

HYGIENIC ANALYSIS OF MORBIDITY AMONG POTASH PLANT WORKERS BY AGE AND GENDER

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ГИГИЕНИЧЕСКИЙ АНАЛИЗ ЗАБОЛЕВАЕМОСТИ РАБОТНИКОВ КАЛИЙНОГО ЗАВОДА ПО ПОЛУ И ВОЗРАСТУ

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Abstract: The study founded that the incidence of workers at the Potash Plant was 7.9% in Group 1, 38.1% in Group 2, 33.6% in Group 3, 19.6% in Group 4, and 0.7% in Group 5. It was founded that the incidence of workers by gender (male workers $86.0 \pm 1.32\%$, female workers $14.0 \pm 1.32\%$) differed sharply. We can see that the highest rates of morbidity in male workers are diseases of the genitourinary system (30.3%), digestive system diseases (22.4%), diseases of the blood and blood-forming organs and certain disorders involving the immune mechanism (11.7%), and diseases of the musculoskeletal system and connective tissue (9.8%), while in female workers, diseases of the blood and blood-forming organs and certain disorders involving the immune mechanism (24.2%), diseases of the genitourinary system (23.7%), digestive system diseases (21.5%), the incidence rate during pregnancy, childbirth and the postpartum period (10.4%), and diseases of the musculoskeletal system and connective tissue (8.6%).

Keywords: Potash plant workers, age groups, illness, temporary disability.

Annotatsiya: Tadqiqotda Kaliy zavod ishchilarining kasallanish 1- guruhda 7,9%ni, 2- guruhda 38,1%ni, 3- guruhda 33,6%ni, 4- guruhda 19,6%ni, 5 guruhda 0,7% ni tashkil qilgan. Ishchilarning jins bo'yicha kasallanish holati (erkak ishchilar $86,0 \pm 1,32\%$, ayol ishchilar $14,0 \pm 1,32\%$) keskin farqlanishi aniqlandi. Kasallanish strukturasi erkak ishchilarda eng yuqori ko'rsatkichlar siydik-tanosil tizimi kasalliklari 30,3%ni, hazm azolari kasalliklari 22,4% ni, qon va qon yaratuvchi azolar kasalliklari va immun mexanizmni jalb etuvchi ayrim buzilishlari 11,7% ni, suyak-mushak tizimi va qo'shuvchi to'qima kasalliklari 9,8% ni, ayol ishchilarda esa qon va qon yaratuvchi azolar kasalliklari va immun mexanizmni jalb etuvchi ayrim buzilishlari 24,2% ni, siydik-tanosil tizimi kasalliklari 23,7% ni, hazm azolari kasalliklari 21,5% ni, xomiladorlik, tug'ruq va tug'ruqdan keyingi davr bo'yicha uchrash darajasi 10,4%ni, suyak-mushak tizimi va qo'shuvchi to'qima kasalliklari 8,6% ni ekanligini ko'rishimiz mumkin.

Kalit so'zlar: Kaliy zavod ishchilari, yosh guruhlari, kasallanish, vaqtinchalik mehnat qobilyatini yo'qotishi.

Аннотация. Исследование показало, что заболеваемость работников калийного завода составила в 1-й группе 7,9%, во 2-й – 38,1%, в 3-й – 33,6%, в 4-й – 19,6%, в 5-й – 0,7%. Установлено, что заболеваемость работников по полу (мужчины – $86,0 \pm 1,32\%$, женщины – $14,0 \pm 1,32\%$) сильно различаются. Видно, что наиболее высокие показатели заболеваемости у мужчин-работников приходятся на болезни мочеполовой системы – 30,3%, болезни органов пищеварения – 22,4%, болезни крови, кроветворных органов и отдельные нарушения,

связанные с иммунным механизмом – 11,7%, болезни костно-мышечной системы и соединительной ткани – 9,8%, а у женщин – на болезни крови, кроветворных органов и отдельные нарушения, связанные с иммунным механизмом – 24,2%, болезни мочеполовой системы – 23,7%, болезни органов пищеварения – 21,5%, заболеваемость во время беременности, родов и в послеродовом периоде – 10,4%, болезни костно-мышечной системы и соединительной ткани – 8,6%.

