are in link to the postponed actions will be postponed indirectly. However, it is in need of reminding an important matter that should not be ignored about the implementation of the law: When one looks at the postponement that is made according to the danger classification of the workplace in terms of the necessary actions about the 6th, 7th, 8th articles of the aforementioned law, he or she should be aware of sluggishness with the anticipation of the effectuation of the regulations in time about the employers, workers and workplaces on the publication date of the law. Because of this reason, aside from the actions that the law gives certain time about the implementation, all the necessary actions should be taken immediately, taking the whole law into consideration. (Akalın, 2012).

3.4 Occupational Health and Safety Definitions

In this section, the definition of workers, employers, insured, accident, occupational accident, occupational disease, temporary incapacity, permanent incapacity, invalidity will be identified.

Worker is a person who does a specified type of work or who works in a specified way. In accordance with the Turkish Labor Law no 4857, 2nd article, "A real or law juristic person that employs workers according to a labor contract or the institutions that does not have a juristic identity are called employers and the relation between them are called business relationship." Also, the definition of the employer is given in the Turkish Labor Law no. 6331 of labor and safety as "unincorporated organizations or institutions which employ workers." As understood by these, in both laws, employer, worker and labor are all explained through the concept of employment. With the help of these laws, it is understood that employer can be a person, an institution, a company, an association, a foundation or a cooperative (Malbeleği, 2013).

In the light of the above descriptions, the law made clear that, in order to be an employer, the employer has to employ workers. According to this ruling, the employer is the person, who employs a worker with binding him/her with labor contract and is responsible with paying him/her a pay in return of labor debt. The employer can be a real person as well as a private law or civil law juristic person like a partnership, a society, a union, a foundation.

General acceptance is that, insured person is someone whose safety is provided by a company. But actually, the definition includes much more than that. Lexical meaning of the insurance is given as "an arrangement by which a company or the state undertakes to provide a guarantee of compensation for specified loss, damage, illness, or death in return for payment of a specified premium". Accident is an event causing injury, loss of life or loss of property. Occupational accident is an event in which an insured person is damaged physically or physiologically at an unexpected time when he/she is working for his/her employer. The definition of occupational accident is available in the 5510th Social Insurance and General Health Insurance Law and in the Turkish Labor Law no. 6331. In accordance with this law, occupational accident is "an event which has caused loss of life or disabled a person while doing his work for the employer." The most important thing

for the employer in occupational accidents is to determine if there is legal responsibility for him/her. If there is an obligation for the employer because of the occupational accident that happened in his/her company according to the law of occupational health and safety and he/she has not done his responsibilities, in this case, there will be an investigation and research for the employer. According to criminal law, occupational accident is a technical malfunction or a disregard relating to the execution of work or an event causing death while working for employer (Malbeleği, 2013).

Temporary incapacity is a situation which causes incapacity to work for temporary time because of an occupational disease or accident. It is a situation in which, a worker hired by an employer for money or learning some other art cannot work for a temporary time period because of certain events that happened while working, occupational disease, sickness and in case of pregnancy.

Permanent incapacity is something similar to temporary incapacity but as the difference can be understood by its name, if the worker cannot work permanently because of an occupational accident or a disease or some other things, the result is called permanent incapability.

If disability happens in a place, where the workers work or at a place where they are assigned by the employer or while going to or coming back from that place by the a vehicle arranged by the company, this kind of disability is called disability of official and who are affected by these are called disabled on active duty.

According to International Labor Organization (ILO), occupational accident is defined as "an unexpected event that was not planned and causes a certain damage or injury". According to World Health Organization (WHO), occupational accident is defined as "an event that is not planned before and causes personal injuries, damage of the machinery, tools and devices which results in a stoppage of the production."

According to Occupational Health and Safety Advisory Services (OHSAS) 18001;

An accident is a work-related event during which injury, ill health, or fatality actually occurs. It is a type of incident.

A hazard is any situation, substance, activity, event, or environment that could potentially cause injury or ill health.

Occupational health and safety, refers to all of the factors and conditions that affect health and safety in the workplace, or could affect health and safety in the workplace.

A risk assessment considers the effectiveness of existing occupational health and safety controls and then evaluates the probability and the potential severity of specific hazardous events and exposures. On the basis of such an assessment, organizations decide whether or not the risk is acceptable.

Occupational health and safety performance is all about results. It is all about how well organizations manage their occupational health and safety risks and the results they actually achieve. In order to be able to determine how well safety risks are being managed, this performance must be measurable. You can measure your organization's safety performance by measuring the effectiveness of your controls and by comparing this results and achievements against your occupational health and safety policy, objectives, or any other suitable occupational health and safety performance requirements.

A risk is acceptable if it has been reduced to a level that your organization can tolerate given its occupational health and safety policy and its legal obligations.

Safety, is the state of not being under the unacceptable risk.

3.5 Legislation in Turkey

Workers, as an active labor force of working life, are exposed to accidents in their working environment due to the ignorance of occupational health and safety measurements. According to SSI statistics in 2010 in Turkey, 17 employees out of 100 lose their lives as a result of occupational accidents. The number of occupational accidents in the last ten years is almost over ten thousand. Furthermore; Turkey ranks first in Europe and third in the world in occupational accidents. In Turkish Legislation, Occupational Accidents are defined as an event that immediately and subsequently inflict employees bodily or mentally; during the working hours in the workplaces or places considered as a workplace. Occupational accidents reveal some results to workers or their heirs if workers died. Occupational accidents cases can be divided into two groups as compensation and criminal cases in terms of their results. Moreover; according to SSI legislation, occupation accidents can be divided and examined in three groups.

3.5.1 Occupational Accident in Criminal Code

a) Under the article 85 and 89 of Turkish Penal Code with the number 5237; stipulate imprisonment for employer if there is a defect. Any person who causes death of a person by negligent conduct is punished with imprisonment from three years to six years.
b) If the act executed results with death or injury of more than one person, the offender is punished with imprisonment from three years to fifteen years. Moreover, if the worker is died due to occupational accidents or occupational disease his heirs have the right to complain about the situation.
c) According to the article number 89 of Turkish Penal Code with the number 5237; any person who gives corporal or spiritual injury to a person or cause deterioration of one's health or consciousness by negligence, is sentenced to imprisonment from three months to one year or punitive fine.

If the negligent injury results with;

a) Weakening of sensual or bodily functions of the victim,

b) Break of bones,

c) Continuous difficulty in speaking,

d) Distinct facial mark,

e) Risk of life,

f) Premature birth of a child,

Then the punishment imposed according to first subsection is increased as much as one half.

If the negligent injury results with;

a) Incurable illness or causes vegetative existence of the victim,

b) Loss of sensual or bodily functions,

c) Loss of ability to speak and to give birth to a child,

d) Distinct facial change,

e) Abortion, if the offense is committed against a pregnant woman,

Then the punishment imposed according to first subsection is increased by one fold.

If the offense results with injury of more than one person, the offender is sentenced to imprisonment from six months to three years.

Excluding the negligent act done with knowledge of essential facts and its legal consequences, commencement of investigation and prosecution for such offenses is bound to filing of a complaint.

Finally under the article 22, Negligence, of Turkish Penal Code

(1) Offenses occasioned by negligent act are punished as expressly defined in the laws.

(2) Negligence is failure to take proper care or precaution during performance of an act without being aware of legal consequences of the crime defined in the laws.

(3) Where an act of person creates the legal consequence defined in the laws beyond his will, this is considered as intentional negligence; in such case the punishment imposed for negligent act is increased from one third to one half.

(4) The punishment to be given due to negligent offense is determined according to the fault of the offender.

(5) In negligent offenses committed by more than one person, each one is blamed of his own fault. The punishment is assessed individually according to the fault of each offender.

(6) No punishment is given if the legal consequence of the negligent offense exclusively results with injury of the offender either in person, rights or reputation in such a way not to require imposition of punishment; in case of intentional negligence, the punishment to be imposed may be abated from one half to one sixth.

3.5.2 Occupational Accidents in Compensation Code

Occupational health and safety obligations of employers and employees are formed under Turkish Labor Law no 4857, Article 77 as stated at section 3.3.1 above.

Moreover, the principles and methods of training shall be indicated in the regulation to be issued by the Ministry of Labor and Social Security.

Employers shall notify, in written form, any occupational accident and occupational disease which occurs in the establishment to the relevant regional directorate of labor within two working days at the latest.

3.5.2.1 Subrogation (Rollback) Compensation

Workers' compensation laws were designed to enable injured workers to receive the medical care and financial support quickly and efficiently. They need following an occupational accidents. Whether self-insured or insured by a workers' compensation carrier, employers strive to manage risk and enhance safety in the workplace.

The best risk-management program cannot eliminate all occupational accidents and illnesses, particularly those that result from third-parties' negligence or carelessness. When equipment is faulty or a jobsite is dangerous, workers may experience devastating injuries. Such incidents lead to significant medical costs and damage to an organization's loss rating. Ultimately, these costs may negatively impact a business and its potential profits for the following years.

Determining whether a product defect or the wrongful conduct of a third party was the cause of an occupational accident can be complex and challenging. Serious accidents require comprehensive, systematic analysis and review, as well as experienced legal representation to accurately determine whether third parties are to blame. Complainant must act promptly to preserve evidence in order to effectively obtain a recovery as permitted by the laws of the particular jurisdiction.

3.5.2.2 Pecuniary and Non-Pecuniary Damages

The Turkish Family Law Act provides that non-pecuniary damages are damages for "pain and suffering", sometimes also described as "loss of enjoyment of life". These damages are supposed to compensate the claimant for having to experience symptoms caused but the accident, having loss of expectation of life, etc.

Non-pecuniary damages, sometimes described as "general damages", are referred to as "non-pecuniary" because they involve an imprecise assessment of how much money is appropriate to compensate for loss of enjoyment of life, and are therefore unlike "pecuniary" damages which can be more accurately calculated.

Assessment of the pecuniary loss arising out of a fatal accident will typically focus on the income that had been earned by the decreased, to the extent it would have been of benefit to the surviving Turkish Family Law Act complainant. As such, these claims are only likely be successful if advanced by a family member who was living with the deceased, or who was clearly dependent on the deceased's income.

3.5.2.3 Disability Damages

In case where an occupational accident resulting in an injury, and the loss of the earning capacity in the profession is over 10%, SSI pays a salary for permanent failure at the rate of 70% of yearly wage. Although, this rate is 100% for the victim in case of such a permanent failure, SSI pays just 70% of it and if the rate for failure is above 10%. So, if this ratio is below %10, the victim may act for failure to act to get the amount that SSI will not give to him/her.

3.5.3 Salaries Given by SSI in case of Occupational Accidents

In general, a person liable for an accident and therefore that person's liability insurance company must pay for:

a) medical care and related expenses
b) missed work time or other lost income
c) pain and other physical suffering
d) permanent physical disability or disfigurement
e) loss of family, social, and educational experiences, and
f) emotional damages resulting from any of the above.

While it is usually simple to add up the money spent and money lost, there is no precise way to put a dollar figure on pain and suffering, and on missed experiences and lost opportunities. That's where the damages formula comes in.

3.5.4 Legal Inspection

3.5.4.1 Labor Inspection Board

Inspection Board is formed by head inspector, assistant inspector and branch managers. Labor Inspection Board is founded to inspect, manage and conduct the practice of the statutes, to prepare, evaluate and interpret plans and programs about this and to examine and investigate the inspections deemed necessary by the Ministry. The board of inspectors have rights to do scheduled or unscheduled inspections in accordance with the regulations, do investigations, take necessary precautions, monitor the implementation of legislation related to working life do their work, in the name of the minister.

3.5.4.2 Duties and Authorities of the Labor Inspectors Regarding Occupational Health and Safety

Labor inspectors work in two fields; occupational health and safety inspectors and social labor inspectors. Occupational health and safety inspectors are only selected from people who are medical doctors, electrical engineers, mine engineers, chemical engineers, machine engineers, civil engineers, physics engineers, computer engineers and such.

One of the labor inspectors' duties is to ensure necessary precautions to overcome the deficiencies they see regarding occupational health and safety at a business. The necessity of decision making to overcome these deficiencies in a period of time is stated in the ILO agreement no 81. Duties and authorities of the inspectors in our country are stated in the 13^{th} and 15^{th} articles of the Labor Inspection by Law and 12^{th} article of the Inspection Board Regulations. Some of the duties of labor inspectors, regarding the occupational health and safety are;

- Inspecting as a part of statutes of occupational health and safety,
- Investigating the working conditions and production methods of a business,
- Constantly watching publications about occupational health and safety,
- Receiving necessary information written and verbally about the inspection,

- Checking the presence of the documents at the business stated by the statute,
- Checking if the machine and tools used at production are fit to occupational health and safety,
- Taking a sample and examining the possibly dangerous items or having them examined,
- Intervening the situations considered crime by the Labor Law,
- Withholding workers from work if necessary,
- Sealing the machine, facility or section with as little production loss as possible if dangerous,
- Sealing the business in case of a prohibited item presence until it is removed,
- Visiting the business on any hour of a day without any notice to inspect,
- Taking assistance of law enforcement force if necessary,
- Preparing a result report and making suggestions about deficiencies of the statutes.

3.6 Responsibilities in Occupational Accidents

The aid that is made by Social Security Institute (SSI) after an occupational accident based on SSI regulations and the extension and results of the compensation that can be requested from the employer based on Individual Labor Law are briefly explained below.

After an occupational accident, employers may face three types of lawsuits and each has different legal dimensions. These are the lawsuits by victim for monetary compensation and compensation of moral damages, and the lawsuit that is initiated to make the employer pay for the payments that SSI has made for the worker.

According to the Private International Law of Obligations Act's article 332 "employer must take necessary precautions against any danger and provide working place that is safe for the health of the workers." As a result of the labor contract, employer must look after the worker. According to the article 77 of Turkish Labor Law, employers must take any precaution and provide necessary equipment to secure job health and safety. As mentioned before, the second paragraph of the same article also states that employers must inspect the occupational health and safety measures, educate the workers about the risks that they will face, and explain their legal rights and responsibilities. Similarly, employer must

follow the rules and regulations that are described in article 78 of Turkish Labor Law in order to ensure occupational health and safety. If the employers do not obey these rules and do not satisfy his/her responsibility to protect the employees, they can face penalties and governmental enforcements. Those enforcements include suspension or closing of business and pecuniary penalties. In addition, in case of fatal accidents they can be charged for prison based on Turkish Penal Code with the charge of "cause to death due to negligence or carelessness".

The lawsuits that employers can face after an occupational accident based on the regulations of Individual Labor Law are discussed in three section 3.6.1 below.

3.6.1 Responsibility of the State

For both State and social peace, it is primary element to avoid the necessary measures before accidents, eliminating the destruction of the negative situations when occurred and to pick up the pieces. Providing occupational health and safety is a constitutional task of the State. Occupational health and safety issues are mentioned in Constitution provisions. In the Constitution of 1982, 2nd in article; Turkish Republic is referred as a social State of Law and respect to human rights annexed an issue about occupational health and safety of the workers. As understood from the article, it is the principle of the social State to provide occupational health and safety. At first (1st) and second (2nd) paragraphs, 50th article of the Constitution; it is judged that "Nobody to execute age, gender and power non-conforming jobs. Women workers, under aged workers and workers that are physically and mentally disabled are specially protected for work conditions."

At third (3rd) paragraph of the same article; the worker's right to rest is also mentioned regarding with the workers' health. In the constitution, 56th in article; it is clearly mentioned that "Anybody has right to live in a healthy and well-balanced environment. The State is obliged to provide physical and mental health conditions for the citizens to continue their lives. In the Constitution, 60th in article; it is judged that "Anybody has right for social security. Social security means a continuous income in case of losing the necessary working conditions."

In the scope of this article, the employee has a social security until death. After the employee's death, close relatives of the beneficiary are social secured against all risks.mIn this context; the State is obliged to provide occupational health and safety, meet and audit the necessary requirements for regulatory purposes (Eken, 2011).

There are judgments mentioned about "generation health" in public health law in Turkey. In Turkish Labor Law no 931 and other regulations, there are judgments regarding to children and parents' health, working conditions, diseases and relaxation allowance and social welfare. An important step was taken by the Law of Social Security dated July 27th, 1964. The law is about the social welfare in case of occupational accidents and diseases, maternity, disablement, elderliness and death.

