

# **Risk-based Analysis: Recommended Action Plan for the State Labor Inspectorate**

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Armenia Social Protection Systems Strengthening Project

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# Risk-based Analysis

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## Recommended Action Plan for the State Labor Inspectorate

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## **Risk-based analysis: Action plan**

### **Problem**

The SLI inspectors need to focus their planned inspections on businesses where data show that workers face the highest risk of injury and occupational disease. This strategy requires relatively accurate and detailed information about work-related injuries and their costs; that information is not currently available in Armenia.

### **Action plan**

1. Revise the “Temporary disability paper” to include information from the employer about the circumstances of the disability, coded to a common standard, and require employers to submit that form promptly to SSSS and the SLI for all temporary disabilities. At present, a Physician must also sign the “temporary disability paper” to validate the disability and the length of the disability. The physician should discuss the circumstances of the injury with the injured worker and submit that information directly to the SSSS and be paid by the SSSS for doing so. SSSS should store this information from employers and physicians in PARNAS **where it can be accessed by the SLI**. The “Temporary disability paper” and related information in PARNAS and any related data from SMEC should be linked to the disability of the worker in order to obtain a more complete description of the disability.
2. Eliminate the employers’ annual accident report to the SLI.
3. Obtain access to the data captured by the Ministry of Health’s (MOH) Hygiene Service – inspections, and their findings - and consider transferring the occupational hygiene part of that service to the SLI.
4. Part of the pension reform should be to separate the social contribution into three parts – the old age pension contribution, an insurance premium for work-related injuries and occupational diseases, and an insurance premium for other types of disability. The employer’s insurance premium for work-related injuries and occupational diseases (premium payment per DRAM of payroll) should be risk dependent, *i.e.* related to the type of business being operated and the level of safety in the business.
5. The State Social Security Service (SSSS) should adopt one common standard for classifying businesses into industry groups. The SLI should use that standard for risk-based analysis.
6. Explore further the financial, legal and ethical issues of obtaining work-related injury and occupational disease data directly from physicians, poly-clinics, hospitals, ambulatory

care clinics and private health care facilities. One strategy document from the MOH recommends that “Coordination and integration of activities of the Ministry of Health and Information-Analytical Centre of the Ministry of Labor and Social Issues is required, since many MLSI social programs are in fact health programs.”

7. Explore the possibility of charging back health care costs incurred by the MOH and private health care providers to treat work-related injuries and occupational diseases to the SSSS and recording that cost to the injury record of the worker who was injured or has an occupational disease. This would information would provide a more complete view of the impact of work-related injuries and would be an incentive to health care providers to report work-related conditions.
8. Workers do complain to the SLI about working conditions and they do inform the SLI about work-related injuries. The information in these informal contacts (employer name, address, date, nature of the complaint and details about work-related injuries) needs to be captured in a standard format and stored in the LIIS with linkage to the appropriate business in PARNAS.
9. Implement now a rudimentary risk based analysis by using the PARNAS data to analyze variations in the duration, costs and incidence rates of short-term disabilities according to time since hire, occupation and industry to determine where these disabilities are occurring more often, last longer and cost more than expected (based upon industry and number of employees) and include these businesses in the planned inspections.
10. Setup an information sharing agreements that allow PARNAS, SMEC and the MOH to exchange information with the SLI that would be useful to risk –based analysis in the SLI.
11. After the injury data has been improved as outlined above, use them to target inspections at the workplaces which place the greatest cost burden upon employers and pose the greatest risk to workers.
12. Trends in work-related injuries and occupational diseases and SLI enforcement activity should be published.

The rest of this note provides more detail and the rationale for each item in the action plan.

## Currently available data in Armenia

### Work-related injuries

#### *Deaths on the job*

The following table shows the number of deaths on the job in Armenia and includes work-related deaths of agricultural employees and excludes occupational disease deaths and deaths of self-employed farmers.

Year	Deaths on the job in Armenia
2001	16
2002	15
2003	27
2004	22
2005	17
2006	17
Total	114

With about 1,000,000 workers in Armenia, the average annual death rate from work-related injuries is about 2 per 100,000 workers per year. It is not clear whether the number of deaths on the job in Armenia includes traffic accidents while travelling between their home and place of work. The definition of employed workers is “**Employed persons** are both wage-earners and non wage-earners (irrespective whether this work is permanent, temporary, seasonal, occasional, or one-time), who receive income with or without hiring workers, those who are temporarily not at work for some reasons.”

#### *Non-fatal work-related injuries and diseases*

The following table shows the number of short-term disabilities from injuries and poisonings in Armenia year by year as reported by the National Statistical Service. Short-term disabilities are defined in terms of “**Disabled person** is the person who needs caring for and protection in connection with restriction of vital activity in consequence of physical or medical deterioration.” and “Restriction of vital activity finds its expression in full or partial loss of ability to move, to orient, to communicate, to control the behavior as well as loss of working ability”<sup>1</sup>. These data are published by the National Statistical Service of Armenia. The number of short-term disabilities from injuries and poisonings in all age groups (of working age, under and over the normal working age) is less than 1,000 per year.

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<sup>1</sup> Statistical Yearbook of Armenia 2007, National Statistical Service

Year	Non-fatal work-related injuries of workers	New cases of Occupational diseases disabilities <sup>2</sup>	New cases of injuries and poisonings <sup>2</sup>	New cases of injuries and poisonings per 10,000 employed <sup>2</sup>
2001	79	Not available		
2002	95	4	880	6.9
2003	68	0	747	6.7
2004	63	0	898	8.1
2005	55	3	939	8.5
2006	83	1	999	9.0
2007	Not available	Not available		

Sources: Labor Market in Armenia, 2003-2006, NSS 2007, Armenia and Statistical Yearbook of Armenia, NSS, 2007.

The number of deaths from work-related injuries in Armenia appears to be reasonably valid but the numbers of non-fatal work-related injuries and long-term disabilities appear to be extremely low. For example, in Ontario, Canada in 2007, there were 100 deaths from workplace injuries and another 279 deaths from occupational diseases (not all occupational disease deaths are recognized), 80,863 work-related injuries where the worker was not able to report to work for his usual tasks the next day (a large number of these – about 40% - are due to injuries from repetitive motion) and 172,122 work-related injuries where the worker was able to report to work the next day and do his usual work<sup>3</sup>. The Ontario Workplace Safety and Insurance Board (WSIB) insure about 4.5 million of the 6 million workers in the Province of Ontario. The fatality rate for work-related injuries is approximately 2 per 100,000 workers per year and the fatality rate from work-related injuries and occupational diseases is more than 6 per 100,000 workers per year. The lost-time injury rate is about 1.8 per 100 workers per year. Based upon the number of deaths from work-related injuries and the number of lost-time injuries in Ontario, employers in Armenia should report about 14,000 work-related injuries where the worker was not able to work on the workday following the injury and 29,000 work-related injuries where the worker was able to continue working after his injury. If one extrapolates the lost-time injury rate in Ontario to Armenia, the 500,000 non-agricultural workers in Armenia would be expected to have 9,000 short-term disabilities and 19,000 injuries where the worker was able to continue working after the injury. The available accident statistics for Armenia indicate that fewer than 100 workers have non-fatal injuries – about 1% of what would be expected. In 2006, the Ontario WSIB made 1,010 permanent disability awards where the degree of impairment was 30% or higher<sup>4</sup> (roughly equivalent to SMEC's Category I, II and III combined). Based upon Ontario's experience, about 110 permanently disabled workers in category I to III should be recognized each year among the 500,000 non-agricultural workers in Armenia.

<sup>2</sup> Statistical Yearbook of Armenia 2007, National Statistical Service, page 162.

<sup>3</sup> <http://www.wsib.on.ca/wsib/wsibsite.nsf/public/CurrentStatistics> as of June 27, 2008

<sup>4</sup> [http://www.wsib.on.ca/wsib/wsibobj.nsf/LookupFiles/DownloadableFile2006StatisticalSupplement/\\$File/2278AStatSupp06.pdf](http://www.wsib.on.ca/wsib/wsibobj.nsf/LookupFiles/DownloadableFile2006StatisticalSupplement/$File/2278AStatSupp06.pdf) see page 29, as of June 27, 2008

The US Department of Labor's annual reports show that approximately 2.1 million workers in the private sector were away from work, transferred to another job, employed with restricted activities or a combination of these as a result of work-related injuries and illnesses in 2006<sup>5</sup>. And the US Department of Labor reports that the number of work-related fatalities in private sector workers was 5,202 in 2006<sup>6</sup>. Among private sector workers in the US, each fatality represents about 400 non-fatal injuries where the worker required time to recover and resume his normal duties. If this ratio was applied to the 17 deaths in Armenia in 2007, employers in Armenia should report about 6,900 work-related injuries and diseases which would include both traumatic injuries and sprains and strains; the available data show that about 1.5% of work-related injuries and diseases are reported. The work-related fatality rate in the private and public sectors in the US was 3.9 per 100,000 workers in 2006. This includes self-employed workers and highway traffic accidents. The US, Ontario and Armenian work-related fatality rates appear to be comparable while the number of short-term non-fatal injuries that are reported in Armenia is not comparable with the US or Ontario.

