HYGIENIC ASSESSMENT OF MINERAL NUTRIENT INTAKE IN THE DIETS OF POTASH PLANT WORKERS

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Abstract. Adequate mineral nutrition plays a crucial role in maintaining workers' health and improving labor productivity in industrial enterprises. Macro- and microelements are essential for metabolic processes, enzymatic reactions, neuromuscular function, and the normal functioning of the immune system. Therefore, a seasonal hygienic assessment of the dietary intake of potash plant workers employed under strenuous working conditions is of significant scientific and practical importance.

Objective. To conduct a seasonal hygienic assessment of the adequacy of mineral nutrient intake in the daily diet of workers employed at the mining complex of the Dehqonobod Potash Plant.

Materials and Methods. The study was conducted between 2023 and 2025 among 528 workers employed at the mining complex of the Dehqonobod Potash Plant. Daily dietary intake was assessed using a specially designed questionnaire. The intake levels of macroelements (potassium, calcium, magnesium, sodium, and phosphorus) and microelements (iron, iodine, selenium, fluoride, and zinc) were determined and compared with established physiological requirements. Statistical analysis of the obtained data was performed using the Statistica for Windows 7.0 software package.

Results. The findings demonstrated seasonal variations in the adequacy of mineral nutrient intake among the workers. Potassium consumption exceeded recommended physiological requirements in all seasons, reaching 3195.4±59.4 mg (127.8%) in winter, 3070.6±57.1 mg (122.8%) in spring, 2919.7±54.8 mg (116.8%) in summer, and 2871.0±53.1 mg (114.8%) in autumn.

Calcium intake exceeded the recommended level during winter (113.6%) but decreased during spring (85.1%), summer (94.7%), and particularly autumn (78.3%). Magnesium intake remained close to recommended physiological requirements throughout the year, ranging from 92.9% to 96.6%.

The highest deviation from recommended values was observed for sodium intake. Sodium consumption reached 4214.4±73.5 mg (324.2%) in winter, 3615.5±68.2 mg (278.1%) in spring, 3196.2±65.4 mg (245.9%) in summer, and 3045.7±61.8 mg (234.3%) in autumn, exceeding physiological requirements by more than twofold in all seasons. Phosphorus intake was also consistently above recommended levels throughout the year.

Iron intake was elevated during winter (161.3%) and remained close to recommended values in the other seasons. Analysis of trace elements revealed persistent

deficiencies of iodine, selenium, and fluoride in all seasons. Iodine intake ranged from 61.5% to 75.1%, selenium from 61.7% to 78.1%, and fluoride from 56.2% to 74.4% of recommended physiological requirements. Zinc intake exceeded recommended levels during winter (125.8%) and remained close to recommended values during the remaining seasons.

Conclusion. The study demonstrated that the adequacy of mineral nutrient intake among workers of the Dehqonobod Potash Plant varied considerably across seasons. Potassium, phosphorus, and especially sodium intake exceeded recommended physiological requirements throughout the year, with excessive sodium consumption representing the most significant hygienic concern. Although calcium and magnesium intake approached recommended levels in certain seasons, a decline was observed during spring and autumn. Deficiencies of iodine, selenium, and fluoride persisted throughout all seasons.

Practical Recommendations. To optimize the dietary mineral composition of workers, it is recommended to increase the consumption of foods rich in iodine, selenium, and fluoride, including fish, seafood, dairy products, nuts, and mineral-rich foods. In addition, sodium intake should be reduced by limiting table salt consumption. Regular hygienic monitoring of workers' dietary intake should also be implemented.

Keywords: potash plant workers, dietary intake, macroelements, microelements, hygienic assessment, seasonal adequacy.

FOYDALANILGAN ADABIYOTLAR:

1. Baymamatovich O. B. et al. Hygienic assessment of the nutritional status of workers of a mining and metallurgical plant //American Journal of Applied Medical Science. – 2026. – T. 4. – №. 1. – C. 161-165.
2. Baymamatovich O. B. et al. HYGIENIC ANALYSIS OF THE NUTRITIONAL STATUS OF UZKIMYOSANOAT WORKERS. – 2025.
3. Jumakulovich E. N. et al. Hygienic assessment of the importance of the biological value of the biologically active additive" virgin tanagon. – 2024.
4. Ortikov B. B. HYGIENIC ANALYSIS OF THE NUTRITION STATUS OF WORKERS //Медицинский журнал молодых ученых. – 2026. – №. 17 (03). – С. 403-406.
5. Ortikov B. B., Khodjayev A. S. HYGIENIC ANALYSIS OF NUTRITION STATUS AMONG MINING AND METALLURGICAL INDUSTRY WORKERS //Methods of applying innovative and digital technologies in the educational system. – 2026. – Т. 3. – №. 1. – С. 132-133.
6. Ortiqov B. B. Kaliy ishlab chiqarish korxonalarida ishlovchi ishchilarning ovqatlanish tartibiga qo'yiladigan gigiyenik talablar //Медицинский журнал молодых ученых. – 2025. – №. 13 (03). – С. 194-200.
7. Ortiqov B. B., Baxtiyorova G. R., Tugilova S. N. Analysis of the main risk group products in the daily diet of tekstil enterprises'employees. – 2024.

8. Ortiqov B. B., Omonov J. P. Hygienic justification of the nutrition of workers in the bread production industry //Новости образования: исследование в XXI веке. – 2025. – Т. 3. – №. 33. – С. 43-48.
9. Ortiqov BB O. J. P. Hygienic justification of the nutrition of workers in the bread production industry. – 2025.
10. Rizzo N.S. Seasonal diet quality variation. Nutrition Reviews, 2019.