The social insurant shall get medical care and financial support in case of occupational accidents and diseases. An annual income is provided for the spouse and children in case of the beneficiary's death. Health Insurance is provided for medical care and treatment cost of the social insurant's spouse and children in case of illness. Maternity Insurance is provided for pregnancy examination, birth and nursing cost of the social insurant. Social Welfare is provided for the insurant in case of disablement and elderliness.

3.6.2 Responsibility of the Employer

Employer's kind of legal responsibility is a controversial issue in the Turkish Laws. A variety of opinions are adopted about the issue in the judicial system. Before studying on these opinions, it is considered to examine the concept "liability". In the widest sense, "liability" might be described as; one to recompense the damages occurred as the result of illegal acts or acts against debtor - creditor relationship.

In doctrines and Supreme Court practices, there are different opinions about the employer's legal liabilities for occupational accidents and diseases. In general, doctrines for the employer's liabilities are divided into two like; defect liability and strict liability. Different acts meet on a common ground (Ekin, 2009).

When these two different types are examined;

The employer's strict liability is based on various principles by some of the authorities/writers like; "legal gaps in law", "equity" or "jeopardize". As understood, there's no consensus among the views.

The employer's defect liabilities are based on Constitutional provisions by some of the authorities/writers. According to this, "defect" is the basic act for the liability. Wrongdoer's "defect" is the basic idea for indemnity obligations. Tort Liability is based on acts of defect.

Thus; if there is no defect then, there is no liability. In order to remove the idea of "defect liability" and replace with the idea of “strict liability", the issue should be specially projected in the laws. Turkish Labor Law, article 77, the purpose of the article does not add such a liability for the employer, indeed, the article itself is not capable of assigning liabilities. In this context, defect liability is a controversial issue.

Claims for damages are explained under three topics; Material Indemnity, Solatium and Compensation for Loss of Support. The Employer's prior legal liability is "Material Indemnity Claims".

Material Indemnity is described as any and all kind of loss of the worker as the result of no or lack of occupational safety issues. In Turkish Labor Law no 4857, there’s no legal regulation about material indemnity to cover all and any kind of material loss due to physical and mental disabilities. Thus, Code of Obligations, article 46/1 is applied in case of material indemnity or physical disability described; "Anyone who's been physically disabled and will no longer be able to work may claim for his/her loss".

As seen here, Code of Obligations, article 46/1 foresees a fully payment for all and any kind of material loss and all and any kind of expenses regarding with the situation.

In Liability Law; physical disability is described as one's physical or mental damages. Loosing and/or injuring an organ, partly or completely loss in seeing, hearing, changes in physical appearance and losing the beauty are all described as physical damages.

The worker who faces a loss by the employer's illegal acts, has right to claim for all and any kind of loss and medical treatment expenses, as well as indirect loss.

Solatium is described as in the compensation of a person's involuntary damages in personality. That means if a worker is physically and/or mentally disabled caused by an occupational accident or disease, he has right to claim for pecuniary and non-pecuniary damages. In case of the worker's death, close relatives may claim for pecuniary and non-pecuniary damages (Özbek, 2009).

Solatium right is issued in the Code of Obligations, article 47. Accordingly; a judge may decide for Solatium payment to the one who has been physically/mentally damaged or in case of the beneficiary's death, to close relatives.

According to the decision of Joint Chambers of the Supreme Court, there should be a causal connection between the act and the damage, an illegal action and disability for Solatium.

Aim of the Solatium is to try to balance the physical and mental anguishes of the one who's been occupational diseased or accident. Although the anguish is priceless, with the help of the Solatium payment, it's aimed to ease the worker's life. In case of the worker's death, Solatium is aimed to ease the worker's close relatives.

Generally, Solatium is described as an amount of bid but; the Declaration of the Sentence may be a choice for compensation.

In principle, directly damaged worker has right to claim for indemnity, caused by the illegal acts of the employer. Nevertheless, in case of the worker's death as the result of non-conforming work conditions, then the worker's close relatives may claim for indemnity, as described in the Code of Obligations, article 332/2.

Obviously, it's mentioned that the worker's close relatives may claim for indemnity in case of the beneficiary's death. Besides, disclaimer of an inheritance is no hinder for the claim.

Compensation for Loss of Support is described as; full and advanced payment to the close relatives of a worker in case of the worker's death. Note that "Compensation for loss of a

support" is described same in one of Supreme Court decisions. Aim of this compensation is to provide material support to the deceased's family (Ekin, 2009).

Education level of workers in Turkey is a cause in occupational accidents. The employers were assigned for this responsibility to organize educational programs about teaching how to behave in risky situations and prevent accidents. According to 77th clause of Turkish Labor Law employers must inform the workers about the risks that they will face and perform educational programs. Employers have to:

- Determine the occupational risks that his/her workers will face,
- Take measures against these risks,
- Teach workers about their legal responsibilities and rights (Eken, 2011).

Defects principle directs employers to be more cautious. The employer is required to meet all the damages even if he/she has done all the requirements of laws in strict liability. Though, Supreme Court tries to minimize the indemnity because of the rights under the terms right and good. This implementation contradicts to the integrity of the system and the thought of it. The employers who have taken all the measurement should not be responsible for the accidents. Keeping the employers who has done all the required measurements responsible can undermine the sense of justice and lead to physiological responses. To sum up, defects liability policy is appropriate for avoiding occupational accidents and diseases. In other words, it is the system that has been adapted to the positive law (Soy, 2010).

Responsibilities of the employers are stated in the 4th article of the Turkish Labor Law 6331 as following;

a) Employers shall take the measures necessary for the safety and health protection of workers, including prevention of occupational risks and provision of information and training as well as provision of the necessary organization and means shall ensure that these measures are adjusted taking account of changing circumstances and aim to improve existing situations.

Employers shall monitor and check whether occupational health and safety measures that have been taken in the workplace are followed and ensure that nonconforming situations are eliminated.

b) Employers shall carry out a risk assessment or get one carried out.

c) Employers shall take into consideration the worker's capabilities as regards health and safety where he entrusts tasks to a worker.

d) Employers shall take appropriate measures to ensure that workers other than those who have received adequate information and instructions are denied access to areas where there is life-threatening and special hazard.

e) In case an employer enlists component external services or persons, this shall not discharge him from his responsibilities in this area.

f) The workers' obligations in the field of safety and health at work shall not affect the principle of the responsibility of the employer.

g) Measures related to health and safety at work may in no circumstances involve the workers in financial cost.

Also, in this law businesses categorized separately regarding danger class and number of employees. These categories are being used to determine the class and the length of the obligatory service that businesses will receive. According to the law, businesses are assessed in two classes, if their number of employee is lower or higher than 50. This assessment is effective regarding the average service length, whether service should be continuous or external service could be enlisted and legal obligation effective time. There are three classifications for danger classes; these are less dangerous, dangerous and very dangerous. There is a similar classification for the occupational safety specialists as class A, class B and class C. According to law, businesses assessed as less dangerous should work at least a class C occupational safety specialist, dangerous businesses should work at least a class B specialist and very dangerous businesses should work at least a class A specialist (Antmen, 2013).

3.7 Cost Effects of Occupational Accidents in General

3.7.1 Understanding the "Damage in Wealth" And "Loss in Earnings"

In the past, claims for damages, as the result of an accident or an illegal act were used to be considered as "damage in wealth" or "loss in earnings", as an understanding of concrete materialism. Relevant to this; "indemnity" was out of question in case of loss of life or a disability if described situation fails to derive a profit. In Code of Obligation article 46, is described as; bodily harmed person may claim for all and any kind of possible damage in wealth that may occur in the future. In reviewing this statement, focusing on "life" issue would be more suitable than focusing on "damage in wealth" and "loss in earnings" issues. According to the ones who think that; if a person is only injured or disabled than, this situation would not be accepted as "damage in wealth" and/or "loss in earnings".

In order to discuss damage in wealth or loss in earnings, it was necessary for the damaged one still to have power to work; which means that the person has economic efficiency relevant to his physical and mental abilities. It was necessary to determine the loss in earnings besides a disability as well, for the damaged one to receive material compensation. According to the ones who share the opinion that "a human is not only a flesh and blood but a semi-human & semi-machine" that gets unearned income. Afterwards, this materialistic understanding was moderated and described as; power loss is an individual reason to claim for compensation because; damaged person would need to expand more energy to perform, although there would be no loss in earnings. On the other hand; scope of application is expanded and described as; parallel to the one's difficulties in daily routine relevant to the person's disabilities; would be a reason for compensation, even though he's not working or earning an income. Taking the issue much further in recent years; difficulties that may occur parallel to the disabilities in daily routine, would be a reason for compensation for the ones in period of retirement (Çelik, 2011). Details are mentioned below.

3.7.2 Understanding the Power Loss

Parochial ideas like; if a working and earning person is injured and has damage in health as the result of an illegal act, to be a reason for compensation, are moderated to compensation right because of power loss. Relevant to this, based on "damage in wealth" and "loss in earnings" issues; recovering the damage after rating the power loss is lined up. Accordingly, capacity to work is taken as the damaged person's physical and mental abilities and disabilities as an earning income. What important is not damage or loss in wealth but incapacity to work.

An expansion towards life loss is built by the understanding of negative economical results cause damage in wealth. Unfortunately; factor of "earning" is heavier than "life" factor.

Due to heavy working conditions for a disabled one; it's necessary to receive compensation even if there’s no damage in wealth or loss in earnings as the result of permanent disability. Accordingly; a disabled person will need to spend more energy when compared to peers. It's just because of this reason, to claim for compensation for a person who became disabled, as the result of an illegal act (Çelik 2011).

One of Supreme Court's decisions is described as; it's an indisputable fact to receive material compensation for the one who became permanent disabled as the result of an illegal act and has an actual damage in wealth. The problem occurs if there's no loss in earnings despite power loss and/or physical disability. Today; although a person has no loss in earnings or damage in wealth despite his permanent disability, he will receive a "Power Loss Indemnity"

At first, this decision might be considered contrary to "responsibility" factor in Liability Law. However, disabled person will need to spend more energy compared to his previous health situation and the others. So, this additional loss in energy is the base of this compensation. It is suitable with Turkish Compensation Law and rules.

As it's known; recover loss by the damaged person's own meanings does not vanish the liability. Fateful damage in wealth and loss in earnings as the result of a disability, and the one's own meanings to recover in person, should not be taken exoneration. Opposite ideas

would be commented as to defend the person who caused a loss instead of defending the injured one, which is an idea totally contrary to laws and rights (Çelik, 2011).

3.7.3 Assumptive Loss in Earnings

A calculation for "Assumptive indemnity" is made for physical disabilities for children who are not old enough to work or the ones who do not work and earn an income in case it is a concrete fact that above described ones would work and earn in the future. Indemnity in due will be paid for damage in wealth not for "life" factor. In other words; it is recovery loss for damage in wealth as the result of power loss or earnings that would have been obtained.

Assumptive damage calculations are based on "power loss" to claim for indemnity. In case of a permanent disability for a child; it is assumed that this child would need to spend more energy parallel to his disability in his future occupational life. Therefore; indemnity is calculated between the ages 18 to 60, in general. On the other hand, a discount is calculated between the day that the event occurred and age of 18; in order to calculate disabled child's future economic damages or power loss indemnity. As the result; total sum is not a valuable consideration for power loss or disabilities.

According to us; Supreme Court's decision on; "Any and all kind of difficulties that may occur parallel to disabilities in daily routine to be a reason for compensation for the ones in period of retirement" should be applied for the children who became disabled as the result of an accident. They should have right to claim for indemnity for their difficulties in daily routine parallel to disabilities (Bıyıkçı, 2010).

CHAPTER 4

GENERAL ANALYSIS OF OCCUPATIONAL ACCIDENTS ACCORDING TO THE EXPERT REPORTS

4.1 Analyses of Occupational Accidents

In order to assess the current situation in Turkey in terms of occupational health and safety, 195 expert reports of occupational accident, submitted to Ankara Courts, in different construction workplaces are analyzed and given in Table 6. For all different occupational accident reports, all comparable data are evaluated and discussed below.

4.1.1 Distribution of Occupational accidents by Years

The concept of occupational health and safety becomes an important issue in Turkey in recent years. New laws, legal regulations are being implemented and awareness of the workers about the occupational health and safety is increasing in parallel to the developments within Turkey and World.

It can be seen from table 4.1 and figure 4.1 that the majority of the data covers last 14 years. The figure can give an impression that the occupational accidents occurred more frequently during the past ten years. However, when it is analyzed more carefully, it can be seen that the situation is actually reverse. This is because of the fact that the construction industry grew substantially and has obtained bigger market share.

Table 4.1: Distribution of Occupational Accidents by Years

Year	**Accident**	**%**
1900	1	0,5%
1992	1	0,5%
1994	1	0,5%
1995	2	1,0%
1998	2	1,0%
1999	4	2,1%
2000	6	3,1%
2001	13	6,7%
2002	10	5,2%
2003	13	6,7%
2004	17	8,8%
2005	18	9,3%
2006	15	7,8%
2007	20	10,4%
2008	18	9,3%
2009	26	13,5%
2010	19	9,8%
2011	7	3,6%
TOTAL	**193**	100,0%

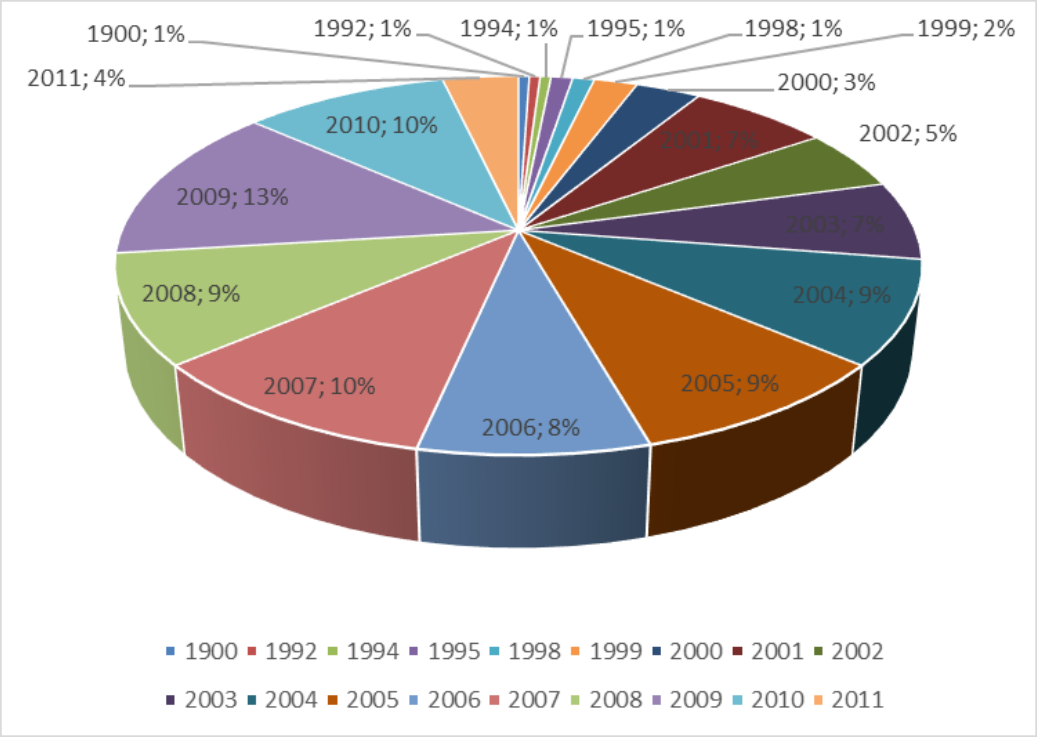

Figure 4.1: Distribution of Occupational Accidents by Years

Figure 4.1a shows the growth of construction trade together with gross domestic product from 1999 to 2010. It can be seen that the growth of building trade and gross domestic product has similar trends. That indicates the construction sector grew during the years in which gross domestic product increased. Therefore, when analyzing the distribution of the occupational accidents with respect to years, the growth of the construction industry should also be considered. As a result, although it seems that occupational accidents increases with years, it cannot be concluded as overall occupational accident occurrence rate in the construction industry increased in recent years.

