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Original article

The Dynamics of Indicators of Industrial Injuries in Karaganda Region

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Abstract

The aim of the study. To conduct a comparative analysis of the indicators of industrial injuries in Karaganda region for 2015-2019.

Methods. The article analyzes the data on industrial injuries in Karaganda region for 2015-2019 years by the method of descriptive statistics, as well as the material consequences of accidents.

Results. In Karaganda region, the number of victims in accidents related to labor activity per 100 thousand adult populations is 2.5 times, and the number of deaths is 2.2 times higher than the national indicator.

Over the 5-year period, there has been a slight decrease in the number of work-related fatalities from 9.9% in 2015 to 9% for 2019. At the same time, there was a 1.2-fold increase in material costs.

Conclusions. In Karaganda region for 2015-2019, the number of people injured at work decreased. Nevertheless, the level of industrial injuries remains quite high, indicating the need to improve the procedure of certification of production facilities on working conditions, as well as the regulatory framework on compliance with working conditions in the mining industry.

Keywords: occupational injury rate, fatality rate, disability rate, Karaganda region, Kazakhstan.

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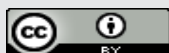
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Introduction

Injuries continue to be one of the serious social problems and occupy a significant place among the causes of health decline. It should be noted that the issues of occupational injuries, its analysis and the cost of funds for social protection and insurance of workers have always been acute for the government of any state [1].

Annually in the world about 125 million cases of injuries at work are registered, 220.000 of which are fatal [2,4]. Today, deaths due to work-related injuries rank third after cardiovascular disease and cancer. In addition, about 160 million cases of occupational diseases are recorded annually [3].

Occupational traumatism has traditionally been

singled out as one of the most severe types of injuries, most often, consisting of multiple, combined or combined injuries, requiring the participation of specialists of various specialties in their treatment [2-4].

The leading branches in the economy of the Republic of Kazakhstan in terms of traumatism are the mining and coal industry, which are characterized by harmful and severe working conditions [5,6]. In the Karaganda region the indicators of industrial injuries tend to grow, which served as the main purpose of this study.

The aim of the study: To conduct a comparative analysis of the indicators of industrial injuries in Karaganda region for 2015-2019.

Materials and methods

The article analyzes the following data on occupational traumatism in Karaganda region for 2015-2019 years: the number of victims in accidents related to labor activity, including fatal accidents; the number of deaths in accidents related to labor activity by descriptive statistics, as well as material consequences of accidents.

The main sources of information for this study were the materials of the Ministry of Health of the Republic of Kazakhstan and the Bureau of National Statistics of the

Agency for Strategic Planning and Reforms of the Republic of Kazakhstan [7].

The work also used data from the annual statistical collection of the National Scientific Center of Traumatology and Orthopaedics named after Academician N.D. Batpenov "The main indicators of traumatological and orthopaedic care to the population of Republic of Kazakhstan for 2015 - 2019" [8-12].

Results

Over the 5-year period we studied, there was a slight decrease in work-related fatalities from 9.9% in 2015 to 9%

for 2019. However, there was a 1.2-fold increase in material costs (Table 1).

Table 1. The dynamics of indicators of industrial injuries in the Republic of Kazakhstan

Indicator/year	2015	2016	2017	2018	2019
Number of victims of accidents related to labor activities, including fatal accidents, people (abs.)	2 307	2 034	2 045	2 160	2 111
Number of fatalities in accidents related to labor activities (abs.)	229	225	211	215	190
Material consequences of accidents, thousand KZT	1 457 943.8	1 278 543.8	1 503 460.7	1 532 656.2	1 730 202.4

We studied the dynamics of occupational injury rates according to the data of the National Statistics Bureau

of the Agency for Strategic Planning and Reforms of the Republic of Kazakhstan (Table 2).

Table 2. The dynamics of occupational injury rates for 2015-2019

Indicators	2015		2016		2017		2018		2019	
	RK	Karaganda Region	RK	Karaganda Region	RK	Karaganda Region	RK	Karaganda Region	RK	Karaganda Region
The number of injured people in accidents related to work activities, including fatal outcome	2 307	593	2 034	395	2 045	444	2 160	430	2 111	433
The number of deaths in work- related accidents	229	33	225	32	211	34	215	37	190	33
Number of casualties by work-related accidents, including fatal outcomes, per 100 thousand adult population	19,0	58,1	16,6	38,8	16,6	43,9	17,4	42,7	16,9	43,3
The number of deaths caused by work- related accidents, per 100 thousand adult population	1,9	3,2	1,8	3,1	1,7	3,4	1,7	3,7	1,5	3,3
The number of casualties work- related accidents, including fatal outcomes, in Karaganda Region / RK	3,07		2,34		2,65		2,46		2,56	
The number of deaths caused by work- related accidents, in Karaganda Region / RK	1,72		1,71		1,96		2,12		2,17	

Analysis of occupational injuries in Republic of Kazakhstan for 2019 showed that the predominance of injuries among the male population (66%), in terms

of localization, injuries to the upper (30%) and lower extremities (31%), head (16%) prevail at work (Figure 1).