Ключевые слова: Работники калийного завода, возрастные группы, заболеваемость, временная нетрудоспособность.

Introduction. Due to their specific features, the technological processes of underground mining do not allow for the complete elimination of the effects of harmful production factors on workers. This complicates the implementation of effective primary prevention of diseases. Therefore, many workers working in production departments are at risk of developing occupational diseases. These diseases include pathologies of the circulatory system. Arterial hypertension is especially common among workers working in enterprises with hazardous working conditions, its indicators are 26.6‰ [1, 4, 5, 8].

Since circulatory system diseases can lead to loss of working capacity, in accordance with the requirements of Order No. 302, such problems are considered one of the factors limiting the professional activity of workers engaged in underground mining. This leads to a decrease in economic efficiency and a significant loss of productivity [3, 9].

Several studies have shown that underground miners have a higher incidence of chest (breathing) symptoms and sometimes a decrease in lung function. A total of 410 (Mining A) and 463 (Mining B) workers were cross-sectionally examined. Also, 75% (Mining A) and 64% (Mining B) of the initial group, respectively, were re-examined after 5 years. Over the 5-year period, after adjusting for age, smoking habits and other factors, the exposure measures reduced FEV₁ (forced expiratory volume) by an average of 18 ml per year in Mining A and 10 ml per year in Mining B. The personal concentrations corresponding to this exposure were as follows: 12.6/7.1 mg/m³ inhalable dust, 2.4/0.8 mg/m³ respirable dust, 0.09/0.09 mg/m³ diesel fumes, 0.4/0.5 ppm NO₂ and 1.7/1.4 ppm NO (mines A and B, respectively). Chronic bronchitis symptoms were found to be associated with exposure only in mine B [2, 6, 7, 10].

Objective: To analyze the incidence of disease among potash plant workers by gender.

Object. Data on the morbidity of workers of the Dehqanabad Potash Plant by age group and gender, medical examination results, workers' outpatient card, temporary disability certificate, and appeal to medical services were obtained in 2023-2025.

Results obtained. Analytical indicators of morbidity among employees of the Dehqanabad Potassium Plant JSC by gender (male and female) and age group (5 groups) are presented in Figure 1.

In order to fully reflect the incidence of workers, the workers were divided into 5 age groups. We can see that the incidence among workers, that is, group 1 workers, is 9.14% of the total workers, with an incidence rate of 7.9%, group 2 workers, 42.7% of the total workers, with an incidence rate of 38.1%, group 3 workers, 31.4% of the total workers, with an incidence rate of 33.6%, group 4 workers, 13.9% of the total workers, with an incidence rate of 19.6%, and group 5 workers, the group with the lowest proportion among the total workers, with an incidence rate of 2.6% and an incidence rate of 0.7%. A sharp difference in the incidence of workers by gender (male workers 86.0 ±1.32%, female workers 14.0 ±1.32%) was also found in the number of male and female workers in the workforce (male workers 88.3 ±1.22%, female workers 11.7 ±1.22%).