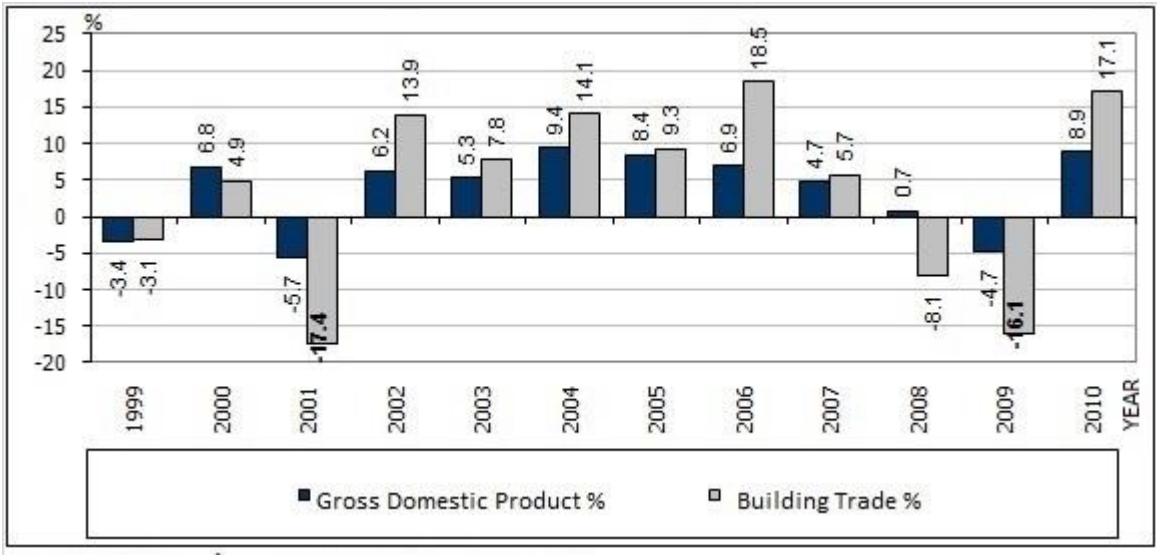

Figure 4.1a: Growth of Building Trade with respect to Gross Domestic Product (EFT, 2011)

4.1.2 Distribution of Occupational accidents by Events

Table 4.1a and Figure 4.1b illustrate the distribution of occupational accident types. It can be seen that 31% of the accidents (62 events) is caused by falling off the upper floors. It is followed by falling off the stairs/scaffolding by 14,65% and falling off the roof by 12,63%. A total of about 58% of the working accidents is caused by falling. These data indicates the importance of falling accidents. In other words, the information provides that percentage of "falling" occupational accidents in construction sector is almost 60%.

Table 4.1a: Occupational Accidents Categorized by Events

Event	Accident	%
Falling off the Roof	25	12,63%
High Falling Objects	15	7,58%
Falling from the Upper Floor	62	31,31%
Sticking in the Eye	7	3,54%
Falling off the Stairs/ Scaffolding	29	14,65%
Jamming Between the Objects	17	8,59%
Getting Hit by the Materials	3	1,52%
Backhoe Accident	5	2,53%
Explosion	3	1,52%
Other Types of Falling	6	3,54%
Other Types of Accidents	4	2,02%
Fire	1	0,51%
Electric Shock	5	2,53%
Getting Strangled in Rubble	12	6,57%
Drowning	1	0,51%
TOTAL	**195**	**100,0%**

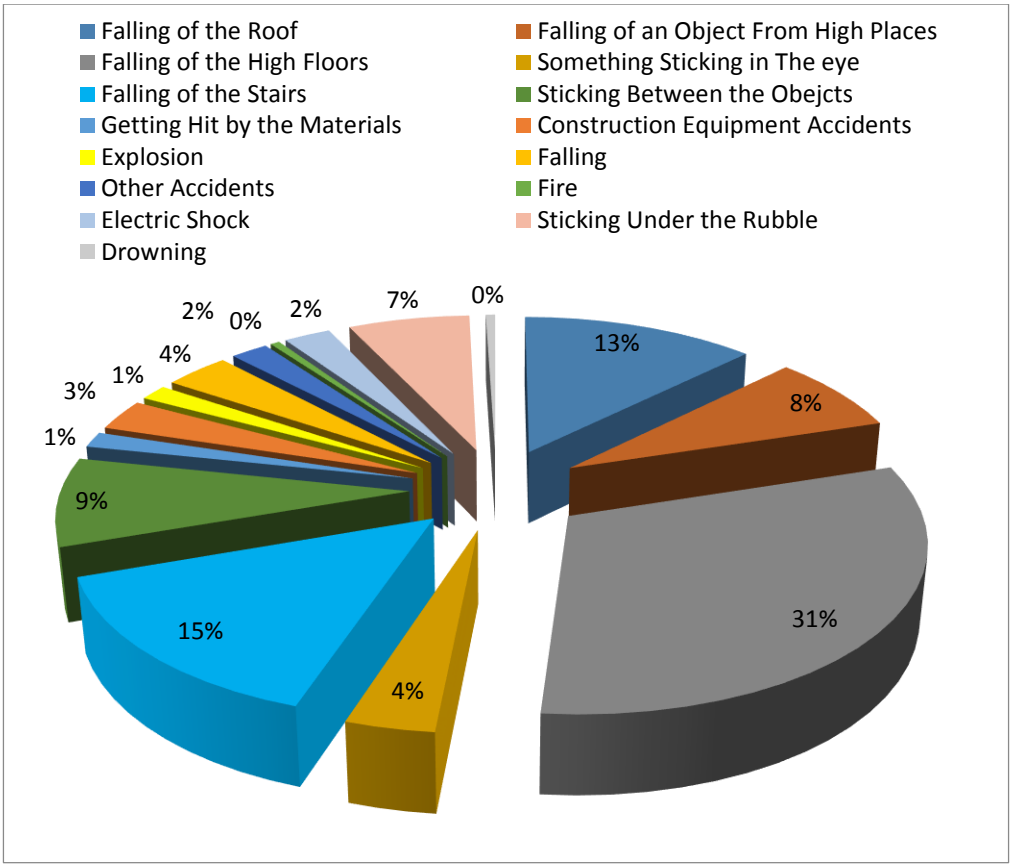

Figure 4.1b: Occupational Accidents Categorized by Events

Table 4.1b and Figure 4.1c summarize death and injuries caused by different occupational accidents (Müngen, 1993). Falling from upper levels and roofs is the most commonly occurred accident type with a percentage of 37,4%, followed by catching up in hands or some other parts of the body with 11,5 %. The falling of material from upper levels or roofs is very close to that with a percentage of 10, 1% (Müngen, 1993). When this data is compared to expert reports as the source of the analyses, the accidents caused from falling is again the most common type with a percentage of 58,6%, which is very close to 47,5 %. Furthermore, there is a dramatical difference in numbers between falling-resulted occupational accidents and other types of accidents.

Table 4.1b: Occupational Accidents Categorized by Events (Müngen, 1993)

NO	Main Groups	Death		Injury		Total	
	Accident Type	Number	%	Number	%	Number	%
1	Falling of People	1028	42,9%	934	32,9%	1962	37,4%
2	Falling of Material	251	10,5%	278	9,8%	529	10,1%
3	Skipping of Material	10	0,4%	211	7,4%	221	4,2%
4	Land sliding	138	5,8%	53	1,9%	191	3,6%
5	Down falling	167	7,0%	73	2,6%	240	4,6%
6	Electric Shocking	293	12,2%	80	2,8%	373	7,1%
7	Explosion of Material	50	2,1%	82	2,9%	132	2,5%
8	Heavy Machine Accidents	206	8,6%	97	3,4%	303	5,8%
9	Catching up in	1	0,0%	604	21,3%	605	11,5%
10	Sticking Hand	1	0,0%	200	7,0%	201	3,8%
11	Material Hitting	0	0,0%	42	1,5%	42	0,8%
12	Ceasing or Sticking	0	0,0%	75	2,6%	75	1,4%
13	Constructural Traffic Accidents	168	7,0%	38	1,3%	206	3,9%
14	Other Accidents	85	3,5%	74	2,6%	159	3,0%
	TOTAL	**2398**	**100,0%**	**2841**	**100,00%**	**5239**	**100,0%**

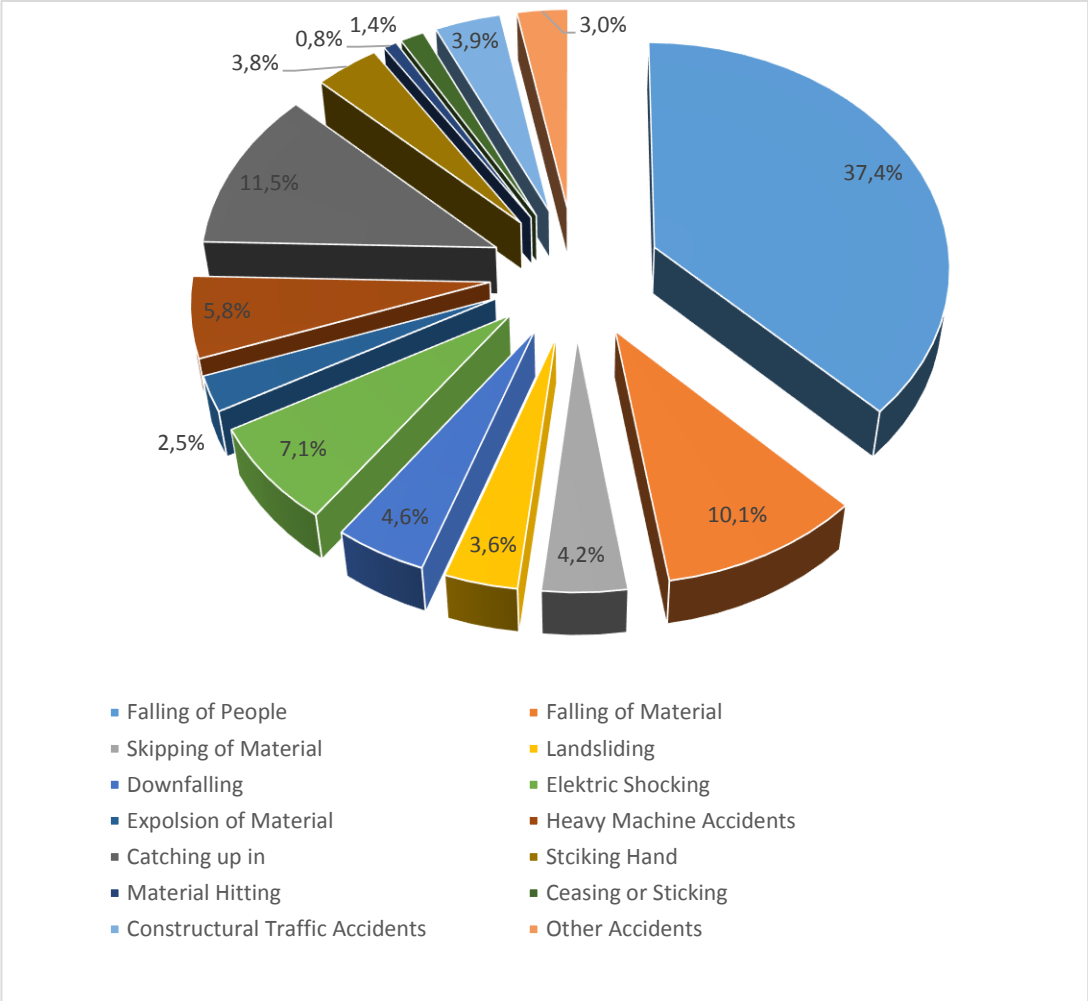

Figure 4.1c: Occupational accidents Categorized by Events (Müngen, 1993)

4.1.3 Distribution of Occupational accidents by Scenes

Table 5 provides the distribution of occupational accidents by accident scenes. When the data is analyzed, it can be seen that there is no big difference between cities and regions about occupational accidents in Turkey. Moreover, since the source of the data come from the Ankara Court, the most accidents obviously should occur in Ankara. Therefore, these analyses according to scenes cannot be considered as representative of whole Turkey.

Table 4.1c: Distribution of Occupational Accidents by Scenes of Accidents

City	No	%	City	No	%	City	No	%
Adana	12	7,4%	Düzce	2	1,2%	Malatya	1	0,6%
Adıyaman	1	0,6%	Elazığ	2	1,2%	Manisa	1	0,6%
Afyon	1	0,6%	Erzurum	4	2,5%	Mersin	13	8,0%
Ağrı	1	0,6%	Eskişehir	3	1,8%	Muğla	1	0,6%
Aksaray	1	0,6%	Gaziantep	1	0,6%	Nevşehir	1	0,6%
Antalya	16	9,8%	Gebze	1	0,6%	Niğde	1	0,6%
Ankara	29	17,8%	Giresun	1	0,6%	Ordu	4	2,5%
Aydın	1	0,6%	Gümüşhane	2	1,2%	Osmaniye	1	0,6%
Balıkesir	1	0,6%	Hatay	5	3,1%	Rize	1	0,6%
Bartın	2	1,2%	Isparta	1	0,6%	Samsun	2	1,2%
Batman	1	0,6%	İskenderun	1	0,6%	Silopi	1	0,6%
Bayburt	1	0,6%	İstanbul	3	1,8%	Sivas	1	0,6%
Bingöl	1	0,6%	İzmir	5	3,1%	Şanlıurfa	3	1,8%
Bitlis	1	0,6%	K.Maraş	1	0,6%	Trabzon	1	0,6%
Bodrum	1	0,6%	Karabük	2	1,2%	Uşak	1	0,6%
Bolu	2	1,2%	Karaman	2	1,2%	Van	2	1,2%
Çorum	2	1,2%	Kayseri	3	1,8%	Zonguldak	3	1,8%
Denizli	5	3,1%	Konya	7	4,3%	**TOTAL**	**163**	100,0%

4.1.4 Distribution of Occupational accidents by Injury/Death

Most accidents for especially construction sector result in death. That is why there is a need for health and safety experts or professionals in construction sector. Moreover, most of the occupational accidents in construction sector occur during the reinforced concrete construction period, which indicates the result might be more dangerous. Table 4.1d shows the consequence of occupational accidents in construction sites in terms of death and injury. The most of these accidents result in injury, it should be noted that the death ratio is also very high.

There can be more than one injuries or deaths for every occupational accidents. If there is a death and injury at the same time in the occupational accidents, this type of accident is also counted as accident involving death. Another reason for the low ratio of injury is that, in order to be counted or considered as "occupational accident", the situation must end up with SSI records, as discussed above. On the other hand; most of the simple accidents have not been considered as occupational accidents at construction site due to nature of construction sector. That explains why the injury rate is so close to the death ratio.