Armenian law (RA GOVERNMENT DECREE 2301-N) requires that each employer submit an accident summary report each quarter (revised to an annual report). The procedures for completing this report are given in the Decree: "The employer should submit the report (in the established format) on the number of employees, size of salaries (by occupations), number of accidents and occupational diseases occurred at work place to the RA State Labor Inspectorate's regional center of its location". The decree requires that employers report accidents but it does not define the term "accident". Accidents are usually classified by the severity of the injury to the worker and that can range from an injury where the worker can be given first-aid by a person other than a nurse or physician and resume work immediately, an injury where the worker is temporarily disabled, a permanent disability where the workers is unable to perform any kind of work ever again and to death. For certain sectors, some jurisdictions also require employers to report accidents where no worker was injured but where the probability of injury was high. The Mining regulations in Ontario require all mining companies to report all underground fires, all failures of hoisting equipment, etc even though no worker was injured. The employers in Armenia are also required to report "occupational diseases" and the Decree gives no guidance as to how to do that. Most employers are not qualified to diagnose occupational diseases and even some practicing physicians are unable to do so. It is not useful to continue to require employers to submit reports about work-related accidents and occupational diseases to the SLI when employers in Armenia do not report 98% of the injuries to their workers. Even if the employers' annual reports were reasonably accurate, the information provided to the SLI contains no details about the circumstances of these injuries. This report places an unreasonable burden upon the employer; it provides the SLI with very little information about workplace accidents. At present, it does provide the SLI with a list of active employers and some information about the number of employees; this information, however, should also be available in the LIIS and is obtained from

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<sup>5</sup> <http://www.bls.gov/news.release/osh.nr0.htm> as of June 30, 2008

<sup>6</sup> <http://www.bls.gov/news.release/cfoi.nr0.htm> as of June 30, 2008

the State Tax Service. The government decree requiring the annual accident report should be rescinded.

### **Improving the quality and accuracy of work-related injury and occupational disease data**

The appendices show coding structures that were recommended by the International Labor Organization (ILO) and that are used, with some modifications, by many jurisdictions to capture information about work-related injuries. Information about the circumstances of short-term disabilities should be reported by the accident investigation committee on the “Temporary disability paper”. The information could be classified and coded using systems similar to those proposed by the ILO. This information should be submitted to the SLI and the SSSS and stored in PARNAS with linkages to the short-term disability, which is linked to the employer, and related re-imbursements recorded in PARNAS. A system for linking information about short-term disabilities that turn into long term disabilities should be instituted. This would allow for analysis of the circumstances that led to long-term disabilities and would allow the tabulation of injuries and their characteristics for each employer. These tabulations would form part of the risk-based analysis.

Information about the circumstances of fatalities and their costs should also be captured in the SSSS database and the circumstances of their injury coded in the same manner as short-term disabilities. The fatality information should be recorded for each fatality and should be linked to the employer. This would allow for a more complete injury and cost profile to be developed for each employer and for each sector of the economy and would enable the SLI to monitor long-term trends in fatalities and their circumstances.

The SLI does not appear to have data about occupational exposures to toxic substances, the exposures that cause or are associated with occupational diseases. The Ministry of Health (MOH) provides occupational hygiene services as part of its overall hygiene service. Consideration should be given to gaining access to the results of occupational hygiene surveys done by the MOH’s hygiene service; alternatively, the occupational hygiene part of the MOH’s hygiene service could be re-organized and transferred to the SLI.

Some but not all of the data about the costs of work-related injuries and occupational diseases are captured in PARNAS. The possibility of capturing the Ministry of Health’s costs of treating work-related injuries and occupational diseases should be explored further (This may require changes to processes at the MOH). Employers and workers may also pay private clinics for the treatment of work-related injuries and occupational diseases. Capturing these costs is important to better understand the complete direct cost and incidence of work-related injuries and occupational diseases. The SSSS should pay the MOH for health care costs of work-related injuries and occupational diseases and it should be notified, on an injury by injury basis, of the

costs and circumstances of injuries that are treated by private clinics and private doctors. Legislation may be necessary to require private clinics and doctors to report cases of work-related injury and occupational diseases, their costs and circumstances to the SSSS and the SLI.

Workplace injuries and occupational diseases are under-reported by varying amounts in Armenia and other jurisdictions<sup>7</sup>. Allowing workers to report their work-related injuries and occupational diseases to the SSSS and SLI and implementing systems to facilitate injury reports from workers can improve the completeness of information about these conditions. Consideration should be given to developing more awareness of occupational injuries and diseases and to giving workers the legal right and means to report their work-related injuries and illnesses to the SLI and SSSS.

Risk-based analysis compares the risks and costs of work-related injuries and diseases in businesses in the same industry and compares the risks and costs of work-related injuries in different sectors. These comparisons require that the industry classification for each business be accurate and well-defined. The SSSS and STS should adopt the same appropriate standard for classifying businesses according to their economic activities. The appendix shows the ILO's system for classifying industries. This may need to be adapted to the particular needs of Armenia.

The accident investigation committee attempts to apportion the responsibility for workplace injuries and occupational diseases. This activity is full of difficulties. Accidents usually result from a combination of circumstances which makes it difficult to apportion responsibility. Furthermore, workers do not appear to participate in this decision and employers render the decision about the cause of the injury although the worker can appeal the decision in the courts. There are no studies that evaluate the accuracy of these decisions which can be heavily influenced by the employer in his favor as these decisions determine reimbursements to workers and disability pensions. It would be wise to reconsider this process as it probably affects the accuracy of the information about work-related disabilities.

At present, employers in Armenia pay the same amount per DRAM of salary to the SSSS for work-related injuries and occupational diseases regardless of the intrinsic hazards in their industry. The workers' compensation part of the Social Contribution needs to be assessed separately so that businesses that are intrinsically safer pay less into the SSSS and those that are intrinsically more dangerous pay more. These payments should be adjusted to take into account the differences in prevention activities of businesses in the same industry; businesses with safe work practices and controlled hazards should have their assessment decreased and those that don't should have their assessments increased. Until that happens, the safer businesses are subsidizing the costs of work-related injuries and occupational diseases in unsafe businesses and the health and safety system provides no incentives to motivate prevention activities. A risk-based, workers' compensation insurance system needs to be introduced into Armenia so that the

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<sup>7</sup> <http://www.thestar.com/News/GTA/article/451322> as of June 30, 2008

costs of work-related injuries and occupational diseases are linked to the businesses where they arise and affect to some extent their workers' compensation premium. Coupled with the changes to the reporting of injury and occupational disease, improvements in allocating costs to the businesses where they occur would form the basis of an incentive to prevent work-related injuries and diseases.

The Ministry of Health has a long term goal of developing individual electronic health records. The local primary health providers keep books for each of their patients that record the history of visits to primary health providers (poly-clinics, hospitals and ambulatory care centers) and apparently, visits to specialists. The records are rolled up for each primary health care provider and sent to the Ministry of Health to track the performance of the health care system in Armenia. The reporting form requires that the number of admissions, discharges and patient-days be reported by types of diagnoses (generally groupings of ICD 10 codes with emphasis on the most important public health problems facing Armenia such as TB, hepatitis, diabetes, glaucoma, many of the components of circulatory diseases and respiratory diseases – bronchitis and emphysema, chronic obstructive lung disease and asthma, etc) and age groups (under 15, 15 to 17 and over 17). Separate reports track infant mortality and diseases.

Several diseases would be of interest to the MLSI but data about them are not readily available because of the lack of an electronic database that captures individual (personal) information about the diagnoses made by the health care system. One disease of interest to the MLSI would be “Lung diseases due to external agents” (J60 to J70) which are lung diseases mainly due to exposure to substances (used at work scarring of the lung from silica, asbestos, and coal dust, respiratory conditions due to inhalation of chemicals, gases, fumes and vapors, etc). Another potential source of work-related injuries would be “Toxic effects of substances chiefly nonmedicinal as to source (T51-T65)” such as organic solvents, alcohols, insecticides, etc. The following diagnoses indicate admissions to a primary health care clinic that could be either directly or potentially work-related.

T75.2 Effects of vibration

- Pneumatic hammer syndrome
- Traumatic vasospastic syndrome
- Vertigo from infrasound

T75.4 Effects of electric current

- Electrocution
- Shock from electric current

T70.3 Caisson disease [decompression sickness]

- Compressed-air disease
- Diver's palsy or paralysis

Chapter XX lists external causes of morbidity and mortality (ICD 10 codes V01 to Y98) list the types of accidents that can be work-related.<sup>8</sup> Supplemental codes are used to identify those hospital admissions that are work-related; it indicates those injuries that occurred while working for income. The accuracy of this coding depends upon the information provided by the patient and recorded by the physician. The possibility of using or modifying the current MOH information system to capture work-related injuries and diseases needs to be explored further.