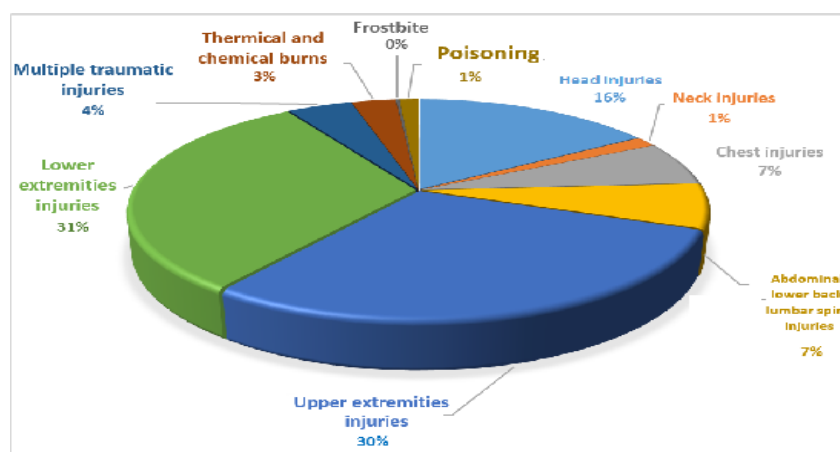


Figure 1 - Structure of occupational injuries by localization in the Republic of Kazakhstan for 2019

In Karaganda region, the number of victims in accidents related to labor activities per 100 thousand adult populations is 2.5 times: republican indicator - 16.9⁰/₀₀₀₀, while for Karaganda region - 43.3⁰/₀₀₀₀ and the number

of deaths is 2.2 times higher than the national indicator: republican indicator - 1.5⁰/₀₀₀₀, while for Karaganda region - 3.3⁰/₀₀₀₀ (Figure 2).

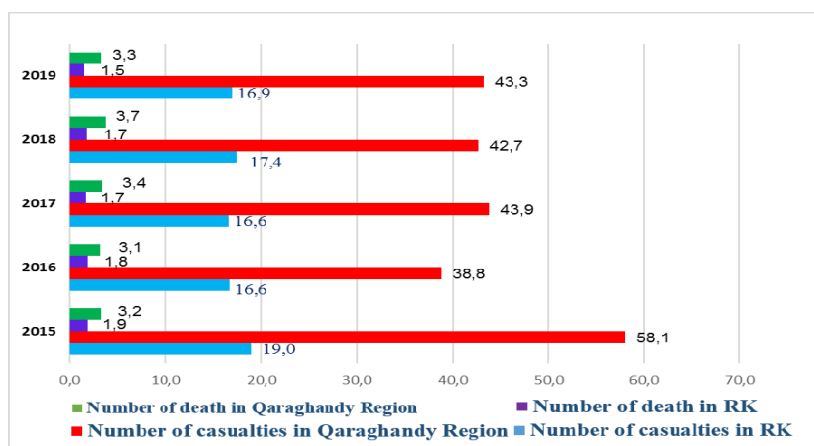


Figure 2. The dynamics of occupational injuries in 2015-2019 (per 100 thousand population)

With a general decrease in deaths from occupational injuries in the republic, the indicator for Karaganda region is 16% of the republican level. By the way, in 2019, the overall injury rate in Karaganda region was 4 793.7⁰/₀₀₀₀.

We also found that the Karaganda region has the highest rate of primary disability from occupational injuries among adults, 1.6 per 10 thousand populations, exceeds the republican level by 3.2 times.

Discussion

In spite of the fact that the indices of occupational traumatism in the territory of the Republic of Kazakhstan are decreasing, the general level of occupational traumatism and occupational morbidity in the country remains high; it requires special attention and implementation of measures based on the results of evaluation of working conditions. In the republic today, about 1.7 million people work in adverse and hazardous conditions [6,15].

In the Karaganda region for a five-year period, the number of victims of industrial accidents decreased by 27%. However, the level of industrial injuries remains quite high and amounts to 21% of the national level.

According to the data of different authors [12-16] such organizational and technical reasons lie at the basis of accidents, occurred at Karaganda region production facilities:

- Unsatisfactory organization of work production,

expressed in the failure of responsible (officials) to implement organizational and technical measures aimed at production safety and labor protection;

- Failure by employers to comply with legal requirements regarding training and briefing of employees;

- Failure to observe the technological, production and labor discipline both by the organizers and by the direct executors of the work;

- Failure by managers and employees to comply with the requirements of regulatory legal acts and standards on occupational health and safety, technical standards on the safe operation of installations, production equipment and mechanisms, etc.;

- Lack of control and supervision over the safe operation of works;

- Use of technically faulty, worn out and obsolete production facilities, etc.