Table 4.1d: The Distribution of Fatal and Injury Accidents at Work

Result	**Accident**	**%**
Death	89	44,95%
Injury	109	55,05%
TOTAL	**198**	**100,0%**

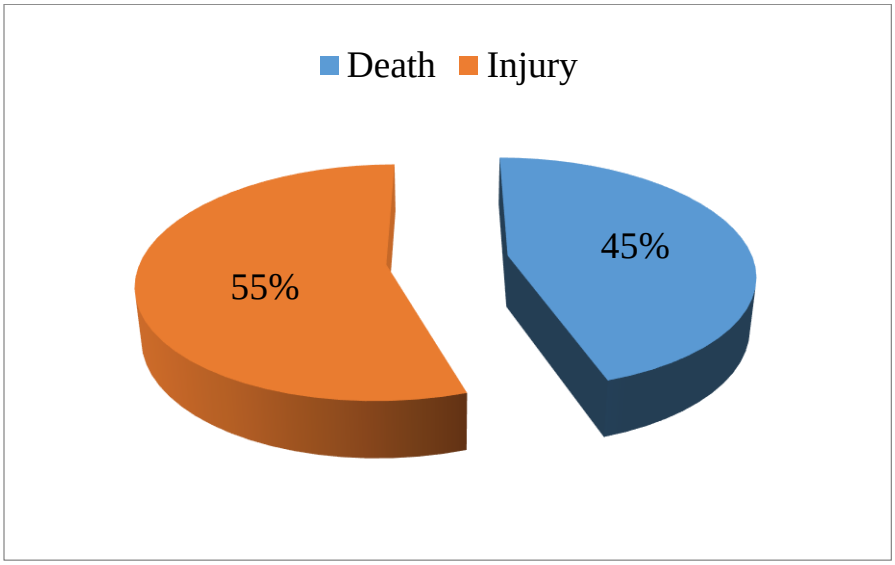

Figure 4.1d: Distribution of Fatal and Injury Accidents at Work

Table 4.1e shows below the comparison of the occupational accidents in construction sector with respect to other industries. This table indicates that about 26% of the total occupational accidents happen in construction sector. When all the other different sectors are considered, 26% is too high for construction. Furthermore, it is obvious from the table that construction sector shows similar pattern with the all other sectors except the year of 2009. Number of deaths due to occupational accidents made a peak in 2006 both for construction and all other sectors. Permanent disability is also at its highest value in 2006 also. For the construction sector; after 2007 number of deaths decreases sharply. When it comes to permanent disability there is also a decline after 2006 but average is still high and it is only reasonable in 2009 when compared to the all other sectors. Finally, it can be seen in the below table that there is not a relation between the average for total occupational accidents between construction sectors and others. The number of total occupational accidents is at its minimum in 2008 for construction sector and in 2009 for the other sectors.

Table 4.1e: The Comparison of the Construction Accidents with respect to All Sectors (Müngen, 2011)

Years	Total		Permanent Disability		Death	
	All Areas	Construction	All Areas	Construction	All Areas	Construction
2005	73923	6480	1374	322	1072	290
2006	79027	7143	1953	425	1592	397
2007	80602	7615	1550	359	1043	357
2008	72923	5574	1452	373	886	297
2009	64316	6891	1668	282	1171	156
Avereage	**74166**	**6441**	**1599**	**352**	**1153**	**300**

4.1.5 Distribution of Occupational accidents by Jobs

The distribution of occupational accidents according to the professions in construction sector is shown in Table 4.1f. The most of the occupational accidents seem to occur in molding, block lying and roof works. The workers on those duties have to work on high places, where falling accidents are faced or occurred mostly. On the other hand, the risk of occupational accidents is very low in jobs such as repair and maintenance, and so the percentage of occupational accidents on this job is 1% to the total. By examining the data on Table 4.1f, it can be concluded that the profession has an important role on occupational accidents.

Table 4.1f: Jobs of the Victims

Job Category	**Accident**	**(%)**
Roof works	23	11,7%
Welding assembly	9	4,6%
Block laying	33	16,8%
Molding	35	17,9%
Pier institution / Disassembly work	4	2,0%
Sanitation	12	6,1%
Iron works	11	5,6%
Concrete works	11	5,6%
Repair and maintenance	2	1,0%
Backhoe workers	4	2,0%
Material handling	10	5,1%
Channel operation	5	2,6%
Electrical works	3	1,5%
Installation works	8	4,1%
Excavation works	4	2,0%
Marble works	1	0,5%
Other jobs	20	10,7%
Total	**195**	**100,0%**

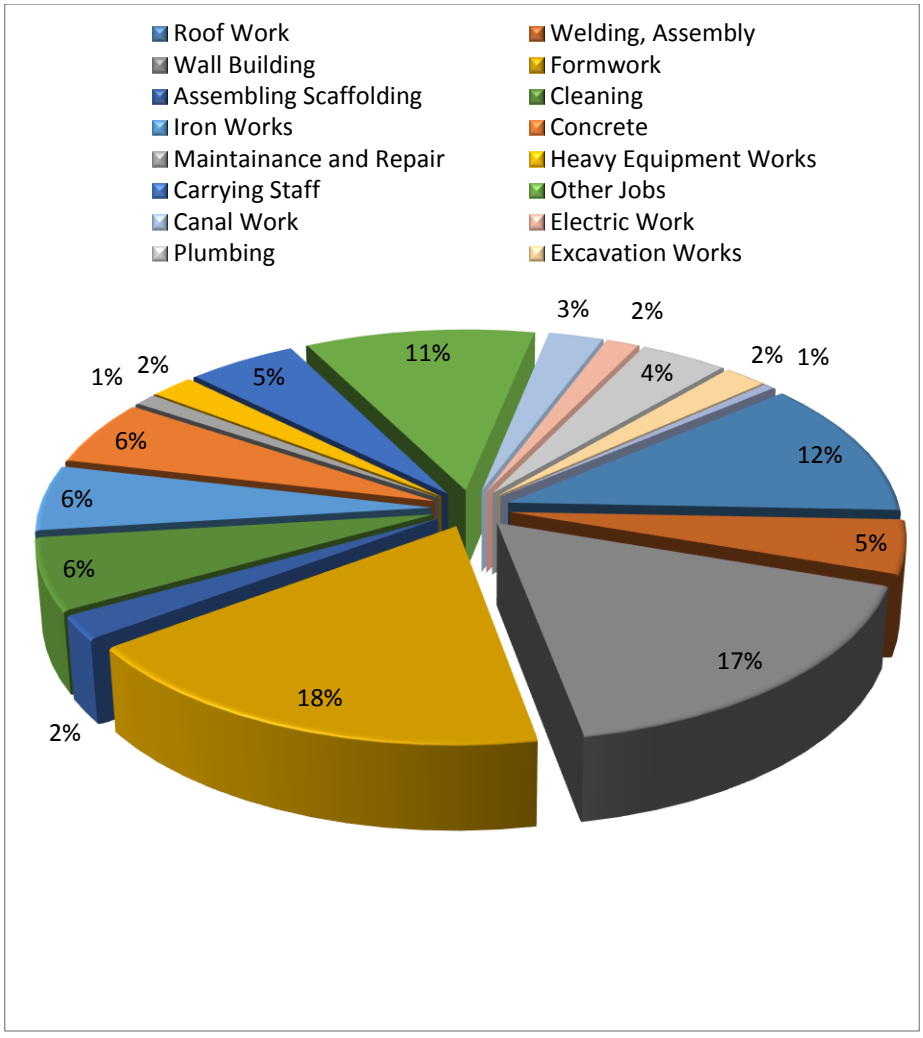

Figure 4.1e: Jobs of the Victims

Figure 4.1e shows that the highest occupational accidents is observed in formworks with a percentage of 18%. It is followed by wall building with 17% and roof works draw attention with 12%. It can be seen that the probability of the occupational accidents on these jobs is quite high, almost half of the total. Besides, occupational accidents can be considered as negligible such as marble works, when compared to occurrence of occupational accidents in other jobs.

4.1.6 Distribution of Occupational accidents by Ages

Table 4.1h provides the distribution of ages of occupational accident victims. The age distribution of victims shows similarities with the working ages in the country. Table 4.1g shows the distribution of compulsory insured persons' cumulative insured days by age and gender. The data that is the source of this thesis indicates that the occupational accidents can happen at any age. However, 35-44 period is on the first and occurrence of occupational accidents is very similar between 16-24 ages period and 45 and more.

Table 4.1g: Distribution of Compulsory Insured Persons' Cumulative Insured Days and by Age and Gender

Age	Male		Female		General Total	
	Number of Insured Person	Number of Cumulative Insured Days	Number of Insured Person	Number of Cumulative Insured Days	Number of Insured Person	Number of Cumulative Insured Days
<24	1.430.236	928.243.866	693.366	436.369.620	2.123.602	1.364.613.486
25-34	3.576.954	7.562.874.954	1.205.417	2.293.289.920	4.782.371	9.856.164.874
34-44	2.652.834	12.267.232.101	790.504	2.497.887.698	3.443.338	14.765.119.799
>44	1.297.817	6.111.724.410	292.492	776.289.995	1.590.309	6.888.014.405
Total	8.957.841	26.870.075.331	2.981.779	6.003.837.233	11.939.620	32.873.912.564
Age	Male		Female		General Total	
	Insured Person (%)	Cumulative Insured Days (%)	Insured Person (%)	Cumulative Insured Days (%)	Insured Person (%)	Cumulative Insured Days (%)
<24	16,0%	3,5%	23,3%	7,3%	17,8%	4,2%
25-34	39,9%	28,1%	40,4%	38,2%	40,1%	30,0%
34-44	29,6%	45,7%	26,5%	41,6%	28,8%	44,9%
>44	14,5%	22,7%	9,8%	12,9%	13,3%	21,0%
Total	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%

Table 4.1h: Distribution of Ages of Victims

AGE	Accident	(%)
16-24	36	18,6%
25-34	58	29,9%
35-44	63	32,5%
45 and more	37	19,1%
Total	**194**	**100,0%**

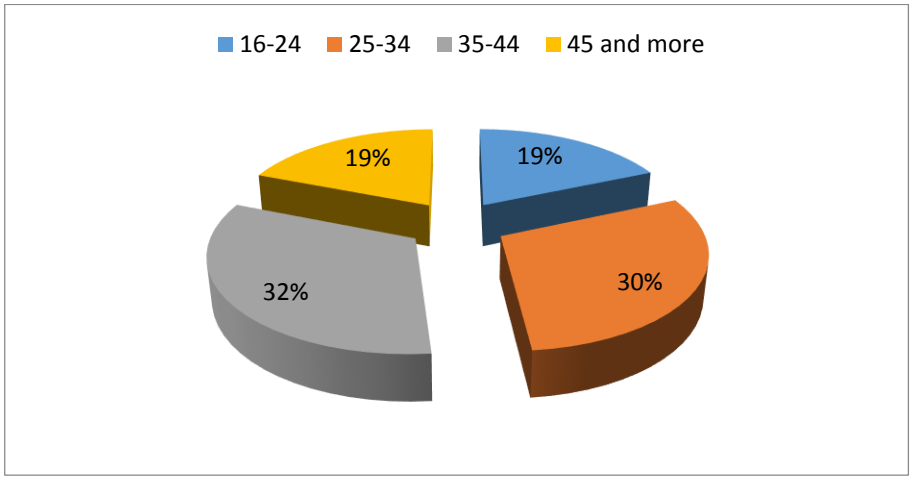

Figure 4.1f: Distribution of Ages of Victims

Figure 4.1f shows the workers at ages between 25-34 and the workers at ages 35-44 had more accidents than other age groups. The main factor of this fact is that there are lots of workers around that ages. Also, the workers who are younger or older than those age groups do not been prefer to work on construction sites or considered as inappropriate for the job description in construction sector. Besides these, if same number of workers with all these categorized ages would work, than the results may change conversely. In other words, according to the age category, there may be %5 of the workers at age 16-24 and there may be %5 of the workers elder than 45, on the other hand around %90 of them are middle aged. That is because the younger worker are inexperienced, and the older workers are lack of power and energy, so they are not preferred at construction works. As a conclusion, ages of the workers are not a representative category and analysis.

4.1.7 Distribution of Occupational accidents by Liability

The responsibility of the occupational accidents is generally attributed to three parties in the courts. These are primary employer, sub-employer and employee. Primary employer indicates the owner of the job. Sub-employer is related to the concept of subcontractor whose definition and implementation is still being discussed in Turkey. But under the current conditions, the sub-contractor can be considered as employer, because of the fact that the expert reports also consider them like that as well. Moreover, in most of the small enterprises, the workers are employed directly by the owner, which means there is no sub-contractor for such kind of small sized enterprises. Therefore, the legal responsibility can be assigned to either employee or employer.

Figure 4.1g shows the liability of occupational accidents based on court decisions. With the examination of the results, it can be seen that the responsibility can be given to only one party as well as can be divided to two parties.

It can be seen from Figure 4.1g that in most of the cases the responsibility of the occupational accidents is on the employer with 85%. The responsibilities of employee is 15%. In the 85% of the cases of working accidents, the court makes the employer pay substantial compensation to the employees or their relatives. One reason for the high ratio of liability for the employer is that the site chiefs or managers are all considered as the employer.

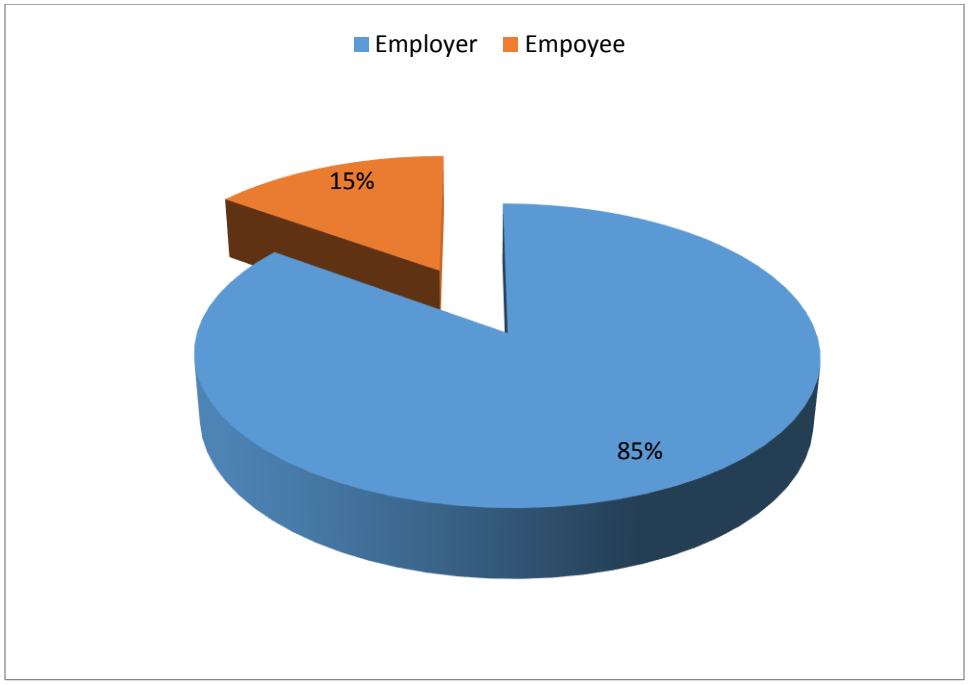

Figure 4.1g: Court's Adjudicative Responsibility Rates in Cases of Occupational Accidents

4.1.8 Distribution of Occupational accidents by Complainants

Table 4.1i shows the distribution of complainants after the occupational accidents in construction. According to the data, 58, 67% of the courts were filed by SSI. 41, 33% of them were filed by the victims themselves or by their relatives. The cases were filed as claim for damages for libel suit or corporal after occupational accidents, along with some illegalities or irregularity found for companies that has been in a jam about the accidents, after all data about the accident have been analyzed. These express responsibility of the companies to the state, not disagreements between employee and the employer. In this kind of situations, the SSI can file cases about these irregularities besides the accidents. SSI can file cases to specify irregularities about the occupational accident or to ensure the compensation to be paid to the victim by the companies.

Table 4.1i: Distribution of Complainants after the Occupational Accidents

Defendant	**Frequency**	**%**
SSI	114	58,67%
Casualty Relative or the Victim Himself	81	41,33%
TOTAL	**195**	**100,00%**

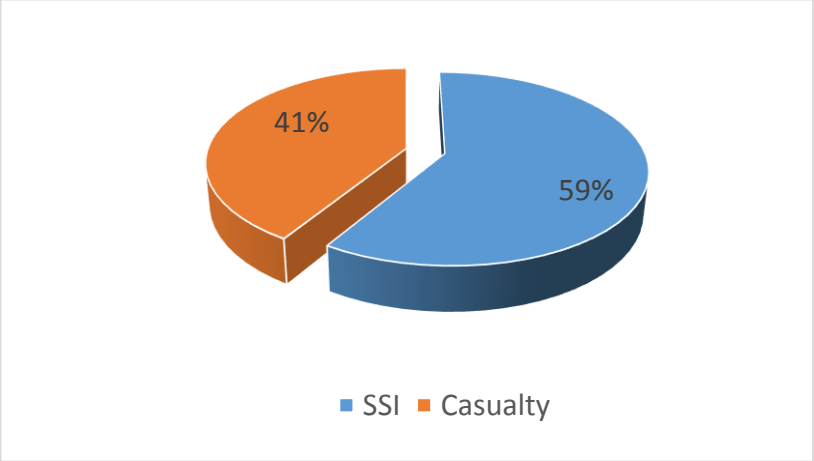

Figure 4.1h: Distribution of Complainants after the Working Accidents

In addition to these analyses, distribution of victims of occupational accidents according to gender can also be analyzed but it is obvious that the men are experienced more occupational accidents than women. Among all the victims who experienced occupational accidents, the percentage of the women is around 2%. As it is well-know the men is mostly preferred in construction jobs. It would be better if the data shows the total number of the men and women workers and the number of men and women workers who had accidents. This comparison is meaningful but it is not possible under current conditions as unrecorded workers are mostly women for social security institution.