In the next few years, the MOH of Armenia plans to develop a database of medical records that would capture information from individual patients and would include the social security card number and the diagnoses made at discharge. In Canada, it is customary to record the most responsible diagnosis, the condition that was most responsible for the length of stay in the primary care facility, and other ancillary conditions that are noted during the patient's stay in hospital. When this database becomes available, it should be linked to the PARNAS so that admissions to primary health care facilities could be linked to the employer by using the social security card number and the individual data captured by SSSS in PARNAS (this provides the link from the social security card number to the employer's state registration number). This linkage from PARNAS to individual poly-clinic, ambulatory care facilities and hospital discharge records will improve the quality of information about work-related injuries and also reduce under-reporting of those injuries. Health care is also available from private providers and the services that they provide to patients should also be included in the MOH database.

It is not clear whether the MOH's current information system can be used to identify workers who have work-related conditions. Aggregated information is reported to the MOH and it is not known whether information that could be used to identify potentially work-related conditions is reported to the MOH. As noted above, some specific diagnoses that are work-related may be grouped together with many other conditions that are not. This makes it difficult to use the current manual statistical systems to identify work-related injuries.

### **Summary description of ideal datasets for risk-based analysis**

The following outlines the data that would be useful to the SLI in doing risk-based analysis. This information could be part of a larger datasets kept in PARNAS (e.g. the SLI does not need to know the personal particulars of individual workers but this is needed by the SSSS).

For each employer:

- State registration number
- Name , address, contact information, etc
- Name, address and state registration numbers of branch locations

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<sup>8</sup> <http://www.who.int/classifications/apps/icd/icd10online/> as of July 2, 2008

- Industry (economic activity) for the majority of workers in the business

For each worker:

- Date of birth,
- gender,
- occupation,
- date of hire and date terminated,
- employers state registration number (branch location)
- social security number

For each short-term disability reported by worker

- social security number
- date of disability,
- time away from work because of disability,
- costs of disability (wage loss, health care costs, re-training costs, etc.) type of disability and circumstances of disability (see above) as reported by employer, physician and worker
- indicator for long-term disability (more than 3 months)
- SMEC data (for long- term disabilities)

For each interaction with a health care provider (poly-clinic, ambulatory care clinic, etc)

- Social security number
- Date of interaction with health care provider
- Id for health care provider
- ICD codes for each diagnoses

### **Risk-based analysis using PARNAS data in its current form and software recommendations**

The SSSS collects data about short-term disabilities for individual workers. These absences would include work-related and non-work-related illnesses. The short-term work-related disabilities are probably described as being due to illness but they may also be described as an absence to care for a sick relative. Nevertheless, these data can be used to detect businesses where work-related conditions occur. It is assumed that most of these disabilities are the result of work-related injuries. Research and common experience has shown the newly hired workers are much more likely to be injured at work than more experienced workers and that injuries of newly hired workers are more severe (i.e. workers take longer to recover from the injury) than those of more experienced workers; work-related injuries are more likely to occur and be more severe in some sectors and occupations than in others. Examining the variations in the short-term disability rate and the duration of the disability by time since hire, by age, by occupation and by

sector will point out businesses and sectors where work-related short-term disabilities are occurring. Simple tabulations of the data can be used to analyze the short-term disabilities that occur during one year:

Sector (taken from ILO classification for illustrative purposes)	No of employees in sector	No of short-term disabilities in sector	Total days on short-term disability	Total reimbursements paid for disabilities	No of short-term disabilities per worker	Days on short-term disability per disability	Total reimbursements per disability
Agriculture, forestry and fishing							
Mining and quarrying							
Manufacturing							
Electricity, gas, steam and air conditioning supply							
Water supply; sewerage, waste management and remediation activities							
Construction							
Wholesale and retail trade; repair of motor vehicles and motorcycles							
Transportation and storage							
Accommodation and food service activities							
Financial and insurance activities							
Professional, scientific and technical activities							
Etc							
Total							

This analysis will point out the sectors where inspectors need to focus their inspections; those sectors with the highest injury rates and where workers have the longest short-term disabilities. Similar analyses listing each firm within a sector can identify those firms with the highest number of short-term disabilities per worker, and where injuries are most severe. Analyses by

firm size and sector will provide a better understanding of the types of work-related risks faced by large and small businesses.

The current request to the SSSS does not ask for individual records of short-term disabilities. The following data could be requested for each short-term disability where the date of disability was in 2007:

- Date of disability
- Social security card number of disabled person
- Type of disability (illness, caring for a sick relative etc)
- Date of returning to work
- State registration number of employer
- Date of hire
- occupation

This data can be used to tabulate the occupations of the disabled workers, their ages, sex, time from hire to disability, the number of individuals who are disabled more than once in a year, and the range of time on short-term disability. The first step in this analysis should be tabulations that examine the quality of the data, e.g. tabulations of ages, genders, occupations, occupations and industry, etc.

Regression models can be used to analyze the variation of the duration of disability as a function of time between date hired and date of injury, age, gender, occupation, business and sector and the commonly used diagnostic tests for the goodness of fit (e.g. standardized residuals) can be used to point out those businesses where workers are suffering work-related short-term disabilities.

Regression models can also be used to analyze the variation of the short-term disability rate according to time since hire, occupation and industry to detect potentially work-related injuries.

Most statistical programs are capable of doing this analysis. The Statistical Analysis System (SAS) is well-regarded and widely used to do statistical analysis; this system is expensive with an annual license fee of several thousand dollars. The Statistical Package for Social Sciences (SPSS) is another commonly used program for statistical analysis. The license fee is much less than for SAS and does not need to be renewed each year. However, the analysis proposed here can be done by Excel spreadsheets or by the analysis software already in the Access database.

### **Analysis of Annual reports to SLI**

The annual reports to the SLI for 2007 were obtained from the SLI on July 8, 2007. The following tables summarize key results for the three groups of businesses: entrepreneurs, public sector and legal bodies.

Entrepreneurs				
Firm Size	Employees in 2007	Businesses reporting in 2007	Accidents reported in 2007	Occupational Diseases Reported
0	0	4,393	0	0
1-9	11,930	7,093	1	0
10-49	902	49		0
50-99	58	1		
100-499	164	1		
500+				
Total	13,054	11,537	1	0

legal bodies				
Firm size	Employees in 2007	Businesses reporting in 2007	Accidents reported in 2007	Occupational diseases reported in 2007
0	0	471		
no employees	0	16	3	
1-9	29,181	8,541	2	
10-49	66,410	2,774	1	1
50-99	38,259	582	1	
100-499	43,975	227	0	
500+	22,759	20	7	
Grand Total	200,584	12,631	14	1

public sector businesses				
Firm size	Employees in 2007	Businesses reporting in 2007	Accidents reported in 2007	Occupational Diseases reported in 2007
0	0	39	0	0
1-9	4,309	674	0	0
10-49	10,938	590	0	0
50-99	1,929	28	0	0
100-499	3,343	23	0	0
500+	550	1	0	0
Total	21,069	1,355	0	0

Total number of employees and businesses submitting annual accident reports to the SLI

Type of business	Employees	Businesses	Workers per business
Public sector	21,069	1,355	15.5
Entrepreneurs	13,054	11,537	1.1
Legal bodies	200,584	12,631	15.9
Total	234,707	25,523	9.2

These data do not include results from Yerevan. The population of Yerevan is about 50% of the total population of Armenia. The census data indicate about 500,000 non-agricultural workers in Armenia.

Only 14 work-related accidents were reported by the 25,523 businesses which employed 234,000 workers in 2007.

### Analysis of PARNAS data for 2007

The following shows the completeness of TIN and State Registration Numbers (SRN) on the records sent from SSSS on July 8, 2008

State Registration Number available	TIN available		Total
	no	yes	
no		503	503
yes	48	21,834	21,882
Total	48	22,337	22,385

SRN's and TIN's were available for 97.5% of all businesses reporting to the SSSS.