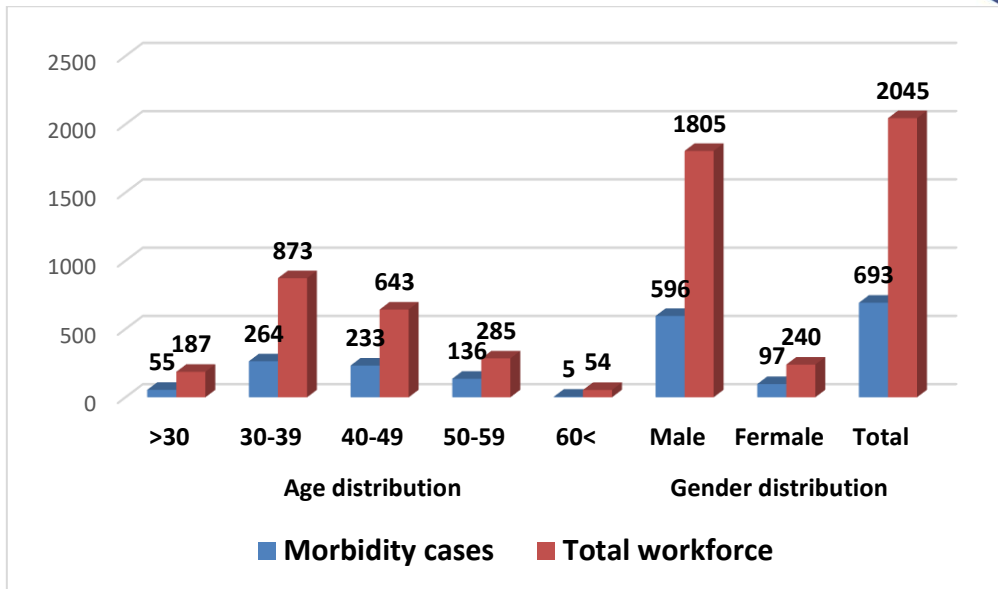


Figure 1. « *Dekhkanabad Potash Plant Distribution of cases of illness by age and gender of employees of the joint-stock company, n* »

Table 1
Age and gender characteristics of temporary incapacity for work among workers (per 100 workers)

Age	Male		Female		Total	
	situation	Average duration of 1 case	situation	Average duration of 1 case	situation	Average duration of 1 case
>30	27±1.05	8.6	44±3.22	7.9	11.1±0.70	8.43
30-39	48.5±1.18	7.5	59.8±1.0	8.0	97±0.38	7.16
40-49	71.5±1.07	7	122.2±1.01	7.5	118.8±1.02	7.0
50-59	110.8±1.07	6.43	188.5±1.03	7.15	47.6±1.11	15.1
60-<	110±1.09	7.3	-	-	66.7±1.05	7.3
Jami	64.1±1.13	7	78.15±1.07	8.9	65.9±1.05	7.34

The age and gender characteristics of temporary disability of workers at the potash plant were analyzed. The results of this analysis are as follows: the highest rate of temporary disability among male workers was observed in the 4th age group (110.8±1.07), while among female workers it was in the 3rd age group (122.2±1.01), and in general, it was in the 3rd age group (118.8±1.02). We can see that the lowest incidence of temporary disability among male, female and general workers was in the 1st age group, i.e., 27±1.05, 44±3.22 and 11.1±0.70 cases, respectively.

The analysis results revealed that the average duration of one case of temporary incapacity for work among workers was the highest for male workers at 8.6 days (age group 1), the lowest at 6.43 days (age group 4), the highest for female workers at 8.0 days (age group 2), the lowest at 7.15 days (age group 4), and in general cases the highest at 15.1 days (age group 4), and the lowest at 7.0 days (age group 3).

The incidence rate of the disease among workers at the potash production plant by gender is presented in Table 6.