4.2 Falling From Roof Type of Accidents

The expert reports that comprises our analyses indicates about 13% of all occupational accidents is falling from roof as shown in table 4.1a which means that workers working on roofs are exposed to significant risk of harm and even death, since falling from fragile roof-related fatalities still account for 42,9% of all fatalities on construction work sites (Müngen, 1993).

Table 4.2: Distribution of Falling From Roof Type of Accidents According to the Results

Result	**Accident**	**%**
Death	20	80,0%
Injury	5	20,0%
TOTAL	**25**	**100,0%**

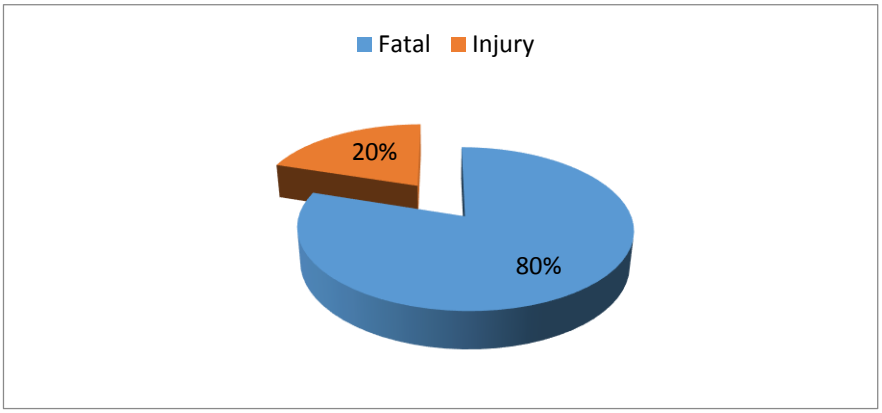

Figure 4.2: Distribution of Falling From Roof Type of Accidents According to the Results

As it is mentioned before, occupational accidents are discussed in two different categories: death and injury. Falling from the roof type of accident is the most common accidents between the occupational accidents which has fatal results. 80% of the accidents of falling of the roof have a result of death. 20% of them end up with injury. Factor affecting results of falling from roof type of accidents are height of the roof, the structure

of the floor, personal protective equipment's that the victim has, falling angle and position. Falling from higher roofs has higher rates of fatal injuries as expected.

4.2.1 Distribution According to Age

Table 4.2a: Distribution of Falling From Roof Type of Accidents According to the Age

AGE	Accident	(%)
16-24	4	15,4%
25-34	7	26,9%
35-44	7	26,9%
45 and more	8	30,8%
Total	**26**	**100,0%**

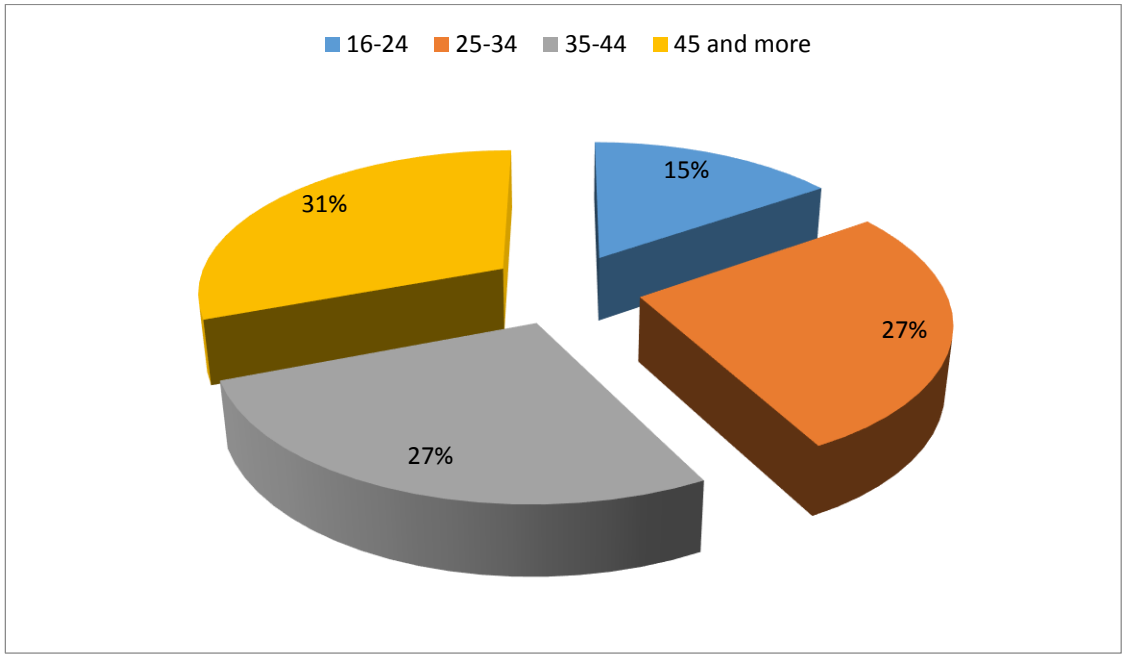

Figure 4.2a: Distribution of Falling From Roof Type of Accidents According to the Age

If one examines the age distribution of the workers who had falling of roof type accidents, it can be seen that 15% of the victims are between age of 16 and 24, 27% of them are between age of 25 and 34, 27% of them are between ages of 35-44, 31% of them are over 45 years old.

When the age distribution is examined, victims who are over age of 45 have the biggest ratio. And these results are similar and parallel to the results of the analyses concluded for distribution of accidents by age for all kind of occupational accidents before.

4.2.2 Cases of Report Convictions, Evaluation of Report Consideration of Falling From Roof Type of Accidents

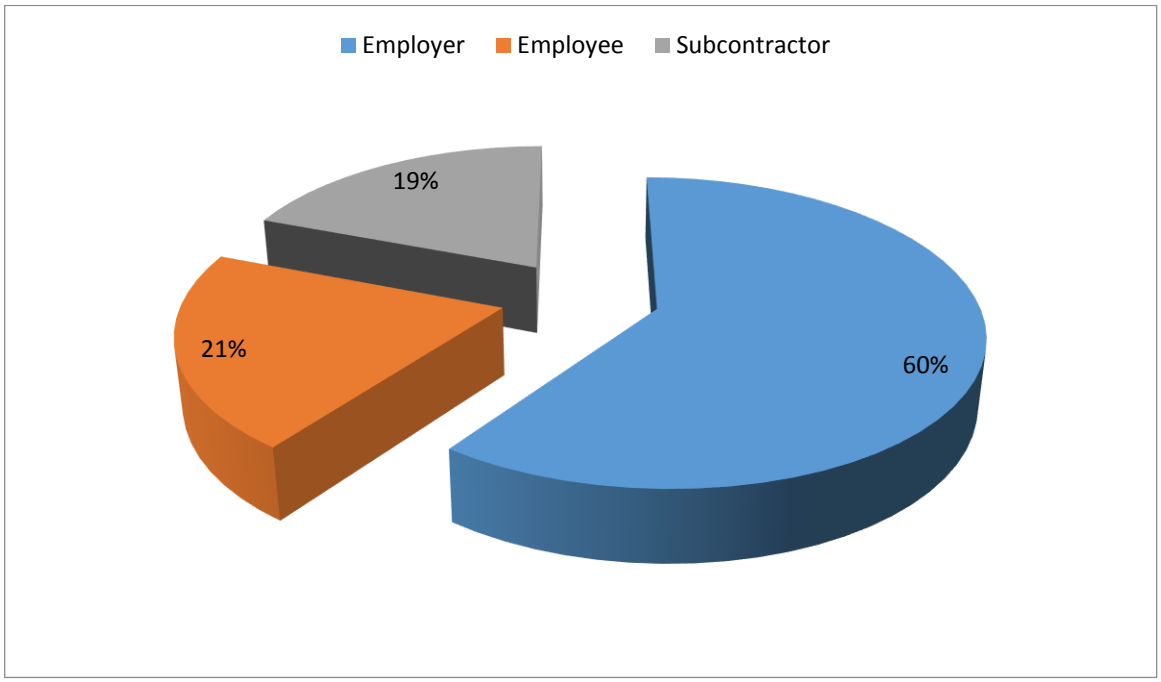

Figure 4.2b: Distribution of Falling From Roof Type of Accidents According to the Defective Fraction

Generally, the employer has the biggest responsibility in occupational accidents. When the data in Figure 4.2b is analyzed, it can be seen the responsibilities are assigned to three groups. In particular, 60% principal employer, 21% employee and 19% subcontractor was found faulty. That indicates even for falling from roof type of accidents, the largest responsibility belongs to the employer. These ratios were calculated from average. The security issues should be explained to all employers work in high places. It can be easily said that the employers do not take sufficient precautions to prevent the occupational accidents.

4.3 Comparison of Falling From Roof Type of Accidents with Other Accidents

According to the data analyzed in the research, the occupational accidents can be classified as falling of the roof, falling off an object from high, falling off the high floors, something sticking in the eye, falling off the stairs, sticking between the objects, getting hit by the materials, construction equipment accident, explosion, falling, some other accidents, fire, electric shock, sticking under the rubble and strangulation. Falling from roof type of accidents can be taken as a common accident among occupational accidents. Falling from roof type of accident is found to be the most common accident with 12.5% occurrence rate.

Based on the data studied in this research, occupational accidents can be categorized as death and injury. According to study, in all other accidents, the fatal rate 45% and the rate of injury is 55%. For falling from roof type of accidents the situation is serious as the rate of the fatality is 80% and 20% of the workers experience injury. Falling off the roof accidents are more hazardous compared to the other types of accidents. The injury rate is too low, because falling of the roof accidents mostly result in fatal consequences.

The age distribution in working life is between 16 and 55. The age groups are divided into four: 16 to 24, 25 to 34, 35 to 44 and over 45. According to the all data 19% of the workers that experienced occupational accident are between age of 16 and 24, 30% of them are between age of 25 and 34, 32% of them are age of 35 and 44 and 19% of them are older than 45. For falling from roof type of accidents, these ratings are 15% for age of 16 to 24, 27% for age of 25 to 34, 27% for age of 35 to 44 and 31% for over 45. Remarkable difference is the higher rate of 45 and more age group workers in falling from roof accidents' ratings. This might be attributed to the fact that the body loss stability by aging. With the examination of the results of the cases, it is seen that the legal responsibility can be assigned to only one as well as can be divided to the others.

According to the data analyzed, in 69% of the cases primary employer, in 16% of the cases subcontractor and in 15% of the cases the employee was found faulty. Similarly in the falling from roof type of accidents these numbers are 60% for primary employer, 19% for subcontractor, and 21% for worker. In falling off the roof accidents, the failure of the employer decreases by 9%. The failure of the employee increases by 6% for falling from roof type of accidents. That might indicate to the fact that personal carelessness plays an important role in for this type.

CHAPTER 5

COSTS COMPARISON OF PREVENTIONS OF FALLING FROM FRAGILE ROOF

5.1 Ways to Avoid Falling From Roof

Roof works are examined under working in high places segment in occupational health and safety issues. Working in high place is the most fatal risky group in terms of occupational health and safety, especially for construction sector. That is why, occupational health and safety for these kinds of works must be examined carefully, deeply and not being closefisted.

Most common preventive materials, personal protective equipment which are used for avoiding from falling from roofs are hard hats, work shoes, safety belts, safety rails, security webs, stimulating borderlines, tensioning the rope, warning line system , security monitoring system, fall restraint system.

Safety belts have effects of slowing down or stopping in case of falling. Safety belts can be characterized as personal safety equipment. It should be provided for each worker working in the area and everyone is obliged to use it. The cost of the safety belts may increase according the material used. Vertical and horizontal life lines avoid falling. Life lines are in personal security category and are built around the roof which means, it works for even one worker and lots of workers. The security rails are made once and it secures all the workers along the work. The cost of security railways increase according to the

size of the working place and the material used. Security rails mostly are not bought ready, mostly the materials are bought and the workers build it for themselves. Security webs are the most secure security system in traditional security systems. Therefore it has wide range of use. For example, it prevents fatal damage by avoiding falling or catching the fallen around the high buildings, roofs or bridges. Tensioning the rope system is a simpler version of safety rails system. It is made by the tension rope tied to the poles nailed in the corners instead of rail systems. Tensioning the rope does not ensure high security but is a low cost security system for the employer. Warning line systems are made up of supports as barriers to stimulate the workers who are getting near to the ropes or chains or unsafe areas. It remarks an area to work who does the roof work without safety rails or security web systems and it should be used combined with stimulating border systems, personal fall restraint systems, security monitoring systems or life lines. Security monitoring system is the sum of procedures that the experts have to do to stimulate the workers who are not aware of the risk of falling. This system is suitable for the roof works which do not have length of 15 meters. This system is used with controlled entrance plan and avoiding the falling from roof plan in the areas which are not suitable for traditional occupational health and safety systems.

5.2 Cost Comparison of Falling Accidents

The calculation for costs of preventive precautions for falling from roof type of accidents is not easy, as there are lots of factors affecting the both these preventive price and total project price. Nevertheless, it has been generally accepted that rapidly changing risks at work can be tackled effectively only when everybody in the company approaches them pro-actively. Prevention is being seen as the result of economic considerations and as an investment in a company's innovative capacity and future prospects. Management systems try to integrate performance measurement of prevention to achieve a higher safety level.

Table 5.2: Minimal Labor Ratio and Average Labor Calculations

Project Class	Project Grup	Unit Cost (TL)	Total Construction Area (m2)	Project Cost (TL)	Duration (month)	Duration (day)	Total Labor Day	Average Labor /day	Minimal Labor Ratio	Minimal Labor Cost (TL)
1	A	100,00 ₺	100,00	10.000,00 ₺	0,6	18	106	6	3,75%	375,00 ₺
	B	160,00 ₺	200,00	32.000,00 ₺	1,2	36	212	6	6,00%	1.920,00 ₺
2	A	250,00 ₺	200,00	50.000,00 ₺	0,8	24	212	8	11,25%	5.625,00 ₺
	B	350,00 ₺	200,00	70.000,00 ₺	0,8	24	212	8	3,75%	2.625,00 ₺
	C	400,00 ₺	500,00	200.000,00 ₺	2	60	527	9	9,00%	18.000,00 ₺
3	A	550,00 ₺	1.000,00	550.000,00 ₺	1,2	36	1.054	28	11,25%	61.875,00 ₺
	B	650,00 ₺	1.000,00	650.000,00 ₺	1,2	36	1.054	28	3,75%	24.375,00 ₺
4	A	700,00 ₺	8.000,00	5.600.000,00 ₺	4,8	144	8.422	58	9,00%	504.000,00 ₺
	B	800,00 ₺	15.000,00	12.000.000,00 ₺	9	270	15.790	58	11,25%	1.350.000,00 ₺
	C	900,00 ₺	25.000,00	22.500.000,00 ₺	15	450	26.317	58	13,50%	3.037.500,00 ₺
5	A	1.150,00 ₺	45.000,00	51.750.000,00 ₺	18	540	47.369	88	6,75%	3.493.125,00 ₺
	B	1.400,00 ₺	50.000,00	70.000.000,00 ₺	20	600	52.633	88	12,00%	8.400.000,00 ₺
	C	1.600,00 ₺	50.000,00	80.000.000,00 ₺	20	600	52.633	88	11,25%	9.000.000,00 ₺
	D	1.900,00 ₺	62.000,00	117.800.000,00 ₺	24,8	744	65.264	88	3,75%	4.417.500,00 ₺

Minimal labor costs and labor calculations should be examined according to two main categorized constructions with some assumptions. As each different factors are obviously changeable according to projects and conditions, the exact value or determination could not be achieved. For instance, according to Turkish Ministry of Environment and Urban Planning and regulations that issued at the Turkish Official Gazette in 2014, construction projects are being considered as 5 main classes according to their architectural services and utilization. First 2 classes are small projects or constructions like cabin, small storehouses etc. Third classes are bigger accordingly and divided A and B category in itself, which can be considered as small sized projects, and the entrepreneur can be called as small sized enterprise. For instance, cold storage depots, small commercial offices are these class of projects. The fourth and fifth classes can be considered as big projects and big sized enterprises are the contractors of such kind of projects like university campuses, big radio or TV buildings etc.