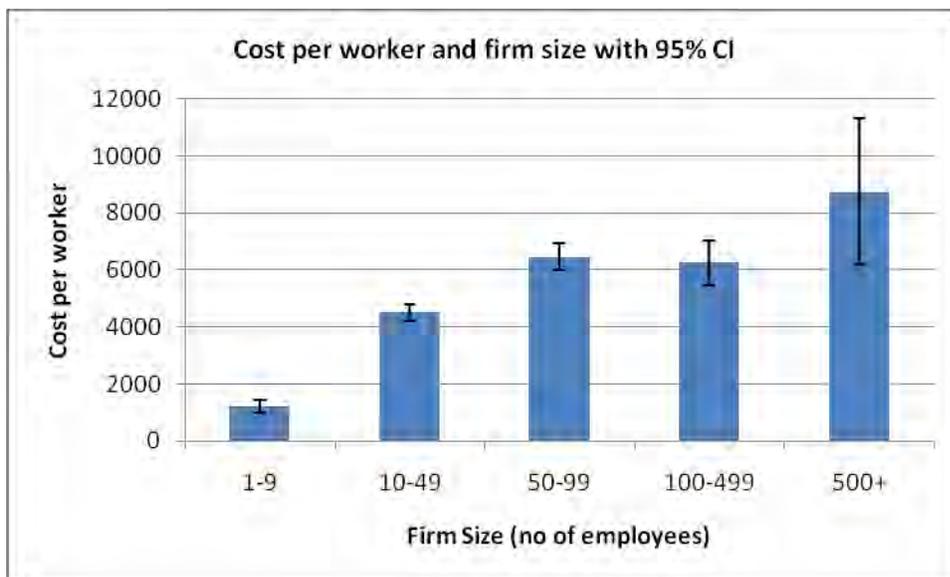
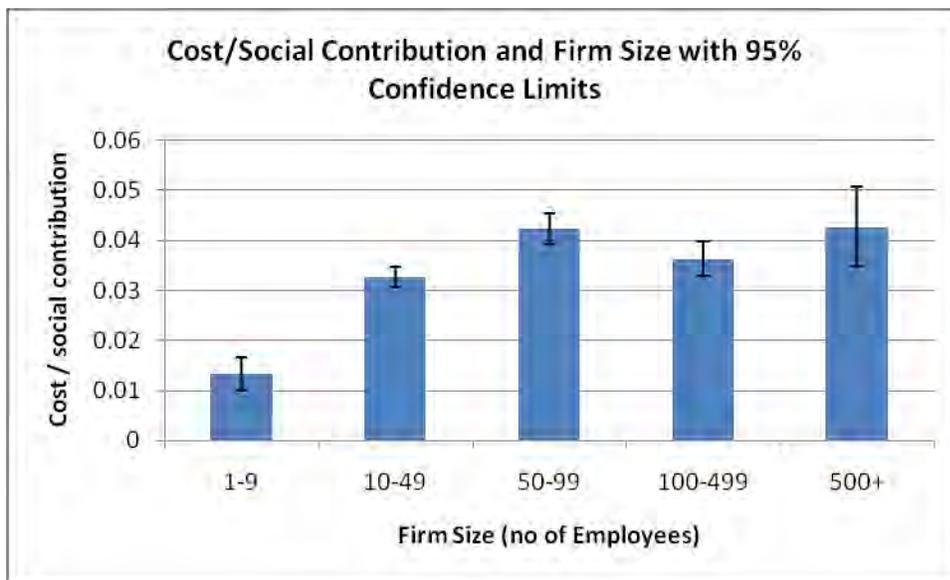
The following table shows 18 instances where different records contained the same TIN. This is a very low error rate among the 22,385 records sent to the SPSS. There were no instances when state registration numbers were duplicated. The records with duplicate TIN's were included in the analysis. This may be the result of businesses with local offices which have separate SRN's but a common TIN. Six percent of the businesses (1,355) reported no social contribution in 2007. The businesses with no social contribution in 2007 were not included in the analysis

**Table 1: Duplicate TIN's**

SRN	TIN	Employees	Social Contribution	Costs
20.060.00437	78217	1	138,397	-
222.210.00111	78217	290	46,845,501	669,180
	400222	773	170,285,304	5,862,029
3770	400222	9	1,261,242	-
1740116	400222	7	1,057,740	-
264.060.06539	1547732	175	35,293,960	365,470
273.120.03639	1547732	76	21,189,817	785,353
94.0083	5300695	16	1,967,448	-
94.210.00507	5300695	2	182,400	-
26.060.01982	6910635	11	1,093,640	4,977
26.110.01061	6910635	16	3,275,710	-
97.0051	7803901	9	1,071,888	-
97.0058	7803901	5	454,434	-
97.0087	7803901	4	326,894	-
74.0027	8100951	1	99,840	-
74.0045	8100951	6	848,400	-
42.060.01559	8400731	35	5,879,859	100,246
70.140.00066	8400731	174	44,761,802	457,137

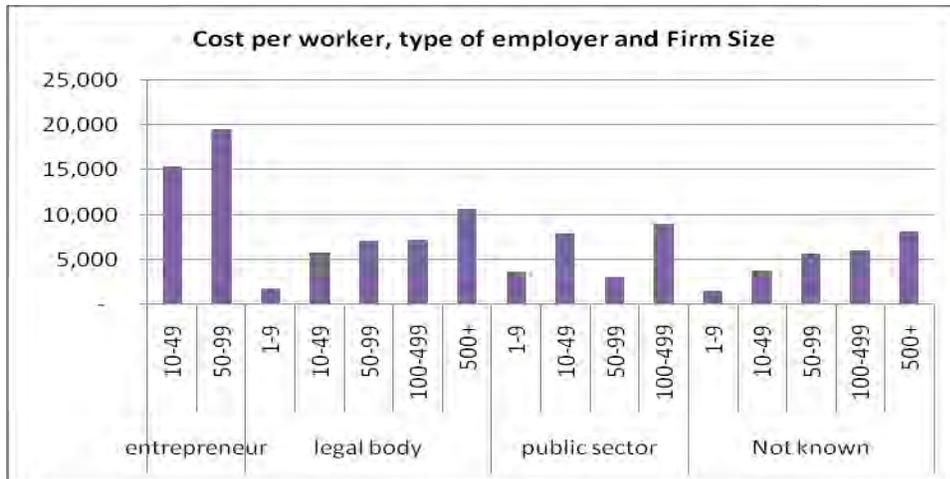
The following table and related graph shows the association between costs per worker and business size.

firm size	Businesses	Employees	Costs	Contributions	Cost per employee	Cost per Contribution (%)
1-9	14,561	46,632	75,270,106	5,502,558,875	1,614	1.4%
10-49	5,020	110,238	555,097,629	15,564,346,538	5,035	3.6%
50-99	938	62,386	405,639,870	9,557,585,042	6,502	4.2%
100-499	462	86,479	571,383,372	14,045,345,841	6,607	4.1%
500+	49	56,137	519,830,697	10,743,199,031	9,260	4.8%
Total	21,030	361,872	2,127,221,674	55,413,035,327	5,878	3.8%



type of employer	firm size	Employees	Contribution	Costs	Cost per worker	Cost/Contribution (%)
entrepreneur	10-49	18	3,032,243	276,825	15,379	9.1%
	50-99	57	14,249,890	1,115,190	19,565	7.8%
entrepreneur Total		75	17,282,133	1,392,015	18,560	8.1%
legal body	1-9	23898	2,618,554,506	41,203,704	1,724	1.6%
	10-49	64140	9,018,969,667	375,959,204	5,862	4.2%
	50-99	37565	5,562,962,509	265,867,159	7,078	4.8%
	100-499	38927	6,089,796,974	282,313,995	7,252	4.6%
	500+	24077	4,771,898,693	257,290,815	10,686	5.4%
legal body Total		188607	28,062,182,349	1,222,634,877	6,482	4.4%
public sector	1-9	140	14,552,428	517,901	3,699	3.6%
	10-49	797	103,996,447	6,293,398	7,896	6.1%
	50-99	314	44,319,958	981,912	3,127	2.2%
	100-499	993	196,999,609	8,964,382	9,028	4.6%
public sector Total		2244	359,868,442	16,757,593	7,468	4.7%
Unknown	1-9	22594	2,869,451,941	33,548,501	1,485	1.2%
	10-49	45283	6,438,348,181	172,568,202	3,811	2.7%
	50-99	24450	3,936,052,685	137,675,609	5,631	3.5%
	100-499	46559	7,758,549,258	280,104,995	6,016	3.6%
	500+	32060	5,971,300,338	262,539,882	8,189	4.4%
Unknown Total		170946	26,973,702,403	886,437,189	5,185	3.3%
Grand Total		361872	55,413,035,327	2,127,221,674	5,878	3.8%

Costs for illnesses use about 4% of the social contribution; the smallest firms use less than 1% of the social contribution while the largest firms use 5% of the social contribution. Business size is one surrogate for health and safety prevention capacity. Generally, larger businesses have more resources for health and safety than smaller ones and costs of illnesses and injuries ought to be less there. Business size and sector are also associated. The PARNAS data does not have data about the type of work done by each business so the following chart shows the sectors and firm sizes where the cost was at least 50% of the social contribution. The TIN's and state registration numbers for these businesses can be found in the accompanying spread sheet. For these businesses, either the social contribution is too small or the costs are too large or some combination of the two.