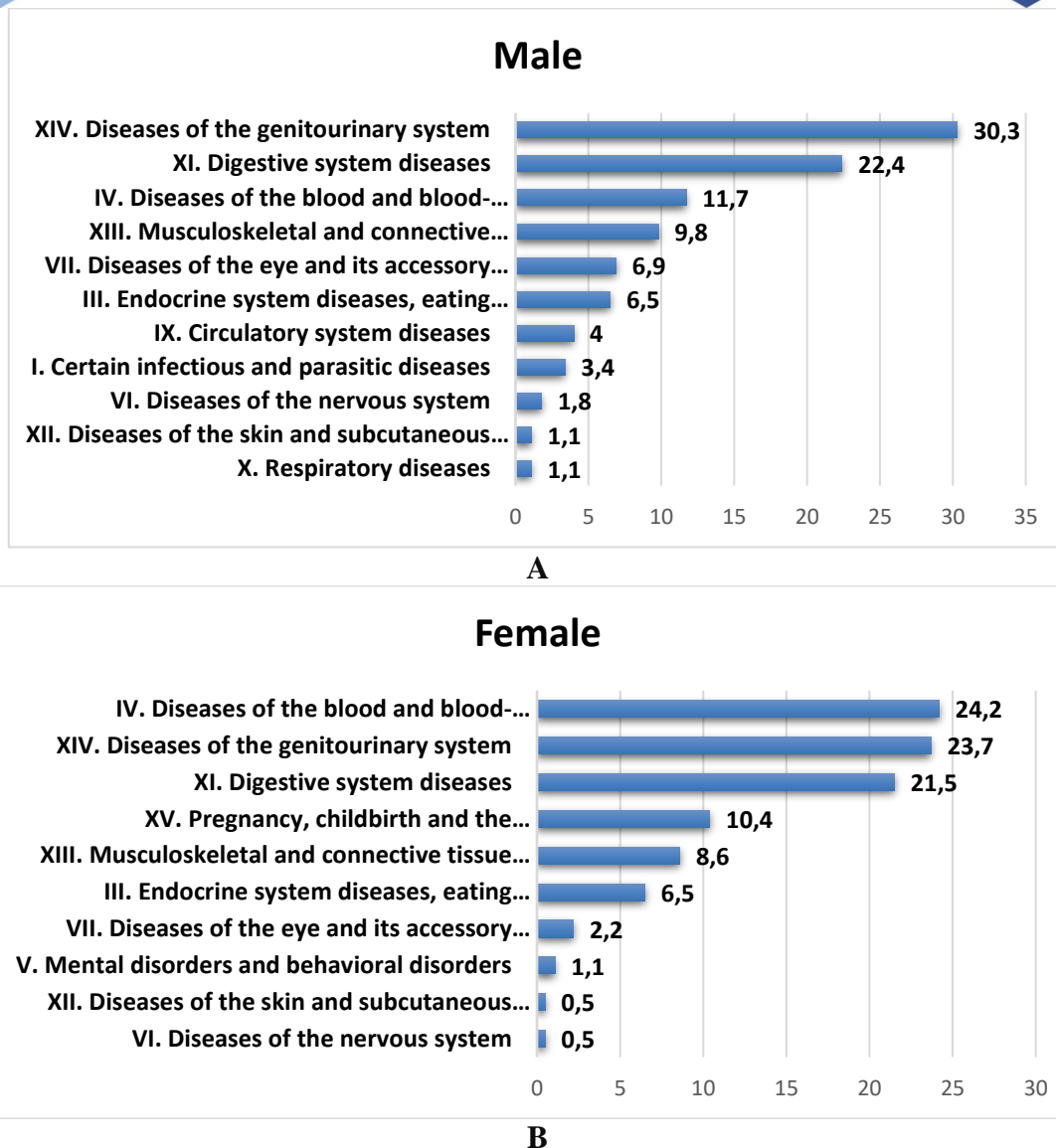


Figure 1. Characteristics of the structure of workers' morbidity by gender (A- Male workers, B- Female workers), %

If we focus on the results of the analysis, it was found that the structure of morbidity among workers differs by gender. The highest rates of morbidity among male workers were diseases of the genitourinary system (30.3%), diseases of the digestive system (22.4%), diseases of the blood and blood-forming organs and certain disorders involving the immune mechanism (11.7%), diseases of the musculoskeletal system and connective tissue (9.8%), diseases of the eye and its accessory apparatus (6.9%), diseases of the endocrine system, eating disorders and metabolic disorders (6.5%), while among female workers, diseases of the blood and blood-forming organs and certain disorders involving the immune mechanism (24.2%), diseases of the genitourinary system (23.7%), diseases of the digestive system (21.5%), the incidence rate during pregnancy, childbirth and the postpartum period (10.4%), diseases of the musculoskeletal system and connective tissue (8.6%), diseases of the endocrine system, nutrition and metabolic disorders (6.5%), and diseases of the cardiovascular system (10.1%). We can see that 6.5% of the cases of systemic diseases are explained by high rates of systemic diseases. These 6 systemic diseases accounted for 87.6% of the total cases of diseases in the structure of diseases in male workers (Figure 1), and in women this figure was 94.9% (Figure 2).

Conclusion. The morbidity rates of workers at the Dehqanabad Potash Plant were analyzed based on the data on the morbidity status of workers by age group and gender, medical examination results, outpatient card of workers, and temporary disability sheet. In this study, it was found that the

highest rate was 38.1% in the 2nd age group (30-39 years old), and according to the morbidity structure, diseases of the genitourinary system accounted for 19.3% of male workers and 25.4% of female workers.

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