Table 5.3: Examples of 5 Main Classes of Projects

Project Class	Project Grup	Unit Cost (TL)	Examples of Project Types
1	A	100,00 ₺	game rings, etc.
	B	160,00 ₺	cabins, etc.
2	A	250,00 ₺	retaining walls, etc.
	B	350,00 ₺	single storey offices,machine workshops, etc.
	C	400,00 ₺	hangars, etc.
3	A	550,00 ₺	offices (up to 3 floors), houses (up to 4 floors) etc.
	B	650,00 ₺	exhibition hall, houses, marinas, etc.
4	A	700,00 ₺	aquaparks, integratedindustrial plants, etc.
	B	800,00 ₺	fitness centers, subway stations, etc.
	C	900,00 ₺	ministerial buildings, 3 star hotels, etc.
5	A	1.150,00 ₺	tv, radio stations, universtiy campuses,
	B	1.400,00 ₺	4 star hotels, airports, etc
	C	1.600,00 ₺	5 star hotels, museum and library complex, etc.
	D	1.900,00 ₺	auditoriums, concert halls, etc..

According to Turkish Ministry of Environment and Urban Planning, unit price of each kind of projects are determined for every year and given in Table 5.2 with pink color above, with some examples of each type of projects.

The Table 5.2 is the result and simply shows the output of an excel formulation table. If one puts the value for the total construction area, projects costs determined from that sheet. Then, for the duration, as a value of average 0,012 m^2 constructing for a day, the monthly duration of that project will be given. (Tezel, 2005). But it should be taken in mind that, this rate differs from one project to another and all the results is given as the table. Again, for the Labor Day calculation, for such kind of concrete reinforced projects, one worker performs about 0,9 m^2 to 1 m^2 for a day. Taking this value as 0,95m^2 per day, total labor day for that project can be obtained. For the minimal labor ratio column, according to regulations that issued at the official gazette in 8th of June, 2012, minimal labor ratio that the enterprise should pay in to the SSI is given for all kind of projects and enterprises. (Gürcanlı, Kuruoğlu, Müngen 2005). According to Table 5.2 above, final column, minimal cost for each kind of projects can be found. It should not be forgotten that, %75 of labor cost is to be paid by the entrepreneur or by the contractor, therefore, while determining this ratio, multiplying with 0,75 as a factor for SSI should be bear in mind.

In order to analyze and show the results for cost comparison of taking precautions for falling from roof type of accidents, an accident for a moderate construction site is investigated as a case study below. In order to calculate and compare the costs for all of these accidents, at first, loses should be divided into two:

5.2.1 Direct Losses

- **First aid cost;** ambulances with a nurse and driver, is a variable factor that affecting the cost for construction sites. As employers should take occupational health and safety consultancy from specialized company, including workplace doctor, they should not take such kind of extra precautions like an ambulance (Official Gazette, 2012). However, just the very huge sized construction sizes may take into such kind of precautions.

- **Temporary and permanent incapacity allowances paid to victim:** If the accident victim earns average of minimum value (891,03 Turkish Liras net) and 2,000,00 TL netto, which means average of 1.134,00 TL and 2.818,18 TL makes 1.976,09 Turkish Liras gross salary for the employer. Lets assume that the victim has the accident at the age 35, and according to Social Securty Institution, he/she would work up to age of 65, means 30 years of unworking period. Moreover, for the salary increase, taking it as 5% with parallel to inflation rate, average salary for the victim can be calcuated with the formula below:

$$a + ar + ar^2 + ar^3 + \cdots + ar^{n-1} = \sum_{k=0}^{n-1} ar^k = a\,\frac{1-r^n}{1-r}$$

then, taking a=1976,09, r = 1,05,n= 30, average salary makes 3.322,00 TL, and then the cost for the accident to the employer;

30 years x 12 months/year x 3.322,00 TL/month = 1.195.920,00 TL

Again, according to SSI, the value should be calculated over 70%, which means, if the accident result in death, the employer should pay for 837.144,00 TL for the indemnity. These rule is known as two-thirds of the wages paid for required rest periods. Moreover, if the treatment could be applied in, it is called as ambulatory treatment and 1/3 of the treatment costs should be counted, and if it is inpatient treatment, this time 3/2 should be counted but these are so detailed information that should not be taken into consideration at this stage.

- **Compensations paid to the victim or the family**, calculated above.

- **Court expenses,** is about 4.200,00 Turkish Liras including expert costs, this amount is taken after discussion of labor lawyers

- **The cost of legal penalties to be applied in a fatal accident,** is about 1.000,00 to 2.000,00 TL

- **Funeral Expenses**, including all costs, is about 2.000,00 to 3.000,00 Turkish Liras, changes with respect to decedents hometown, distance etc.

5.2.2 Indirect Losses

- Workforce loss
    - Inability to work of the victim- is about zero additional costs as there are lots of workers for the employer that he could easily found for construction sector, therefore, this item brings no much costs and can be taken as 0.
    - Due to time outs of the colleagues of the victim, can be considered like the way if it is assumed that the site would stop for a day, about 100 workers x 100 TL per worker makes 10.000,00 TL just for a day loss time outs.
    - Time loss due to the accident investigation of the foremen's and senior admins, again for the nonworking time outs of a site, for all kind of site workers, manufacturers etc., a medium sized construction sites daily expenditure could be taken around 30.000,00 to 35.000,00 TL.
    - Due to re-organization of the job of victim, could be taken as 0.
    - Medical Report Cost- Could be considered with safety supervisioning and expertizing cost.
    - Due to lost time for legal procedures, could be taken as 0.

- Loss of Production,
    - Due to interruption of production during the accidents,
    - Due to disruptions in the work flow and programs,
    - Due to interruption or damage of the machines
    - Due to damages of raw materials or products.
    - Due to decreased productivity when the victim returned to the job.

All these loss of production expenses are considered above.

- **Other indirect losses:**
    - Losses because of orders not being able to provide on time
    - The company's reputation loss, it is impossible to estimate any value for this kind of loss. Companies reputation could be gained by years and losing it with such kind of accidents really priceless in terms of expenditure.
    - Penalties paid due to late delivery, could be taken as 5 per thousand per month, and could be counted according to projects estimated price, is about 52.000.000,00 TL, and results in 8.600,00 TL per day.
    - Loss of possible bonuses due to early delivery.
- **Costs of the investigations done by the Upper Authority and by the Government**

According to above given Table 5.2, and as mentioned above a moderate site for a falling from roof type of accident is taken as a case study, and the excel table gives the results. It

should not be forgotten that, all of the above calculations under the assumptions are based on the cost for the employer in case of the happening of an accident and resulting with the death for a worker, who has a salary of 1.976,09 TL. Moreover, one of the most important cost effect of occupational accident, is the pecuniary and non-pecuniary damages, did not added as their value is definitely unpredictable and uncountable. Adding all the costs for them, excluding the pecuniary and non-pecuniary damages, makes around 1.273.420, 00 TL. Although it cannot be calculated exactly, due to the muchness of the effective factors as mentioned above, resulting an accident with around one million two thousands Turkish Liras is really huge value.

If the employer tries to take preventive precautions, then the costs for him is listed below as a case study:

First of all, assume that the project size has about 45.000,00 m2 constructional area, and it is somewhere between class 5 and A-B group building type, means around 1.040,00 TL/m2 and 1.270,00 TL/m2 for unit costs. Taking it as 1.150,00 TL/m2 unit costs and taking around 100 workers are working there, with the duration of around 18 months. All the personal protective equipment prices have been taken from the average of big construction markets' 2014 prices. These construction markets are Bauhaus, Baumax and Tekzen. The cost calculations can be made accordingly.

Full body harness: 150 TL / one worker in average,

150 TL/ worker x 50 worker needs = 7.500,00 TL

Hard hat: 30 TL / one worker in average

30 TL/ worker x 100 worker in average x (18 months/6 months period) =9.000, 00 TL

Protective work shoes: 85 TL / one worker in average

85 TL/ worker x 100 worker in average x (18 months/6 months period) =25.500, 00 TL

Reflective work waistcoat: 10 TL / one worker in average

10 TL/ worker x 100 worker in average x (18months/3 months period) =6.000, 00 TL

Consultancy costs for such kind of project: around 5.000,00 TL/month 5.000,00 x 18 = 90.000,00 (including all education and medical check-ups)

Monitoring or supervisioning costs: safety adviser: gross salary of 6.000,00/month 6.000,00 x 18= 108.000,00 TL

Other health and safety signs, life belts, unpredictable precautions: 1.000,00 TL/month 1.000,00 x 18= 18.000,00 TL

Adding all preventive precaution costs, makes around 264.000,00 TL, which is about 5 times smaller than the costs of fatal accidents. It should not be forgotten that these calculations made for preventive precautions are considered for the most expensive cases, and above the values that are mentioned at Table 5.2 above. And about the materials which are so expensive, it could of course be bought cheapest way.

One last analyses that could be done with these numbers is that comparing these costs with the project price. According to our assumptions, the construction project under our assay has around 45.000,00 m2 constructional area with unit cost of 1.150,00 TL, makes 51.750.000, 00, which is considered for the first case as 52.000.000, 00 TL. If the employer takes effective precautions, the costs will not be higher than 264.000,00, means 0.5% of the project price. But if he do not prefer to take these effective precautions, in case of a fatal accident, he would have to pay at least 1.250.000, 00 TL plus pecuniary and non-pecuniary damages, about above 2.5% of the project price, which is a really high amount for a contractor of that kind of projects.

A second case study can be studied for a roof repairing works. This time, assuming around a roof of 300-500 square meter, the total project costs will be very low comparing to the project studied in the first case study. But the cost that the employer will face in case of occurrence of a roof falling accident is almost similar. In other words, the ratio will be very much from 2,5%, as a result, cost difference will be higher and higher accordingly.

5.3 Supervision Regarding the Occupational Accidents

Supervision regarding the occupational welfare and safety, aims to protect the labor rights, and to lower occupational sicknesses and accidents. Supervision regarding the

occupational welfare and safety is done by government on a regular basis. Due to preparations for these supervisions done by the government, employers supervise themselves either. This self-supervision mechanism carried out by the employers, plays a crucial part in preventing occupational accidents and the continuity of the practices to prevent occupational accidents (Saat, 2009).

5.3.1 Management Leadership and Employee Involvement

- Employer and employee involvement and communication on workplace-safety and health issues are essential
- Post the company's written safety and health policy for all to see.
- Involve employees in policy making on safety and health issues.
- Take an active part in safety activities.

5.3.2 Workplace Analysis

- Employer and employee involvement and communication on workplace-safety and health issues are essential
- Post the company's written safety and health policy for all to see.
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- Take an active part in safety activities.
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5.3.3 Hazard Prevention and Control

- Regularly and thoroughly maintain equipment and vehicles.
- Ensure that employees know how to use and maintain personal protective equipment.
- Train employees in proper procedures for handling specific situations.

5.3.4 Safety and Health Training and Education

- It is important that everyone in the workplace be properly trained
  - Managers and supervisors
  - Outside contractors
  - Part-time and temporary employees and volunteers
- Allow only properly authorized and instructed employees to do any job.
- Make sure no employees do any job that appears unsafe.
- Hold emergency-preparedness drills for employees.
- Pay particular attention to employees learning new operations to make sure they have the proper job skills and awareness of hazards.
- Train supervisors and managers to recognize hazards and understand their responsibilities.

CHAPTER 6

CONCLUSION

Middle or small sized firms which carry out most of the construction in Turkey, and those in the public sector ignore safety. In other words, concept of work safety has not been developed and sufficient attention is not paid to work safety. As a result, in Turkish business life, insufficient attention paid to work safety, mostly both employers and employees neglect their own safety. Moreover, most of the employers in the construction industry consider the cost of work safety unnecessary, and government inspections are inadequate. Besides these, especially for the accidents that are in more risky group in terms of taking place, like falling from roof type of accidents, there is lack of education, and apart from a few exceptions, public foundations, private firm's trade unions, profession unions and other related units are generally ignorant about the subject and almost no effective improvement is being taken.

As the accidents in the work regards;

- Falling off the high floors has the biggest rating with 31% and 62 events in our work. 15% of the accidents are falling of the stairs, 13% of them are falling of the roof events. Sum of these numbers shows that, 58% of the accidents are falling events. Falling events are taking place in construction industry mostly. Working accidents based on falling are caused by not taking safety precautions as well as carelessness of the workers. The main reasons of falling accidents are

not taking the precautions on the corners of the buildings. Safety rails, stimulating borderlines, tensioning the rope are some of the safety precautions that can prevent damage. Some precautions can even be taken reduce the affect after falling. Safety belts are also kinds of safety equipment's that can prevent damage. In personal, the causes of the falling are carelessness and lack of stability. Carelessness can be temporary as well as permanent for some people. Workers in these situations can prevent accidents by not working in high places. Lack of stability can be related with the carelessness. And lack of stability can also be caused by higher ages. For example, diabetes, high blood pressure can cause temporary lack of stability. That is why people in high ages should not work in high places.

- As the accidents are examined according to the results, 55% of them result in death and 45% of them result in injury. The high ratings of death in accidents show the risks in construction industry. Workers who are in dangerous type of works need to be up to date about the job safety.

- Formwork has the highest rating of death with 18% in categories of job done. Building walls come after it with 17%. Roof works are also taking attention with 12%. By examining these ratings risky jobs can be understood. The floor should be hardened and dry for preventing accidents in formworks. Personal safety equipment's are also very important in these works.

- After the working accidents the court designates a defective fraction. Primary employer comes out faulty in 70% of the cases. This shows that, the employer does not take the security precautions that he must have done. New legal obligations are getting occupational health and safety in better positions. New obligations make employers do the job security by aggravating the punishments.

- Falling off the roof accidents has the highest rating of death. 80% of falling from roof type of accidents end up with death according to our research. These ratings are about the quality of the work the employer is doing. Accidents can be prevented by safety rails, stimulating borderlines, tensioning the rope. But this won't get the death rating lower. Death ratings can be lowered by taking precautions that are necessary after the accidents. For example safety belts slow down the worker after falling, so safety belts lower the death rating. Safety webs are also kinds of precautions that can prevent workers from death. If falling of the worker is taken as an accident, all the precautions taken after the accident have affect to lower the death rate. First aid and presence of the right equipment and personnel is also very important to lower the death rate after the accidents.

- Not taking necessary precautions, not performing the necessary inspections, not educating workers enough about their job are the biggest problems of construction sector in terms of occupational health and safety.

- Under these knowledge, occupational health and safety precautions, especially for the prevention of falling from roof type of accident has been examined and the cost for unit meter square is determined. After all the analyses, it is one more time emphasized that, although cost effects of all items taken as a most expensive way, the cost for the precautions for a moderate construction project is about 0,5% of the total project cost. Besides these, in case of an accident resulting in death, excluding the material moral indemnities, the ratio is about 2, 5% of all the project cost. As the Donald Millar, the Director of National Institute of Safety and Health (NIOSH) said in 1996, *"The biggest occupational health and safety problem is the blindness of our society to the benefits of prevention!"* education is the biggest and most important occupational health and safety measure and has the starting course in job safety, not only for employers or the employees, but also all the society.