Number of businesses where costs exceed 50% of social contribution	firm size		
	1-9	10-49	Total
Sector			
	0	2	2
Hiring laborers and maintenance of staff	1		1
Renovation and construction of apartments (stations) based on contract with residents		1	1
Retail sales of pharmaceutical and medical products, cosmetics and make-up supplies	3		3
Wholesale sales of pharmaceutical, medical and orthopedic products	1		1
Retail specialized sales of pharmaceutical, medical and orthopedic products	1		1
The type of activity is not specified in founding documents	8		8
Agricultural services	1		1
Production	1		1
Trade	2		2
Construction of roads, highways, airports and sports buildings		1	1
Plant growing simultaneously with livestock husbandry (mixed farming)	1		1
Production of non-alcoholic beverages, bottling of mineral water	1		1
Wholesale sales of chemical pesticides (herbicides) and other agrochemical products		1	1
Wholesale sales of solid, liquid, gas fuel and associated products	1		1
Production of plastic products	1		1
Construction of water buildings (constructions)	1		1
Retail sales of mainly food, beverages and tobacco in non-specialized shops	7		7
Other retail sales in non-specialized shops	1		1
Production of tele-radio-electric devices and equipment (without repair)	1		1
Public Food	1		1
Leisure and other activities of leisure and entertainment	1		1
Wholesale sales of food, beverages and tobacco products	2		2
Taxi services	1		1
Leisure and cultural parks, attractions (entertainment) and similar places	1		1
Consultations on commercial and management issues	1		1
EDUCATION	1		1
Wholesale sales with compensation or based on a contract	1	1	2
CONSTRUCTION	1		1
Construction	1		1
Retail sales of fuel for transportation vehicles with internal combustion engines	1		1
Pre-school education	1		1
Unknown	42	5	47
Grand Total	89	9	98

Cost/Contribution (%)	Costs	No of Businesses	% of Businesses	% of costs
0	-	17,049	82.9%	0.0%
1-4	618,271,575	1,593	7.7%	29.1%
5-9	774,879,588	948	4.6%	36.4%
10-24	590,175,652	705	3.4%	27.7%
25-49	105,180,852	186	0.9%	4.9%
50-74	17,595,321	41	0.2%	0.8%
75-99	3,946,444	16	0.1%	0.2%
100+	17,172,242	37	0.2%	0.8%
Total	2,127,221,674	20,575	100%	100%

Cost/contribution (%)	Costs	Costs (%)	Businesses	Businesses (%)
0	-	0.00%	17,393	82.71%
1-4	618,271,575	29.06%	1,639	7.79%
5-9	774,879,588	36.43%	977	4.65%
10-24	590,175,652	27.74%	731	3.48%
25-49	105,180,852	4.94%	192	0.91%
50-74	17,595,321	0.83%	45	0.21%
75-99	3,946,444	0.19%	16	0.08%
100+	17,172,242	0.81%	37	0.18%
Grand Total	2,127,221,674	100.00%	21,030	100.00%

The table above shows the distribution of businesses and their costs in relation to the ratio of costs to social contribution. The data shows that 82.7% of businesses did not have any costs in 2007 and that 37 business (0.2% of all businesses in the sample) accounted for 0.8% of the costs. Those firms where the ratio of costs to social contribution was 10% or more were 4.9% of the sample but 34.9% of the costs. The following table shows that the business where the ratio of cost to social contribution was 10% or more employed 29,284 workers or 8.1% of the workers in the sample. A relatively small number of businesses represented a disproportionately large share of the costs. If the number of work-related illnesses and injuries in the 985 businesses where the costs exceed 10% of the social contribution could be reduced through prevention efforts so that the ratio of costs to social contribution was not more than 10%, (still above the average of 4%) 261million DRAMS (\$800,000) could be saved.

Cost/Social Contribution	Employees	% of employees
0	128,524	35.5%
1-4	140,109	38.7%
5-9	63,955	17.7%
10-24	26,366	7.3%
25-49	2,494	0.7%
50-74	242	0.1%
75-99	71	0.0%
100+	111	0.0%
Total	361,872	100%

### **Surveillance and public reporting**

Surveillance reports should track time series for injury data (fatalities, short-term and long-term disabilities and the rate of occurrence of these disabilities), need based inspections and the orders issued as a result and planned inspections and orders issued as result. Surveillance reports rely upon realistic data about work-related injuries which are not currently available.

Publishing valid statistics about the trends in work-related injuries and occupational diseases and in SLI enforcement activities helps raise awareness of these issues. Examples of public reporting of injury and illness data and inspectorate activity are available on the web<sup>9,10,11</sup>.

<sup>9</sup> <http://www.bls.gov/news.release/cfoi.toc.htm> as of June 30, 2008

<sup>10</sup> <http://www.bls.gov/news.release/osh2.toc.htm> as of June 30, 2008

<sup>11</sup> <http://www.labour.gov.on.ca/english/hs/stats/index.html> as of June 30, 2008

## **Appendix**

## Capturing and coding injury data

The ILO has recommended standards for classifying work related injuries and diseases and occupations.

The most recent recommendation for classifying injury data<sup>12</sup> was adopted by the Sixteenth International Conference of Labor Statisticians in October 1998. The labor statisticians recommended that injuries be classified according to:

- the type of injury,
- the injured part of body,
- the size of the enterprise, establishment or local unit,
- the type of location of the accident,
- the type of accident,
- the material agency of the injury,
- place of occurrence,
- work process,
- specific activity,
- deviation,
- material agency associated with the specific activity or the deviation.

Details about the classification and coding of work-related injuries and occupational diseases are contained in the Appendix.

## Appendix: classifying and coding injury characteristics

### Classification according to type of injury

The ILO has developed coding processes for the type of injury, the injured part of body, the type of accident, and the material agency of the injury.

The following sections were taken from the ILO website<sup>13</sup>.

The following classification is based on the *International Statistical Classification of Diseases and Related Health Problems*, ICD-10. The most serious injury or disease sustained or suffered by the victim should be classified. Where several injuries have been incurred, the most serious one should be classified. The coding given below does not correspond to that given in ICD-10, due to differences in structure.

### Code Designation

#### 1 Superficial injuries and open wounds

1.01 Superficial injuries (including abrasions, blisters (non-thermal), contusions, puncture wounds (without major open wounds), insect bites (non-venomous))

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<sup>12</sup> [http://www.ilo.org/global/What\\_we\\_do/Statistics/standards/resolutions/lang--en/docName--WCMS\\_087528/index.htm](http://www.ilo.org/global/What_we_do/Statistics/standards/resolutions/lang--en/docName--WCMS_087528/index.htm) as of June 23, 2008

<sup>13</sup> <http://www.ilo.org/public/english/bureau/stat/class/acc/index.htm> as of June 23, 2008

1.02 Open wounds (including cuts, lacerations, puncture wounds (with penetrating foreign body), animal bites)

## **2 Fractures**

2.01 Closed fractures

2.02 Open fractures

2.03 Other fractures (dislocated, displaced)

## **3 Dislocations, sprains and strains**

(Including avulsions, lacerations, sprains, strains, traumatic haemarthroses, ruptures, subluxations and tears of joints and ligaments)

3.01 Dislocations and subluxations

3.02 Sprains and strains

## **4 Traumatic amputations**

(Including traumatic enucleation of the eye)

## **5 Concussion and internal injuries**

(Including blast injuries, bruises, concussion, crushing, lacerations, traumatic haematoma, punctures, ruptures and tears of internal organs)

## **6 Burns, corrosions, scalds and frostbite**

6.01 Burns (thermal) (including from electrical heating appliances, electricity, flames, friction, hot air and hot gases, hot objects, lightning, radiation)

6.02 Chemical burns (corrosions)

6.03 Scalds

6.04 Frostbite

## **7 Acute poisonings and infections**

7.01 Acute poisonings (acute effects of the injection, ingestion, absorption or inhalation of toxic, corrosive or caustic substances; including toxic effects of contact with venomous animals)

7.02 Infections (including intestinal infectious diseases, specified zoonoses, protozoal diseases, viral diseases, mycoses)

## **8 Other specified types of injury**

8.01 Effects of radiation

8.02 Effects of heat and light

8.03 Hypothermia

8.04 Effects of air pressure and water pressure

8.05 Asphyxiation

8.06 Effects of maltreatment (including physical abuse, psychological abuse)

8.07 Effects of lightning (shock from lightning, struck by lightning not otherwise specified)

8.08 Drowning and non-fatal submersion

8.09 Effects of noise and vibration (including acute hearing loss)

8.10 Effects of electric current (electrocution, shock from electric current)

8.19 Other specified injuries

## **10 Type of injury, unspecified**

### **Classification according to part of body injured**

The following classification is based on the *International Statistical Classification of Diseases and Related Health Problems*, ICD-10.<sup>(10)</sup> The groups relating to multiple locations should be used only to classify cases where the victim suffers from several injuries to different parts of the body and no injury is obviously more severe than the others. In order to designate the side of the body injured, a further digit may be added to the code for the part of body injured, where relevant, as follows:

1: right side

2: left side

3: both sides

The coding given below does not correspond to that given in the ICD-10, due to differences in structure.

