

REDUCTION OF OCCUPATIONAL RISKS FOR WORKERS OF THE OIL REFINERY BY INTRODUCING AN AUTOMATED SYSTEM FOR EVALUATION OF OPERATORS' PROFESSIONAL ABILITY**DZMITRY YUKHNO, YULIYA BULAUKA****Polotsk State University, Belarus**

An automated system for psychophysiological testing of operators of oil refineries is designed. The system helps to improve the accuracy of the assessment of operator proficiency and to reduce occupational risk.

Profession of the operator of technological oil refinery units is one of the most popular in oil-processing industry and the most responsible since an operator's wrong actions can lead to emergency. Introduction of modern industrial control systems, the systems of antiemergency automatic protection and remote control, and decrease in number of the technological parameters controlled by physical activity has significantly changed the nature of operators' work. This causes increase in requirements to speed of workers' reactions including actions in emergency situations and to the accuracy of measurements of a control system condition in a technological process, as well as increase in volume and the importance of production information.

It is authentically established that about 80% of industrial accidents at oil refinery and 30% of emergencies take place for the reasons connected with a human factor. The problem of decrease in frequency of accidents and injuries by regulating a human factor influence is important and relevant.

The successful solution of these tasks requires tension of memory and attention, operational thinking, speed and accuracy of reactions, maintaining self-control in emergencies, and other abilities connected both with specific features of a nervous system and with formation of qualities of an operator important for the profession. The discrepancy of a number of physiological and psychological parameters of the worker to requirements imposed by a profession, maybe, on the one hand, the overstrain reason that in turn will lead to development of occupational diseases and, on the other hand, can become the reason of industrial accidents and emergencies.

Therefore, the tendency to determine the professional abilities of a person develops. The methods of diagnosing special abilities are used, with the aim of predicting the future professional success of the applicant for the profession. The application of tests for professional selection will allow to ensure rapid inclusion of personnel in work, to cut costs of their training, to reduce the risk of accidents and injuries.

Professional selection is the determination of the degree of a person's professional suitability for a particular profession or position in accordance with regulatory requirements. There are four aspects of professional selection: medical, physiological, pedagogical and psychological.

1. Medical professional selection is made on the basis of medical procedures to measure the level of development and the formation of the human body and its individual functional systems.

2. Physiological selection takes into account the specific functional state of a person: the degree of fatigue and performance, susceptibility to stress factors, the ability to function effectively under risk conditions, night shifts, information uncertainty.

3. Pedagogical professional selection is aimed at assessing the formation of special knowledge in the employee, the development of his skills and practical professional skills.

4. Psychological selection is realized through verbal tests and questionnaires, instrumentation techniques, personal projective tests, interviews. Such a selection is aimed at identifying and assessing the individual's dispositions and abilities, its value orientations, professional orientation, motivation, interests and preferences.

The main goal of the selection is to attract employees with the necessary qualifications and the necessary personal qualities, capable of solving the tasks assigned to them as effectively as possible. At professional selection the conformity of opportunities and sights of candidates to conditions and features of work on a particular post is defined. The result of professional selection should be the choice of the most profitable worker (i.e., the most professionally relevant activity).

Now professional selection of potential employees in oil refinery is carried out generally by identification of medical contraindications to this profession and compliances of education level and qualification. Psychophysiological and personal qualities of candidates are not usually considered.

Introducing an assessment system of professional suitability of the operator of technological oil refinery units will bring both the social and economic effect which leads to the reduction of number of incidents caused by «human factor» and, as a result, will lead to decrease in professional risk.

Department of Technology and Equipment of Oil and Gas Processing at Polotsk State University is carrying out a research on identification of professionally important qualities of workers in an oil processing industry and on selection of the approved techniques of their assessment. The programme complex is developed for professional selection of operators of technological oil refinery units for an oil processing industry. Pilot studies are carried out with the use of a programme complex for professional selection of personnel of oil refinery among the staff at JSC “Naftan” and PSU students of major specialties.

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