Table 6: Expert Reports, from Ankara Courts as a Source of This Thesis

NO	COMPLAINANT	LITIGATIOUS	YEAR	ACCIDENT	SCENE	FATAL	INJURY	WORK BEING DONE	AGE	DATE of RECRUITMENT	DEPARTMENT	EMPLOYER	EMPLOYEE	SUB-CONTRACTOR /OTHERS	REPORT DATE
1	Person	Person	2005	Fall From Roof	Silopi	1	0	Roof Works	38		Painter	70,0%	25,0%	5,0%	25.4.2011
2	Person	Company	2008	Falling of Material	Mersin	0	1	Installation Works	40	1.7.2008	Weldor worker	70,0%	15,0%	15,0%	26.7.2011
3	Person	Company	2004	Fall From Floor	Denizli	0	1	Wall Works	41		Painter	30,0%	30,0%	40,0%	11.7.2011
4	SSI	Company	2004	Fall From Floor	Bodrum	0	1	Formworks	17	20.2.2004	Pattern worker	70,0%	10,0%	20,0%	27.9.2011
5	Person	Person	2010	Pricking sth to eye	Mersin	0	1	Scaffolding Works	41		Painter	40,0%	20,0%	40,0%	25.10.2011
6	SSI	Person	2004	Fall From Roof	Turhal	1	0	Roof Works	46		Roof worker	62,5%	37,5%	0,0%	3.10.2011
7	SSI	Company	2005	Fall From Roof	Samsun	0	1	Roof Works	31	11.10.2005	Roof worker	100,0%	0,0%	0,0%	11.10.2011
8	SSI	Company	2002	Fall From Floor		1	0	Wall Works	27		Painter	80,0%	0,0%	20,0%	8.2.2002
9	SSI	Company	2007	Fall From Roof	Alanya	1	1	Roof Works	24-22		Roof worker	70,0%	5,0%	25,0%	24.4.2012
10	SSI	Company	2007	Fall From Floor	Ankara	1	0	Cleaning	51	8.3.2006	Worker	75,0%	10,0%	15,0%	11.7.2012
11	SSI	Company	2009	Fall From Stairs/Scaffolds	Adana	1	0	Steel Works	37		Worker	30,0%	10,0%	60,0%	5.12.2011
12	SSI	Company	2008	Fall From Stairs/Scaffolds	Bitlis	1	0	Concrete Works	24	21.4.2008	Pattern worker	40,0%	0,0%	60,0%	25.11.2011
13	Person	Person	2009	Fall From Roof	Kayseri	1	0	Wall Works	43	25.12.2009	Painter	75,0%	10,0%	15,0%	7.2.2012
14	SSI	Person	1998	Fall From Floor	Mersin	0	1	Maintenance Works	17		Other worker	40,0%	5,0%	55,0%	7.2.2012
15	Person	Person	2009	Pricking sth to eye	Malatya	0	1	Formworks	25		Pattern worker	85,0%	0,0%	15,0%	15.2.2012
16	Person	Person	2005	Squeezing btw Materials	Giresun	1	0	Heavy Equipment Works	24		Operator	25,0%	10,0%	65,0%	21.3.2012
17	Person	Company	2010	Fall From Stairs/Scaffolds	Rize	0	1	Wall Works	23		Painter	80,0%	20,0%	0,0%	4.10.2012
18	Person	Company	2009	Fall From Roof	Afyon	0	1	Material Carriying	43		Worker	45,0%	0,0%	55,0%	15.5.2012
19	SSI	Person	2011	Falling of Material	Adıyaman	0	1	Cleaning	22	2.2.2011	Worker	90,0%	0,0%	10,0%	11.6.2012
20	Person	Person	2007	Fall From Stairs/Scaffolds		0	1	Formworks	42		Pattern worker	45,0%	10,0%	45,0%	5.06.2012
21	Person	Person	2005	Fall From Stairs/Scaffolds	Çorum	0	1	Scaffolding Works	26		Worker	30,0%	20,0%	50,0%	12.6.2012
22	SSI	Person	2006	Fall From Floor	Denizli	1	0	Wall Works	30		Painter	75,0%	10,0%	15,0%	16.7.2012
23	Person	Company	2011	Pricking sth to eye	Ağrı	0	1	Cleaning	46		Other worker	75,0%	25,0%	0,0%	16.7.2012
24	Person	Company	2010	Material Crash	Hatay	0	1	Concrete Works	42	27.8.2009	Operator	80,0%	20,0%	0,0%	15.7.2012
25	Person	Company	2007	Material Crash	Çatak	0	1	Wall Works	28		Tile worker	100,0%	0,0%	0,0%	10.11.2012
26	SSI	Company	2001	Fall From Floor	Ankara	1	0	Other Works	42		Worker	40,0%	20,0%	40,0%	5.2.2012
27	SSI	Company	2007	Fall From Stairs/Scaffolds	Antalya	0	1	Wall Works	25		Painter	80,0%	20,0%	0,0%	10.11.2011
28	SSI	Company	2008	Squeezing btw Materials	Adana	0	1	Establishment Works	34	2.10.2007	Establishment worker	90,0%	10,0%	0,0%	28.6.2012
29	SSI	Company	2007	Fall From Floor	Batman	1	0	Concrete Works	33		Concrete worker	40,0%	20,0%	40,0%	23.11.2012
30	SSI	Company	2009	Fall From Floor		1	0	Formworks	46		Worker	50,0%	40,0%	10,0%	21.11.2012

Table 6: cont'd

NO	COMPLAINANT	LITIGATIOUS	YEAR	ACCIDENT	SCENE	FATAL	INJURY	WORK BEING DONE	AGE	DATE of RECRUITMENT	DEPARTMENT	EMPLOYER	EMPLOYEE	SUB-CONTRACTOR /OTHERS	REPORT DATE
31	Person	Company	2009	Heavy Machine Accidents	Adana	1	0	Heavy Equipment Works	35		Excavation worker	35,0%	10,0%	55,0%	2.3.2013
32	SSI	Company	2009	Other type of Falling	Kayseri	0	1	Formworks	53		Pattern worker	0,0%	0,0%	100,0%	15.2.2013
33	SSI	Company	2001	Fall From Floor	Mersin	0	1	Steel Works	40		Worker	60,0%	30,0%	10,0%	5.6.2013
34	Person	Company	2003	Fall From Floor	Gaziantep	1	0	Other Works	35		Other worker	50,0%	50,0%	0,0%	5.12.2012
35	Person	Company	2009	Fall From Stairs/Scaffolds	Adana	1	0	Wall Works	32		Side worker	30,0%	5,0%	65,0%	11.3.2012
36	Person	Company	2004	Fall From Roof	Ankara	1	0	Roof Works	52		Roof worker	60,0%	10,0%	30,0%	12.3.2012
37	SSI	Company	2010	Fall From Roof	Antalya	1	0	Wall Works	49		Side worker	30,0%	10,0%	60,0%	22.6.2012
38	SSI	Company	2009	Fall From Floor	Adana	1	1	Wall Works	25 - 37		Painter	80,0%	6,0%	14,0%	23.10.2012
39	SSK	Person	1994	Fall From Floor	izmir	0	1	Other Works	27		Worker	80,0%	10,0%	10,0%	20.5.2013
40	SSI	Person	2004	Fall From Floor	izmir	0	1	Wall Works	45	28.5.2004	Painter	80,0%	20,0%	0,0%	24.3.2013
41	Person	Company	2006	Squeezing btw Materials	Ankara	0	1	Cleaning	23			80,0%	20,0%	0,0%	23.1.2013
42	SSI	Person	2007	Fall From Floor	Ankara	1	0	Cleaning	49		Worker	35,0%	15,0%	50,0%	9.3.2012
43	SSI	Company	2010	Fall From Floor	Hatay	1	0	Cleaning	19			80,0%	20,0%	0,0%	29.1.2013
44	Person	Company	2008	Fall From Floor	Denizli	0	1	Other Works	22		Other worker	40,0%	30,0%	30,0%	15.3.2013
45	Person	Company	2009	Fall From Floor	Zonguldak	0	1	Material Carriying	22	12.1.2009	Worker	70,0%	30,0%	0,0%	10.12.2012
46	Person	Government	2006	Fall From Stairs/Scaffolds	Ankara	0	1	Other Works	38		Worker	55,0%	45,0%	0,0%	6.5.2013
47	Person	Company	2009	Other type of Falling	Abu Dhabi	0	1	Material Carriying	31		Worker	50,0%	50,0%	0,0%	30.04.2012
48	SSI	Company	2010	Fall From Floor	Ankara	1	0	Formworks	32		Pattern worker	40,0%	5,0%	55,0%	25.6.2012
49	Person	Company	2005	Fall From Floor	Nevşehir	0	1	Roof Works	24		Roof worker	70,0%	10,0%	20,0%	3.4.2012
50	Person	Company	2008	Fall From Floor	Eskişehir	0	1	Other Works	24		Engineer	50,0%	50,0%	0,0%	21.3.2012
51	SSI	Company	2003	Squeezing btw Materials	Ankara	0	1	Canal Works	34		Worker	80,0%	10,0%	10,0%	28.3.2012
52	SSI	Company	2003	Falling of Material	İstanbul	1	0	Steel Works	40		Smith worker	80,0%	4,0%	16,0%	19.6.2012
53	SSI	Company	2007	Fall From Floor	Zonguldak	0	1	Formworks	43		Pattern worker	80,0%	20,0%	0,0%	30.4.2012
54	SSI	Company	2009	Pricking sth to eye	Isparta	0	1	Formworks	44		Pattern worker	70,0%	20,0%	10,0%	30.4.2012
55	Person	Person	2010	Material Crash	Hatay	0	1	Material Carriying	28		Operator	42,5%	5,0%	52,5%	2.8.2012
56	SSI	Person	2007	Other type of Falling	Konya	0	1	Other Works	26		Worker	35,0%	15,0%	50,0%	10.9.2012
57	SSI	Person	2010	Fall From Roof	Karabük	1	0	Roof Works	47		Roof worker	50,0%	0,0%	50,0%	28.8.2012
58	SSI	Company	2010	Fall From Floor	Karaman	0	1	Cleaning	46		Cleaning worker	70,0%	30,0%	0,0%	4.10.2012
59	Person	Company	2006	Fall From Roof	izmir	1	0	Roof Works	28		Painter	40,0%	5,0%	55,0%	27.8.2012
60	SSI	Person	2010	Fall From Stairs/Scaffolds	Şanlıurfa	0	1	Wall Works	32 - 25		Painter	90,0%	0,0%	10,0%	10.11.2012
61	Person	Company	2010	Fall From Floor	Ankara	0	1	Scaffolding Works	29		Pattern worker	30,0%	4,0%	66,0%	18.3.2013
62	SSI	Company	2004	Other type of Falling	Bayburt	1	0	Maintenance Works	27		Operator	65,0%	25,0%	10,0%	14.2.2013
63	SSI	Person	2008	Fall From Stairs/Scaffolds	Ankara	0	1	Formworks	31		Pattern worker	80,0%	20,0%	0,0%	15.6.2013

Table 6: cont'd

NO	COMPLAINANT	LITIGATIOUS	YEAR	ACCIDENT	SCENE	FATAL	INJURY	WORK BEING DONE	AGE	DATE of RECRUITMENT	DEPARTMENT	EMPLOYER	EMPLOYEE	SUB-CONTRACTOR /OTHERS	REPORT DATE
64	Person	Company	2005	Other accident	Bartın	0	1	Other Works	26		Other worker	20,0%	0,0%	80,0%	29.1.2013
65	Person	Company	2004	Fall From Roof	Antalya	1	0	Roof Works	23		Roof worker	60,0%	20,0%	20,0%	11.1.2013
66	SSI	Company	2007	Fall From Roof	Denizli	1	0	Roof Works	31		Engineer	50,0%	50,0%	0,0%	10.1.2013
67	SSI	Company	2009	Squeezing btw Materials	Eskişehir	0	1	Establishment Works	42		Establishment worker				16.1.2013
68	SSI	Company	2007	Fire	Trabzon	1	0	?	31	?	?	80,0%	0,0%	20,0%	14.4.2013
69	SSI	Company	2003	Pricking sth to eye	Kahramanmaraş	0	1	Formworks	35		Pattern worker	80,0%	20,0%	0,0%	25.4.2013
70	SSI	Company	2009	Fall From Floor	Antalya	0	1	Formworks	43		Pattern worker				5.6.2013
71	SSI	Company	2007	Fall From Stairs/Scaffolds	Şiran	1	0	Electricity Works	24		Electricity worker	7500,0%	25,0%	-7425,0%	23.3.2013
72	SSI	Company	2005	Fall From Roof	Gebze	1	0	Roof Works	25		Roof worker	10,0%	30,0%	60,0%	1.5.2013
73	SSI	Person	2005	Heavy Machine Accidents	Bozdoğan	0	1	Material Carriying	41		Worker	70,0%	30,0%	0,0%	13.4.2013
74	SSI	Government	2005	Other type of Falling	Erzurum	1	0	Excavation Works	31		Worker	50,0%	25,0%	25,0%	19.4.2013
75	Person	Person	2008	Fall From Floor	Çorum	1	0	Formworks	47		Pattern worker	80,0%	20,0%	0,0%	31.5.2013
76	SSI	Person	2011	Other accident	Küre	1	0	Material Carriying	44		Worker	50,0%	50,0%	0,0%	3.5.2013
77	SSI	Person	2010	Fall From Floor	Mersin	1	0	Establishment Works	16		Establishment worker	70,0%	0,0%	30,0%	12.6.2013
78	SSI	Company	2008	Electric Shock	Bingöl	0	1	Steel Works	36		Smith worker	90,0%	10,0%	0,0%	8.5.2013
79	SSI	Person	2003	Electric Shock	Mersin	2	1	Scaffolding Works	34 - 29		Painter	20,0%	75,0%	5,0%	10.6.2013
80	SSI	Person	2009	Fall From Stairs/Scaffolds	Ordu	1	0	Wall Works	54		Painter	70,0%	30,0%	0,0%	15.6.2013
81	SSI	Company	2006	Other type of Falling	Konya	0	1	Concrete Works	39		Pattern worker	80,0%	10,0%	10,0%	12.3.2012
82	Person	Company	2011	Fall From Roof	Ankara	1	0	Roof Works	33		Worker	70,0%	20,0%	10,0%	21.11.2012
83	SSI	Person	2006	Other accident	Gökçebey	0	1	Other Works	35		Other worker	70,0%	30,0%	0,0%	3.12.2012
84	Person	Person	2006	Fall From Floor	Karabük	0	1	Formworks	29	1.1.2006	Pattern worker	35,0%	20,0%	45,0%	18.12.2011
85	SSI	Company	2007	Fall From Floor	Gümüşhane	0	1	Formworks	40		Pattern worker	90,0%	10,0%	0,0%	10.10.2012
86	SSI	Person	2004	Pricking sth to eye	Ankara	0	1	Formworks	23		Pattern worker	50,0%	0,0%	50,0%	22.6.2012
87	Person	Company	2009	Heavy Machine Accidents	Şanlıurfa	0	1	Concrete Works	45		Operator	70,0%	20,0%	10,0%	15.5.2012
88	Person	Company	2010	Squeezing btw Materials	Eskişehir	0	1	Establishment Works	28	28.10.2009	Operator	45,0%	10,0%	45,0%	16.5.2012
89	Person	Company	2008	Fall From Floor	Erzurum	1	0	Formworks	44		Pattern worker	65,0%	20,0%	15,0%	25.6.2012
90	SSK	Company	2001	Heavy Machine Accidents	Düzce	0	1	Concrete Works	17		Concrete worker	50,0%	10,0%	40,0%	16.07.2012
91	SSI	Person	2007	Fall From Roof	Hatay	1	0	Roof Works	26		Roof worker	70,0%	30,0%	0,0%	22.6.2012
92	SSI	Company	2008	Fall From Floor	Adana	1	0	Formworks	31		Pattern worker	80,0%	10,0%	10,0%	25.6.2012
93	Person	Company	2002	Fall From Floor	Konya	0	1	Wall Works	31		Painter	25,0%	10,0%	65,0%	23.8.2012
94	SSI	Company	2006	Fall From Roof	Antalya	0	1	Roof Works	35		Roof worker	75,0%	25,0%	0,0%	2.8.2012
95	Person	Company	2010	Squeezing btw Materials	Ankara	1	0	Establishment Works	43		Establishment worker	100,0%	0,0%	0,0%	5.11.2012
96	SSI	Company	2004	Falling of Material	Mersin	0	1	Establishment Works	22		Establishment worker	40,0%	20,0%	40,0%	10.11.2012