## **Code Designation**

### **1 Head**

- 1.1 Scalp, skull, brain and cranial nerves and vessels
- 1.2 Ear(s)
- 1.3 Eye(s)
- 1.4 Tooth, teeth
- 1.5 Other specified parts of facial area
- 1.7 Head, multiple sites affected
- 1.8 Head, other specified parts not elsewhere classified
- 1.9 Head, unspecified

### **2 Neck, including spine and vertebrae in the neck**

- 2.1 Spine and vertebrae
- 2.8 Neck, other specified parts not elsewhere classified
- 2.9 Neck, unspecified

### **3 Back, including spine and vertebrae in the back**

- 3.1 Spine and vertebrae
- 3.8 Back, other specified parts not elsewhere classified
- 3.9 Back, unspecified

### **4 Trunk and internal organs**

- 4.1 Rib cage (ribs including sternum and shoulder blades)
- 4.2 Other parts of thorax, including internal organs
- 4.3 Pelvic and abdominal area, including internal organs
- 4.4 External genitalia
- 4.7 Trunk, multiple sites affected

4.8 Trunk, other specified parts not elsewhere classified

4.9 Trunk and internal organs, unspecified

## **5 Upper extremities**

5.1 Shoulder and shoulder joints

5.2 Arm, including elbow

5.3 Wrist

5.4 Hand

5.5 Thumb

5.6 Other finger(s)

5.7 Upper extremities, multiple sites affected

5.8 Upper extremities, other specified parts not elsewhere classified

5.9 Upper extremities, unspecified

## **6 Lower extremities**

6.1 Hip and hip joint

6.2 Leg, including knee

6.3 Ankle

6.4 Foot

6.5 Toe(s)

6.7 Lower extremities, multiple sites affected

6.8 Lower extremities, other specified parts not elsewhere classified

6.9 Lower extremities, unspecified

## **7 Whole body and multiple sites**

7.1 Systemic effect (for example, from poisoning or infection)

7.8 Multiple sites of the body affected

## **9 Other parts of body injured**

### **10 Part of body injured, unspecified**

1. This inclusion should not be interpreted as condoning child labour.
2. For full details, see United Nations, Statistical Papers, Series M, No. 4, Rev. 3 (New York, UN doc. ST/ESA/STAT/SER.M/4/Rev. 3, 1990).
3. For full details, see United Nations: *International Recommendations for Industrial Statistics*, Statistical Papers, Series M, No. 48, Rev. 1 (New York, UN doc. ST/ESA/STAT/SER.M/48/Rev. 1, 1983).
4. For full details, see ILO *International Standard Classification of Occupations: ISCO-88* (Geneva, 1990).
5. This sub-major group is intended to include persons who -- as directors, chief executives or department managers -- manage enterprises requiring a total of three or more managers.
6. This sub-major group is intended to include persons who manage enterprises on their own behalf, or on behalf of the proprietor, with some non-managerial help and assistance of no more than one other manager.
7. For full details, see ILO, *Report of the Conference*, Fifteenth International Conference of Labour Statisticians (Geneva, 19-28 Jan. 1993), (Geneva, doc. ICLS/15/D.6(Rev. 1), 1993).
8. For linguistic convenience the group titles and definitions have been formulated in a way which corresponds to the situation where each person holds only one job during the reference period. Rules for classifying persons with two or more jobs are given in section V.
9. For full details, see WHO *International Statistical Classification of Diseases and Related Health Problems, ICD-10* (Geneva, 1992).
10. For full details, see WHO *International Statistical Classification of Diseases and Related Health Problems, ICD-10* (Geneva, 1992).

## **CLASSIFICATION OF INDUSTRIAL ACCIDENTS ACCORDING TO TYPE OF ACCIDENT**

This classification identifies the type of event which directly resulted in the injury, i.e. the manner in which the object or substance causing the injury enters into contact with the injured person.

### **1. Falls of persons**

- 11 Falls of persons from heights (trees, buildings, scaffolds, ladders, machines, vehicles) and into depths (wells, ditches, excavations, holes in the ground)

- 12 Falls of persons on the same level
- 2. Struck by falling objects
  - 21 Slides and cave-ins (earth, rocks, stones, snow)
  - 22 Collapse (buildings, walls, scaffolds, ladders, piles of goods)
  - 23 Struck by falling objects during handling
  - 24 Struck by falling objects, not elsewhere classified
- 3. Stepping on, striking against or struck by objects excluding falling objects
  - 31 Stepping on objects
  - 32 Striking against stationary objects (except impacts due to a previous fall)
  - 33 Striking against moving objects
  - 34 Struck by moving objects (including flying fragments and particles) excluding falling objects
- 4. Caught in or between objects
  - 41 Caught in an object
  - 42 Caught between a stationary object and a moving object
  - 43 Caught between moving objects (except flying or falling objects)
- 5. Overexertion or strenuous movements
  - 51 Overexertion in lifting objects
  - 52 Overexertion in pushing or pulling objects
  - 53 Overexertion in handling or throwing objects
  - 54 Strenuous movements
- 6. Exposure to or contact with extreme temperatures
  - 61 Exposure to heat (atmosphere or environment)
  - 62 Exposure to cold (atmosphere or environment)
  - 63 Contact with hot substances or objects

- 64 Contact with very cold substances or objects
- 7. Exposure to or contact with electric current
- 8. Exposure to or contact with harmful substances or radiations
  - 81 Contact by inhalation, ingestion or absorption of harmful substances
  - 82 Exposure to ionising radiations
  - 83 Exposure to radiations other than ionising radiations
- 9. Other types of accident, not elsewhere classified, including accidents not classified for lack of sufficient data
  - 91 Other types of accident, not elsewhere classified
  - 92 Accidents not classified for lack of sufficient data

## **CLASSIFICATION OF INDUSTRIAL ACCIDENTS ACCORDING TO AGENCY**

This classification may be used for classifying either the agency related to the injury or the agency related to the accident:

(a) when this classification is used to classify an agency related to the injury, the items selected for coding shall be those which directly inflicted the injury without regard to their influence in initiating the event designated as the accident type (see section 8);

(b) when this classification is used to classify an agency related to the accident, the items selected for coding shall be those which because of their hazardous nature or condition precipitated the event designated as the accident type (see section 8).

### 1. Machines

#### 11 Prime-movers, except electrical motors

111 Steam engines

112 Internal combustion engines

113 Others

#### 12 Transmission machinery

121 Transmission shafts

122 Transmission belts, cables, pulleys, pinions, chains, gears

- 129 Others
- 13 Metalworking machines
  - 131 Power presses
  - 132 Lathes
  - 133 Milling machines
  - 134 Abrasive wheels
  - 135 Mechanical shears
  - 136 Forging machines
  - 137 Rolling-mills
  - 139 Others
- 14 Wood and assimilated machines
  - 141 Circular saws
  - 142 Other saws
  - 143 Moulding machines
  - 144 Overhand planes
  - 149 Others
- 15 Agricultural machines
  - 151 Reapers (including combine reapers)
  - 152 Threshers
  - 159 Others
- 16 Mining machinery
  - 161 Under-cutters
  - 169 Others
- 19 Other machines not elsewhere classified

191 Earth-moving machines, excavating and scraping machines, except means of transport

192 Spinning, weaving and other textile machines

193 Machines for the manufacture of foodstuffs and beverages

194 Machines for the manufacture of paper

195 Printing machines

199 Others

## 2. Means of transport and lifting equipment

### 21 Lifting machines and appliances

211 Cranes

212 Lifts and elevators

213 Winches

214 Pulley blocks

219 Others

### 22 Means of rail transport

221 Inter-urban railways

222 Rail transport in mines, tunnels, quarries, industrial establishments, docks, etc.

229 Others

### 23 Other wheeled means of transport, excluding rail transport

231 Tractors

232 Lorries

233 Trucks

234 Motor vehicles, not elsewhere classified

235 Animal-drawn vehicles

236 Hand-drawn vehicles

- 239 Others
- 24 Means of air transport
- 25 Means of water transport
  - 251 Motorized means of water transport
  - 252 Non-motorized means of water transport
- 26 Other means of transport
  - 261 Cable-cars
  - 262 Mechanical conveyors, except cable-cars
  - 269 Others
- 3. Other equipment
  - 31 Pressure vessels
    - 311 Boilers
    - 312 Pressurized container
    - 313 Pressurized piping and accessories
    - 314 Gas cylinders
    - 315 Caissons, diving equipment
    - 319 Others
  - 32 Furnaces, ovens, kilns
    - 321 Blast furnaces
    - 322 Refining furnaces
    - 323 Other furnaces
    - 324 Kilns
    - 325 Ovens
  - 33 Refrigerating plants

- 34 Refrigerating installations, including electric motors, but excluding electric hand tools
  - 341 Rotating machines
  - 342 Conductors
  - 343 Transformers
  - 344 Control apparatus
  - 349 Others
- 35 Electric hand tools
- 36 Tools, implements and appliances, except electric hand tools
  - 361 Power-driven hand tools, except electric hand tools
  - 362 Hand tools, not power-driven
  - 369 Others
- 37 Ladders, mobile ramps
- 38 Scaffolding
- 39 Other equipment, not elsewhere classified
- 4. Materials, substances and radiations
  - 41 Explosives
    - 42 Dusts, gases, liquids and chemicals, excluding explosives
      - 421 Dusts
      - 422 Gases, vapours, fumes
      - 423 Liquids not elsewhere classified
      - 424 Chemicals not elsewhere classified
      - 429 Others
  - 43 Flying fragments
  - 44 Radiations

441 Ionizing radiations

449 Others

49 Other materials and substances not elsewhere classified

5. Working environment

51 Outdoor

511 Weather

512 Traffic and working surfaces

513 Water

519 Others

52 Indoor

521 Floors

522 Confined quarters

523 Stairs

524 Other traffic and working surfaces

525 Floor openings and wall openings

526 Environmental factors (lighting, ventilation, temperature, noise, etc.)

529 Others

53 Underground

531 Roofs and faces of mine roads and tunnels, etc.

532 Floors of mine roads and tunnels, etc.

533 Working faces of mines, tunnels, etc.

534 Mine shafts

535 Fire

536 Water

539 Others

6. Other agencies, not elsewhere classified

61 Animals

611 Live animals

612 Animal products

69 Other agencies, not elsewhere classified

7. Agencies not classified for lack of sufficient data

**Occupations: Major groups, sub-major groups and minor groups**

This is the revision to the ILO International Standard Classification of Occupations, 2008 (ISCO-08) that was adopted by the ILO on December 6, 2007 by the Meeting of Experts in Labour Statistics<sup>14</sup>.