In order to reduce occupational sickness rate and occupational traumatism in the mining industry it is necessary to improve the system of evaluation and accounting of hazardous and harmful factors of the working environment. At present, the procedure for evaluating working conditions is the closest, but it is not always possible to adequately identify and evaluate the factors that affect the personnel [14,16].

At present, the process of assessing working conditions in Republic of Kazakhstan is incomplete, since there is no assessment of the risk factor for occupational diseases and injury hazards. One of the main reasons for the current situation is the decline in the living standards of the

vast majority of the population that has arisen as a result of socio-economic transformations in the country, as well as the result of the weakened attention of state structures to the problems of preventing various kinds of accidents, by creating safe working and living conditions, implementing programs of healthy lifestyles [17].

In order to minimize these factors, it is necessary to develop a methodology that will not only make it possible to evaluate the effectiveness of measures for periodically certifying the working conditions at manufacturing facilities, but will also contain a recommended list of basic measures to bring working conditions in the mining industry of Kazakhstan into line with the regulatory requirements.

Conclusions

The dynamics of the indices of occupational traumatism testifies to its rather high level and the present tendency of growth. Among the adverse social consequences of injuries, the indicators of the permanent loss of the ability to work (disability) are rather high.

It is possible to solve this important and multifaceted medical and social problem of reducing the level of

occupational injuries by improving the system of evaluation and registration of hazardous and harmful factors of the production environment, with attestation of production facilities according to working conditions, as well as by improving the regulatory and legal framework of compliance with working conditions in the mining industry.

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Қарағанды облысындағы өндірістік жарақаттану көрсеткіштерінің динамикасы

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Түйіндеме

Зерттеудің мақсаты. Қарағанды облысындағы өндірістік жарақаттану көрсеткіштерінің динамикасын салыстырмалы түрде саралау.

Әдістері. Мақалада сипаттамалы статистика әдісі арқылы Қарағанды облысындағы өндірістік жарақаттану көрсеткіштері бойынша 2015-2019 жылдардағы мәліметтер талданып, жазатайым оқиғалардың салдарынан туындаған материалдық шығындар сараланды.

Нәтижесі. Қарағанды облысында еңбек қызметімен байланысты жазатайым оқиғалардан зардап шегушілердің саны 100 мың тұрғынға есептегенде республикалық көрсеткіштерден 2,5 есе, ал өлім-жітім саны 2,2 есе жоғары.

Өндірістегі өлім-жітімнің жиілігі 5 жылдық мерзім ішінде біршама төмендегені анықталды: 2015 жылы бұл көрсеткіш 9,9% болса, ал 2019 жылы 9,9%-ды құраған. Алайда материалдық шығын 1,2 есеге өскен.

Қорытынды. 2015-2019 жылдар арасында Қарағанды облысында өндірісте зардап шегушілердің саны азайған. Алайда өндірістік жарақаттану деңгейі әлі де жоғары. Бұл өз кезегінде өндіріс орындарын еңбек жағдайы бойынша аттестациялау рәсімін және тау-кен өнеркәсібінде еңбек шарттарын сақтау бойынша нормативті-құқықтық базаны жетілдіру қажет екенін білдіреді.

Түйін сөздер: өндірістік жарақаттану, өлім-жітім, Қарағанды облысы, Қазақстан.

Динамика показателей производственного травматизма в Карагандинской области

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Резюме

Цель исследования. Провести сравнительный анализ показателей производственного травматизма в Карагандинской области за 2015-2019 годы.

Методы. В статье проанализированы данные по производственному травматизму в Карагандинской области за 2015-2019 годы методом описательной статистики, а также материальные последствия несчастных случаев.

Результаты. В Карагандинской области число пострадавших при несчастных случаях, связанных с трудовой деятельностью на 100 тысяч взрослого населения в 2,5 раза, а число умерших в 2,2 раза выше республиканского показателя.

За 5-летний период отмечается некоторое снижение числа погибших на производстве с 9,9% в 2015 году до 9% за 2019 год. При этом в 1,2 раза возросли материальные затраты.

Выводы. В Карагандинской области за 2015-2019 годы число пострадавших на производстве снизилось. Тем не менее, уровень производственного травматизма остается достаточно высоким, что указывает на необходимость усовершенствования процедуры аттестации производственных объектов по условиям труда, а также нормативно-правовой базы о соблюдении условий труда в горнодобывающей промышленности.

Ключевые слова: производственный травматизм, смертность, Карагандинская область, Казахстан.