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NO	COMPLAINANT	LITIGATIOUS	YEAR	ACCIDENT	SCENE	FATAL	INJURY	WORK BEING DONE	AGE	DATE of RECRUITMENT	DEPARTMENT	EMPLOYER	EMPLOYEE	SUB-CONTRACTOR /OTHERS	REPORT DATE
97	SSK	Company	2000	Fall From Floor	Aydın	0	1	Wall Works	55		Wall worker	60,0%	30,0%	10,0%	21.1.2013
98	SSI	Company	2006	Heavy Machine Accidents	Elazığ	1	0	Excavation Works	43		Excavation worker	50,0%	4,0%	46,0%	23.3.2013
99	Person	Person	2011	Fall From Floor	Mersin	0	1	Formworks	34		Pattern worker	50,0%	20,0%	30,0%	14.3.2013
100	SSI	Person	2005	Falling of Material	Muğla	0	1	Establishment Works	21		Establishment worker	70,0%	30,0%	0,0%	20.2.2013
101	Person	Person	1999	Electric Shock	Van	0	1	Excavation Works	39		Operator	70,0%	10,0%	20,0%	8.5.2013
102	SSI	Government	2010	Stay Under the Debris	Adana	1	1	Canal Works	46 - 29		Excavation worker	100,0%	0,0%	0,0%	8.6.2013
103	Person	Person	2008	Fall From Floor	Niğde	0	1	Installation Works	34		Weldor worker	60,0%	40,0%	0,0%	28.11.2012
104	SSI	Person	2001	Stay Under the Debris	Adana	1	0	Canal Works	39		Other worker	40,0%	0,0%	60,0%	14.3.2013
105	SSI	Company	2008	Fall From Stairs/Scaffolds	Hatay	0	5	Concrete Works	43-23-46 -24-45		Pattern worker	100,0%	0,0%	0,0%	14.3.2013
106	SSI	Person	2004	Fall From Floor	Adana	0	1	Steel Works	42		Smith worker	50,0%	25,0%	25,0%	30.4.2012
107	SSI	Person	2003	Fall From Stairs/Scaffolds	Ordu	0	1	Wall Works	24		Wall worker	40,0%	25,0%	35,0%	28.8.2012
108	Person	Person	1900	Fall From Floor	Ankara	0	1	Formworks	54		Pattern worker	40,0%	4,0%	56,0%	2.7.2012
109	SSI	Company	2009	Fall From Floor	Ankara	1	0	Formworks	36		Pattern worker	90,0%	10,0%	0,0%	4.7.2012
110	Person	Company	2009	Fall From Roof	İstanbul	1	0	Roof Works	49		Roof worker	30,0%	5,0%	65,0%	17.7.2012
111	SSI	Person	2006	Fall From Floor	Mersin	0	1	Material Carriying	19		Worker	25,0%	10,0%	65,0%	22.11.2012
112	SSI	Person	2006	Fall From Floor	Van	1	0	Material Carriying	26		Wall worker	80,0%	20,0%	0,0%	15.11.2012
113	Person	Company	2000	Falling of Material	Zonguldak	0	1	Installation Works	21		Installation worker	35,0%	25,0%	40,0%	7.11.2011
114	Person	Company	2008	Squeezing btw Materials	Mersin	0	1	Installation Works	45		Installation worker	70,0%	15,0%	15,0%	25.11.2011
115	SSK	Person	2010	Falling of Material	Ankara	1	0	Heavy Equipment Works	36		Operator	60,0%	0,0%	40,0%	16.2.2013
116	SSI	Person	2009	Fall From Stairs/Scaffolds	Mersin	1	0	Wall Works	55	21.02.2009	Painter	60,0%	40,0%	0,0%	07.05.2012
117	SSI	Company	2004	Stay Under the Debris	Uşak	2	0	Concrete Works			Pattern worker	60,0%	30,0%	10,0%	06.05.2012
118	SSI	Company	2009	Fall From Floor	İskenderun	1	0	Other Works			Painter				09.05.2012
119	SSI	Company	2005	Squeezing btw Materials		1	0	Other Works	21	11.11.2005	Worker				03.01.2011
120	Person	Government													
121	Person	Company	2006	Fall From Stairs/Scaffolds	Konya	0	1	Installation Works	34	13.04.2006	Weldor worker	75,0%	25,0%	0,0%	10.02.2013
122	Person	Company	2007	Fall From Stairs/Scaffolds		0	1	Roof Works	27	01.05.2007	Worker	70,0%	30,0%	0,0%	
123	SSI	Company	2008	Fall From Stairs/Scaffolds		0	2	Wall Works		02.10.2007	Worker	25,0%	50,0%	25,0%	
124	SSI	Person	2001	Fall From Floor	Ankara	1	0	Other Works	42		Worker	40,0%	20,0%	40,0%	11.11.2001
125	SSI	Company	2009	Electric Shock		1		Electricity Works		13.04.2006	Worker	60,0%	40,0%	0,0%	14.01.2010
126	SSK	Company	2008												
127	Person	Company	2005	Fall From Floor		1	0	Roof Works	39		Worker	25,0%	35,0%	40,0%	05.05.2012
128	Person	Company	2004	Fall From Floor	Ankara	0	1	Other Works			Worker	60,0%	40,0%	0,0%	April,2007
129	SSK	Company	1995	Fall From Floor		1	0	Formworks		1.1.2006	Pattern worker	10,0%	80,0%	10,0%	February,2007

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NO	COMPLAINANT	LITIGATIOUS	YEAR	ACCIDENT	SCENE	FATAL	INJURY	WORK BEING DONE	AGE	DATE of RECRUITMENT	DEPARTMENT	EMPLOYER	EMPLOYEE	SUB-CONTRACTOR /OTHERS	REPORT DATE
130	SSK	Person	1999	Fall From Stairs/Scaffolds	Balıkesir	0	1	Steel Works	18		Worker	30,0%	70,0%	0,0%	February,2007
131	SSK	Company	2000	Fall From Floor	Manisa	1	0	Other Works	29		Pattern worker	50,0%	35,0%	15,0%	February,2007
132	SSK	Person	1992	Explosion		0	1	Heavy Equipment Works			Worker	30,0%	10,0%	60,0%	February,2007
133	Person	Person	1995	Fall From Stairs/Scaffolds		1	0	Wall Works	39		Worker	40,0%	5,0%	55,0%	April,2007
134	Person	Person	2002	Falling of Material		0	1	Steel Works			Worker	40,0%	10,0%	50,0%	June,2007
135	SSK	Person	2002	Fall From Floor		1	0	Wall Works			Worker	40,0%	30,0%	30,0%	July,2007
136	SSK	Person	2004	Fall From Floor		1	0	Marble Works			Worker	10,0%	60,0%	30,0%	August,2007
137	SSK	Company	2003	Fall From Roof		1	0	Roof Works	53		Worker	50,0%	45,0%	5,0%	July,2007
138	SSK	Person	1999	Fall From Floor		1	0	Wall Works	19		Worker	50,0%	30,0%	20,0%	September,2007
139	Person	Person	2008	Fall From Floor		0	1	Formworks	31	June,2008	Worker	80,0%	20,0%	0,0%	28.02.2013
140	Person	Company	2010	Fall From Stairs/Scaffolds		0	1	Formworks	38		Worker	30,0%	40,0%	30,0%	16.02.2011
141	Person	Company	2009	Fall From Roof	Kayseri	1	0	Roof Works	43		Painter	75,0%	10,0%	15,0%	08.02.2012
142	Person	Company	2005	Stay Under the Debris		0	1	Formworks	42		Pattern worker	40,0%	5,0%	55,0%	20.05.2013
143	Person	Company	2004	Falling of Material		0	1	Wall Works	26		Worker	70,0%	25,0%	5,0%	
144	Person	Company	2006	Fall From Floor	Ankara	1	0	Wall Works	26	2005	Worker	35,0%	30,0%	35,0%	July,2007
145	Person	Company	2005	Fall From Stairs/Scaffolds	Ankara	0	1	Establishment Works	38	15.07.2005	Establishment worker	60,0%	30,0%	10,0%	08.05.2012
146	SSI	Company	2007	Pricking sth to eye		0	1	Formworks	28		Worker	60,0%	40,0%	0,0%	27.02.2012
147	Person	Government													
148	SSK	Person	2000	Stay Under the Debris		1	0	Canal Works	41		Worker	50,0%	10,0%	40,0%	07 January 2008
149	SSI	Person	2000	Electric Shock		1	0	Electricity Works	39		Electricity worker	3,0%	35,0%	62,0%	11.01.2013
150	SSK	Company	2001	Fall From Floor	Osmaniye	1	0	Formworks	46		Worker	60,0%	20,0%	20,0%	September, 2007
151	SSI	Company	2002	Fall From Stairs/Scaffolds		0	1	Formworks	37		Worker	50,0%	35,0%	15,0%	July, 07
152	SSI	Company	2010	Fall From Floor		1	0	Formworks	55	22.03.2010	Worker	55,0%	30,0%	15,0%	24.04.2013
153	SSI	Company	2004	Fall From Roof		1	0	Roof Works	46		Worker	65,0%	35,0%	0,0%	3.10.2011
154	Person	Company	2004	Strangulation		1	0	Other Works			Worker	25,0%	35,0%	40,0%	April 07
155	SSK	Company	2003	Other type of Falling		0	1				Worker	75,0%	25,0%	0,0%	June, 2007
156	Person	Company	2002	Heavy Machine Accidents	Ankara	0	1	Other Works	33		Other worker	30,0%	0,0%	70,0%	14.2.2013
157	Person	Company	2007	Squeezing btw Materials	Ankara	0	1	Cleaning	46	11.8.2007	Other worker	30,0%	15,0%	55,0%	2.1.2013
158	SSI	Company	2009	Squeezing btw Materials	Bartın	1	0	Excavation Works	34		Excavation worker	60,0%	30,0%	10,0%	30.3.2013
159	SSI	Company	1999	Falling of Material	izmir	0	1	Other Works	22	23.07.1000	Worker	50,0%	25,0%	25,0%	20.1.2013
160	SSI	Company	2003	Fall From Floor	Antalya	0	1	Steel Works	19		Smith worker	35,0%	30,0%	35,0%	9.5.2013
161	Person	Company	2011	Fall From Stairs/Scaffolds	Elazığ	0	1	Wall Works	26		Painter	70,0%	30,0%	0,0%	3.5.2013
162	SSI	Company	2001	Squeezing btw Materials	Düzce	0	1	Concrete Works	17		Concrete worker	50,0%	25,0%	25,0%	25.2.2011
163	Person	Company	2002	Fall From Stairs/Scaffolds	Sivas	0	1	Wall Works	45		Painter	25,0%	30,0%	45,0%	20.1.2012
164	Person	Company	2007	Fall From Stairs/Scaffolds	Aksaray	1	0	Formworks	40		Pattern worker	60,0%	30,0%	10,0%	9.1.2012
165	Person	Company	2008	Fall From Roof	Ankara	1	0	Installation Works	35	18.9.2004	Installation worker	70,0%	30,0%	0,0%	2.6.2013
166	Person	Company	2009	Falling of Material	Ankara	0	2	Cleaning	44		Cleaning worker	30,0%	0,0%	70,0%	2.6.2013

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NO	COMPLAINANT	LITIGATIOUS	YEAR	ACCIDENT	SCENE	FATAL	INJURY	WORK BEING DONE	AGE	DATE of RECRUITMENT	DEPARTMENT	EMPLOYER	EMPLOYEE	SUB-CONTRACTOR /OTHERS	REPORT DATE
167	Person	Company	2009	Falling of Material	Ankara	0	2	Cleaning	37		Cleaning worker	30,0%	0,0%	70,0%	3.6.2013
168	SSK	Company	2007	Falling of Material	Samsun	1	0	Wall Works	41		Tile worker	30,0%	0,0%	70,0%	26.2.2012
169	SSI	Company	2011	Falling of Material	Mersin	1	0	Formworks	44		Pattern worker	80,0%	15,0%	5,0%	2.5.2013
170	SSI	Company	2005	Fall From Floor	Konya	0	1	Concrete Works	31	12.4.2004	Pattern worker	60,0%	20,0%	20,0%	7.5.2011
171	Person	Company	2006	Fall From Floor	Ankara	0	1	Concrete Works	32	21.3.2006	Pattern worker				5.1.2011
172	SSI	Company	2009	Fall From Roof	Adana	0	1	Roof Works	24	3.10.2007	Weldor worker	85,0%	15,0%	0,0%	30.3.2013
173	SSK	Company	2005	Stay Under the Debris	Erzurum	1	0	Canal Works	36	2005	Worker				30.3.2013
174	Person	Company	2006	Explosion	Azerbaycan	1	0	Installation Works	37	6.10.2005	Painter	70,0%	30,0%	0,0%	April, 2007
175	Person	Person	2007	Fall From Stairs/Scaffolds	Ankara	0	1	Steel Works	42		Smith worker	80,0%	20,0%	0,0%	24.11.2012
176	SSI	Person	2000	Fall From Stairs/Scaffolds	Antalya	0	1	Formworks	34		Pattern worker	70,0%	25,0%	5,0%	30.1.2012
177	Person	Person	2004	Squeezing btw Materials	Ankara	0	2	Formworks						100,0%	15.5.2013
178	Person	Person	2010	Fall From Roof	Adana	1	0	Installation Works	45		Weldor worker	60,0%	40,0%	0,0%	14.5.2013
179	SSI	Person	2003	Squeezing btw Materials	Mersin	0	1	Wall Works	29		Painter	50,0%	20,0%	30,0%	?
180	SSK	Company	2003	Fall From Roof	Antalya	0	1	Roof Works	34	9.12.1998	Side worker	70,0%	20,0%	10,0%	1.4.2007
181	SSK	Person	2001	Fall From Floor	izmir	1	0	Steel Works	49		Smith worker	20,0%	75,0%	5,0%	1.2.2007
182	Person	Person	2002	Fall From Floor	Ordu	1	0	Formworks	47	2001	Pattern worker	0,0%	100,0%	0,0%	1.5.2007
183	Person	Company	2005	Fall From Floor	Konya	0	1	Other Works	50	28.1.2005	Engineer	50,0%	50,0%	0,0%	October, 2007
184	SSK	Person	2003	Stay Under the Debris	Adana	1	0	Wall Works	29		Wall worker	50,0%	50,0%	0,0%	July, 2007
185	SSK	Company	2001	Fall From Stairs/Scaffolds	Bolu	0	1	Steel Works	37		Smith worker	100,0%	0,0%	0,0%	August, 2007
186	SSI	Company	2001	Stay Under the Debris	Antalya	4	0	Wall Works	45 17 45 47		Wall worker	80,0%	0,0%	20,0%	25.10.2007
187	SSI	Company	2001	Stay Under the Debris	Antalya	4	0	Wall Works	45 17 45 47		Wall worker	80,0%	0,0%	20,0%	25.10.2007
188	SSI	Company	2001	Stay Under the Debris	Antalya	4	0	Wall Works	45 17 45 47		Wall worker	80,0%	0,0%	20,0%	25.10.2007
189	Person	Person	2005	Fall From Roof	Konya	1	0	Roof Works	39		Worker	60,0%	40,0%	0,0%	10.11.2007
190	SSK	Person	1998	Fall From Floor	Batman	1	0	Formworks	32		Pattern worker	60,0%	20,0%	20,0%	1.2.2007
191	SSK	Company	2002	Falling of Material	İstanbul	0	1	Wall Works	46	1.9.2002	Wall worker	70,0%	20,0%	10,0%	January, 2008
192	Person	Person	2003	Stay Under the Debris	Erzurum	0	1	Material Carriying	17		Worker	60,0%	30,0%	10,0%	May, 2007
193	SSK	Company	2002	Fall From Floor	Antalya	0	1	Door Works	38		Pattern worker	35,0%	35,0%	30,0%	October, 07
194	Person	Company	2008	Stay Under the Debris	Karaman	1	0	Installation Works	42	24.3.2008	Weldor worker	50,0%	10,0%	40,0%	31.3.2012
195	Person	Person	2001	Stay Under the Debris	Antalya	4	0	Wall Works	45 17 45 47		Wall worker	80,0%	0,0%	20,0%	6.2.2008

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