1 Managers

11 Chief executives, senior officials and legislators

111 Legislators and senior officials

112 Managing directors and chief executives

12 Administrative and commercial managers

121 Business services and administration managers

122 Sales, marketing and development managers

13 Production and specialized services managers

131 Production managers in agriculture, forestry and fisheries

132 Manufacturing, mining, construction, and distribution managers

133 Information and communications technology service managers

134 Professional services managers

14 Hospitality, retail and other services managers

141 Hotel and restaurant managers

142 Retail and wholesale trade managers

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<sup>14</sup> <http://www.ilo.org/public/english/bureau/stat/isco/docs/resol08.doc> as of June 24, 2008.

- 143 Other services managers
- 2 Professionals
  - 21 Science and engineering professionals
    - 211 Physical and earth science professionals
    - 212 Mathematicians, actuaries and statisticians
    - 213 Life science professionals
    - 214 Engineering professionals (excluding electrotechnology)
    - 215 Electrotechnology engineers
    - 216 Architects, planners, surveyors and designers
  - 22 Health professionals
    - 221 Medical doctors
    - 222 Nursing and midwifery professionals
    - 223 Traditional and complementary medicine professionals
    - 224 Paramedical practitioners
    - 225 Veterinarians
    - 226 Other health professionals
  - 23 Teaching professionals
    - 231 University and higher education teachers
    - 232 Vocational education teachers
    - 233 Secondary education teachers
    - 234 Primary school and early childhood teachers
    - 235 Other teaching professionals
  - 24 Business and administration professionals
    - 241 Finance professionals
    - 242 Administration professionals
    - 243 Sales, marketing and public relations professionals

- 25 Information and communications technology professionals
  - 251 Software and applications developers and analysts
  - 252 Database and network professionals
- 26 Legal, social and cultural professionals
  - 261 Legal professionals
  - 262 Librarians, archivists and curators
  - 263 Social and religious professionals
  - 264 Authors, journalists and linguists
  - 265 Creative and performing artists
- 3 Technicians and associate professionals
  - 31 Science and engineering associate professionals
    - 311 Physical and engineering science technicians
    - 312 Mining, manufacturing and construction supervisors
    - 313 Process control technicians
    - 314 Life science technicians and related associate professionals
    - 315 Ship and aircraft controllers and technicians
  - 32 Health associate professionals
    - 321 Medical and pharmaceutical technicians
    - 322 Nursing and midwifery associate professionals
    - 323 Traditional and complementary medicine associate professionals
    - 324 Veterinary technicians and assistants
    - 325 Other health associate professionals
  - 33 Business and administration associate professionals
    - 331 Financial and mathematical associate professionals
    - 332 Sales and purchasing agents and brokers
    - 333 Business services agents

- 334 Administrative and specialized secretaries
- 335 Regulatory government associate professionals
- 34 Legal, social, cultural and related associate professionals
  - 341 Legal, social and religious associate professionals
  - 342 Sports and fitness workers
  - 343 Artistic, cultural and culinary associate professionals
- 35 Information and communications technicians
  - 351 Information and communications technology operations and user support technicians
  - 352 Telecommunications and broadcasting technicians
- 4 Clerical support workers
  - 41 General and keyboard clerks
    - 411 General office clerks
    - 412 Secretaries (general)
    - 413 Keyboard operators
  - 42 Customer services clerks
    - 421 Tellers, money collectors and related clerks
    - 422 Client information workers
  - 43 Numerical and material recording clerks
    - 431 Numerical clerks
    - 432 Material-recording and transport clerks
  - 44 Other clerical support workers
    - 441 Other clerical support workers
- 5 Service and sales workers
  - 51 Personal service workers
    - 511 Travel attendants, conductors and guides
    - 512 Cooks

- 513 Waiters and bartenders
- 514 Hairdressers, beauticians and related workers
- 515 Building and housekeeping supervisors
- 516 Other personal services workers
- 52 Sales workers
  - 521 Street and market salespersons
  - 522 Shop salespersons
  - 523 Cashiers and ticket clerks
  - 524 Other sales workers
- 53 Personal care workers
  - 531 Child care workers and teachers' aides
  - 532 Personal care workers in health services
- 54 Protective services workers
  - 541 Protective services workers
- 6 Skilled agricultural, forestry and fishery workers
  - 61 Market-oriented skilled agricultural workers
    - 611 Market gardeners and crop growers
    - 612 Animal producers
    - 613 Mixed crop and animal producers
  - 62 Market-oriented skilled forestry, fishery and hunting workers
    - 621 Forestry and related workers
    - 622 Fishery workers, hunters and trappers
  - 63 Subsistence farmers, fishers, hunters and gatherers
    - 631 Subsistence crop farmers
    - 632 Subsistence livestock farmers
    - 633 Subsistence mixed crop and livestock farmers

- 634 Subsistence fishers, hunters, trappers and gatherers
- 7 Craft and related trades workers
  - 71 Building and related trades workers, excluding electricians
    - 711 Building frame and related trades workers
    - 712 Building finishers and related trades workers
    - 713 Painters, building structure cleaners and related trades workers
  - 72 Metal, machinery and related trades workers
    - 721 Sheet and structural metal workers, moulders and welders, and related workers
    - 722 Blacksmiths, toolmakers and related trades workers
    - 723 Machinery mechanics and repairers
  - 73 Handicraft and printing workers
    - 731 Handicraft workers
    - 732 Printing trades workers
  - 74 Electrical and electronic trades workers
    - 741 Electrical equipment installers and repairers
    - 742 Electronics and telecommunications installers and repairers
  - 75 Food processing, wood working, garment and other craft and related trades workers
    - 751 Food processing and related trades workers
    - 752 Wood treaters, cabinet-makers and related trades workers
    - 753 Garment and related trades workers
    - 754 Other craft and related workers
- 8 Plant and machine operators, and assemblers
  - 81 Stationary plant and machine operators
    - 811 Mining and mineral processing plant operators
    - 812 Metal processing and finishing plant operators

- 813 Chemical and photographic products plant and machine operators
- 814 Rubber, plastic and paper products machine operators
- 815 Textile, fur and leather products machine operators
- 816 Food and related products machine operators
- 817 Wood processing and papermaking plant operators
- 818 Other stationary plant and machine operators
- 82 Assemblers
  - 821 Assemblers
- 83 Drivers and mobile plant operators
  - 831 Locomotive engine drivers and related workers
  - 832 Car, van and motorcycle drivers
  - 833 Heavy truck and bus drivers
  - 834 Mobile plant operators
  - 835 Ships' deck crews and related workers
- 9 Elementary occupations
  - 91 Cleaners and helpers
    - 911 Domestic, hotel and office cleaners and helpers
    - 912 Vehicle, window, laundry and other hand cleaning workers
  - 92 Agricultural, forestry and fishery labourers
    - 921 Agricultural, forestry and fishery labourers
  - 93 Labourers in mining, construction, manufacturing and transport
    - 931 Mining and construction labourers
    - 932 Manufacturing labourers
    - 933 Transport and storage labourers

## International Standard Industrial Classification of All Economic Activities, Revision 4 - ISIC Rev.4 (draft)

The following is the ILO standard for industrial classifications<sup>15</sup>.

Click on any code to see more detail. Click [here](#) for top level only.

- [A](#) - Agriculture, forestry and fishing
  - [01](#) - Crop and animal production, hunting and related service activities
  - [02](#) - Forestry and logging
  - [03](#) - Fishing and aquaculture
- [B](#) - Mining and quarrying
  - [05](#) - Mining of coal and lignite
  - [06](#) - Extraction of crude petroleum and natural gas
  - [07](#) - Mining of metal ores
  - [08](#) - Other mining and quarrying
  - [09](#) - Mining support service activities
- [C](#) - Manufacturing
  - [10](#) - Manufacture of food products
  - [11](#) - Manufacture of beverages
  - [12](#) - Manufacture of tobacco products
  - [13](#) - Manufacture of textiles
  - [14](#) - Manufacture of wearing apparel
  - [15](#) - Manufacture of leather and related products
  - [16](#) - Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials
  - [17](#) - Manufacture of paper and paper products
  - [18](#) - Printing and reproduction of recorded media
  - [19](#) - Manufacture of coke and refined petroleum products
  - [20](#) - Manufacture of chemicals and chemical products
  - [21](#) - Manufacture of basic pharmaceutical products and pharmaceutical preparations
  - [22](#) - Manufacture of rubber and plastics products
  - [23](#) - Manufacture of other non-metallic mineral products
  - [24](#) - Manufacture of basic metals
  - [25](#) - Manufacture of fabricated metal products, except machinery and equipment
  - [26](#) - Manufacture of computer, electronic and optical products
  - [27](#) - Manufacture of electrical equipment
  - [28](#) - Manufacture of machinery and equipment n.e.c.
  - [29](#) - Manufacture of motor vehicles, trailers and semi-trailers
  - [30](#) - Manufacture of other transport equipment
  - [31](#) - Manufacture of furniture
  - [32](#) - Other manufacturing
  - [33](#) - Repair and installation of machinery and equipment
- [D](#) - Electricity, gas, steam and air conditioning supply
  - [35](#) - Electricity, gas, steam and air conditioning supply
- [E](#) - Water supply; sewerage, waste management and remediation activities
  - [36](#) - Water collection, treatment and supply
  - [37](#) - Sewerage

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<sup>15</sup> <http://unstats.un.org/unsd/cr/registry/regcst.asp?Cl=27> as of June 24, 2008

- [38](#) - Waste collection, treatment and disposal activities; materials recovery
  - [39](#) - Remediation activities and other waste management services
- [F](#) - Construction
  - [41](#) - Construction of buildings
  - [42](#) - Civil engineering
  - [43](#) - Specialized construction activities
- [G](#) - Wholesale and retail trade; repair of motor vehicles and motorcycles
  - [45](#) - Wholesale and retail trade and repair of motor vehicles and motorcycles
  - [46](#) - Wholesale trade, except of motor vehicles and motorcycles
  - [47](#) - Retail trade, except of motor vehicles and motorcycles
- [H](#) - Transportation and storage
  - [49](#) - Land transport and transport via pipelines
  - [50](#) - Water transport
  - [51](#) - Air transport
  - [52](#) - Warehousing and support activities for transportation
  - [53](#) - Postal and courier activities
- [I](#) - Accommodation and food service activities
  - [55](#) - Accommodation
  - [56](#) - Food and beverage service activities
- [J](#) - Information and communication
  - [58](#) - Publishing activities
  - [59](#) - Motion picture, video and television programme production, sound recording and music publishing activities
  - [60](#) - Programming and broadcasting activities
  - [61](#) - Telecommunications
  - [62](#) - Computer programming, consultancy and related activities
  - [63](#) - Information service activities
- [K](#) - Financial and insurance activities
  - [64](#) - Financial service activities, except insurance and pension funding
  - [65](#) - Insurance, reinsurance and pension funding, except compulsory social security
  - [66](#) - Activities auxiliary to financial service and insurance activities
- [L](#) - Real estate activities
  - [68](#) - Real estate activities
- [M](#) - Professional, scientific and technical activities
  - [69](#) - Legal and accounting activities
  - [70](#) - Activities of head offices; management consultancy activities
  - [71](#) - Architectural and engineering activities; technical testing and analysis
  - [72](#) - Scientific research and development
  - [73](#) - Advertising and market research
  - [74](#) - Other professional, scientific and technical activities
  - [75](#) - Veterinary activities
- [N](#) - Administrative and support service activities
  - [77](#) - Rental and leasing activities
  - [78](#) - Employment activities
  - [79](#) - Travel agency, tour operator, reservation service and related activities
  - [80](#) - Security and investigation activities
  - [81](#) - Services to buildings and landscape activities
  - [82](#) - Office administrative, office support and other business support activities
- [O](#) - Public administration and defence; compulsory social security
  - [84](#) - Public administration and defence; compulsory social security
- [P](#) - Education

- [85](#) - Education
- [Q](#) - Human health and social work activities
  - [86](#) - Human health activities
  - [87](#) - Residential care activities
  - [88](#) - Social work activities without accommodation
- [R](#) - Arts, entertainment and recreation
  - [90](#) - Creative, arts and entertainment activities
  - [91](#) - Libraries, archives, museums and other cultural activities
  - [92](#) - Gambling and betting activities
  - [93](#) - Sports activities and amusement and recreation activities
- [S](#) - Other service activities
  - [94](#) - Activities of membership organizations
  - [95](#) - Repair of computers and personal and household goods
  - [96](#) - Other personal service activities
- [T](#) - Activities of households as employers; undifferentiated goods- and services-producing activities of households for own use
  - [97](#) - Activities of households as employers of domestic personnel
  - [98](#) - Undifferentiated goods- and services-producing activities of private households for own use
- [U](#) - Activities of extraterritorial organizations and bodies
  - [99](#) - Activities of extraterritorial organizations and bodies

The ICD also has codes for the location of the injury and the activity when injured. See below.

## Place of occurrence code

The following categories are provided to identify the place of occurrence of the external causes where relevant. Place of occurrence should be coded separately from the codes W00-Y34.

### 0 Home

Apartment  
 Boarding-house  
 Caravan [trailer] park, residential  
 Farmhouse  
 Home premises  
 House (residential)  
 Noninstitutional place of residence  
 Private:  
 · driveway to home  
 · garage  
 · garden to home  
 · yard to home  
 Swimming-pool in private house or garden

**Excludes:** abandoned or derelict house (8)  
 home under construction but not yet occupied (6)  
 institutional place of residence (1)

## **1 Residential institution**

Children's home  
Dormitory  
Home for the sick  
Hospice  
Military camp  
Nursing home  
Old people's home  
Orphanage  
Pensioner's home  
Prison  
Reform school

## **2 School, other institution and public administrative area**

Building (including adjacent grounds) used by the general public or by a particular group of the public such as:

- assembly hall
- campus
- church
- cinema
- clubhouse
- college
- court-house
- dancehall
- day nursery
- gallery
- hospital
- institute for higher education
- kindergarten
- library
- movie-house
- museum
- music-hall
- opera-house
- post office
- public hall
- school (private)(public)(state)
- theatre
- university
- youth centre

*Excludes:* building under construction (6)  
residential institution (1)  
sports and athletics area (3)

## **3 Sports and athletics area**

Baseball field  
Basketball-court  
Cricket ground

Football field  
Golf-course  
Gymnasium  
Hockey field  
Riding-school  
Skating-rink  
Squash-court  
Stadium  
Swimming-pool, public  
Tennis-court

*Excludes:* swimming-pool or tennis-court in private home or garden (0)

**4 Street and highway**

Freeway  
Motorway  
Pavement  
Road  
Sidewalk

**5 Trade and service area**

Airport  
Bank  
Café  
Casino  
Garage (commercial)  
Gas station  
Hotel  
Market  
Office building  
Petrol station  
Radio or television station  
Restaurant  
Service station  
Shop (commercial)  
Shopping mall  
Station (bus)(railway)  
Store  
Supermarket  
Warehouse

*Excludes:* garage in private home (0)

**6 Industrial and construction area**

Building [any] under construction  
Dockyard  
Dry dock  
Factory:  
· building

- premises
- Gasworks
- Industrial yard
- Mine
- Oil rig and other offshore installations
- Pit (coal)(gravel)(sand)
- Power-station (coal)(nuclear)(oil)
- Shipyards
- Tunnel under construction
- Workshop

**7 Farm**

Farm:

- buildings
- land under cultivation

Ranch

*Excludes:* farmhouse and home premises of farm (0)

**8 Other specified places**

Beach  
Campsite  
Canal  
Caravan site NOS  
Derelict house  
Desert  
Dock NOS  
Forest  
Harbour  
Hill  
Lake  
Marsh  
Military training ground  
Mountain  
Park (amusement) (public)  
Parking-lot and parking-place  
Pond or pool  
Prairie  
Public place NOS  
Railway line  
River  
Sea  
Seashore  
Stream  
Swamp  
Water reservoir  
Zoo

**9 Unspecified place**

## Activity code

The following sub classification is provided for optional use in a supplementary character position with categories V01-Y34 to indicate the activity of the injured person at the time the event occurred. This sub classification should not be confused with, or be used instead of, the recommended categories provided to indicate the place of occurrence of events classifiable to W00-Y34.

### 0 While engaged in sports activity

Physical exercise with a described functional element such as:

- golf
- jogging
- riding
- school athletics
- skiing
- swimming
- trekking
- water-skiing

### 1 While engaged in leisure activity

Hobby activities

Leisure-time activities with an entertainment element such as going to the cinema, to a dance or to a party

Participation in sessions and activities of voluntary organizations

**Excludes:** sports activities (0)

### 2 While working for income

Paid work (manual)(professional)

Transportation (time) to and from such activities

Work for salary, bonus and other types of income

### 3 While engaged in other types of work

Domestic duties such as:

- caring for children and relatives
- cleaning
- cooking
- gardening
- household maintenance

Duties for which one would not normally gain an income

Learning activities, e.g. attending school session or lesson

Undergoing education

### 4 While resting, sleeping, eating or engaging in other vital activities

Personal hygiene

### 8 While engaged in other specified activities

### 9 During unspecified activity