Introduction

Annually 120 million people worldwide suffer occupational accidents. In the EU alone over 2.8 million occupational accidents occur each year and over 3000 people die. Again in the EU, the occupational accidents are the main reason for 146 million working days lost on an annual basis and the financial losses are estimated to 20 billion euro. The industrial traumaism in Bulgaria is higher compared to the EU average. The main objective is to present the dynamics of occupational accidents in Bulgaria for the period 2000-2012. Data used is retrieved from the Information system on accidents of the National Insurance Institute (NI) for the period 2000-2012. NI registered a total of 3086 occupational accidents in 2010, of which 109 had fatal and 66 resulted to disability. The days lost are 252792. In 2011 the registered accidents number is 184 006 and the days lost significantly reduced. The frequency of fatal occupational accidents and the number of the days lost are significantly reduced. In the long term, the downward trend is maintained. The frequency of fatal occupational accidents similarly decreases. Despite the positive changes more effort is needed to reduce the industrial traumaism, especially in the sectors of Construction, Manufacturing, Transportation and Storage.

Keywords: Industrial traumaism, Occupational accidents, Permanent disability

Abstract:

Annually 120 million people worldwide suffer occupational accidents. In the EU alone over 2.8 million occupational accidents occur each year and over 3000 people die. Again in the EU, the occupational accidents are the main reason for 146 million working days lost on an annual basis and the financial losses are estimated to 20 billion euro. The industrial traumaism in Bulgaria is higher compared to the EU average. The main objective is to present the dynamics of occupational accidents in Bulgaria for the period 2000-2012. Data used is retrieved from the Information system on accidents of the National Insurance Institute (NI) for the period 2000-2012. NI registered a total of 3086 occupational accidents in 2010, of which 109 had fatal and 66 resulted to disability. The days lost are 252792. In 2011 the registered accidents number is 184 006 and the days lost significantly reduced. The frequency of fatal occupational accidents and the number of the days lost are significantly reduced. In the long term, the downward trend is maintained. The frequency of fatal occupational accidents similarly decreases. Despite the positive changes more effort is needed to reduce the industrial traumaism, especially in the sectors of Construction, Manufacturing, Transportation and Storage.

Keywords: Industrial traumaism, Occupational accidents, Permanent disability

The comparative analysis of data on occupational accidents shows that after the introduction of preventive approaches that after the introduction of preventive approaches for ensuring health and safety at work (HSWA, 1997) the total number of work related accidents and the number of days lost significantly decreased (Fig. 1 and 6). However, in 2009 there was a tendency to increase the number of fatal work related accidents (Fig. 2).

For the first time in 2009 the number of fatal work related accidents sharply decreased as a result of the prevention activities in the workplace, which is in line with the established stable trend to reduce the total number of occupational accidents, the fatal accidents and the accidents ending up with permanent disability. In the long term the trend of lowering the total number of occupational accidents and those resulting in death were retained, and reduces the frequency of fatal occupational accidents in decline. The number of occupational accidents with permanent disability also decreases (Fig. 3). These positive changes testify to improve prevention and control of the OHS activities.

Results

The operational data of the National Insurance Institute in 2010 registered a total of 3086 accidents, of which 109 were fatal and 66 were permanent disability. The total number of work related accidents was at the level of 2752 accidents and in 2012 - 3027. The number of occupational accidents resulting to death is 86 in 2011, and 82 in 2012. For the same two years the occupational accidents which ended up with disability increased to 20 and 21.

The days lost due to work-related accidents are 154006 in 2011 and 158444 in 2012. In the industries with the highest risk are: Manufacturing - 849 accidents (2010), 701 (2011) and 697 (2012); - Transportation and Storage - 357 (2010), 298 (2011) and 271 (2012); - Construction - 298 (2010), 248 (2011). After the introduction of preventive approaches to ensure OHS the total number of accidents and the number of the days lost are significantly reduced. In the long term, the downward trend is maintained. The frequency of fatal occupational accidents similarly decreases. Despite the positive changes more effort is needed to reduce the industrial traumaism, especially in the sectors of Construction, Manufacturing, Transportation and Storage.

The economic aspect of the occupational accidents and diseases could be found through the share of OASD fund in the structure of ‘Social insurance’ state funds.

Conclusion

The comparative analysis of occupational accidents’ data which represent a heavy weight in social and economic terms shows that after the introduction of preventive approaches for ensuring health and safety at work, the total number of accidents and the number of the days lost significantly reduced. In the long term the downward trend is maintained. The frequency of fatal occupational accidents similarly decreases. Despite the positive changes more effort is needed to reduce the industrial traumaism, especially in the sectors of Construction, Manufacturing, Transportation and Storage.
Introduction:
The implementation of the OHS activities in Bulgaria shows that the well-established classical approach practiced by most of Occupational Medicine Services (OMS) is applied inefficiently and, to some extent typically. Our objective is to present an innovative and effective approach for the management and organization of the OMS activities. The innovation consists of an information system and specialized software that measure, analyse and store, received from the work environmental parameters control and the employees medical examination.

Methods:
We analyzed and tracked the following tasks: we researched and analyzed the national and European experience in the management and organization of activities for creating and maintaining safe and healthy working conditions; we researched and analyzed the new technologies and innovative methods and solutions for the creation and maintenance of healthy and safe working conditions in the organizations; we developed and tested in a number of economic and business organizations the concept and model of an integrated innovative approach, based on the application of an automated health information system and the electronic health file of the employees.

Results:
The implementation of the integrated innovative approach in creating and maintaining safe and healthy working environment will lead to an increase of their competitiveness and effectiveness. The OMS will increase the key conditions of the medical and engineering staff, leading to approximately to a 30% to in capacity.

Discussion:
The process automation has a decisive impact on:
• reduction of the service time for one employee;
• increase of capacity for more enterprises and remote businesses;
• improved control over the human factor risks;
• elimination/mitigation of mistakes due to the human factor intervention;
• carrying out of simultaneous measurements.

Subsystems - Web services

The software platform receives medical data using a variety of methods: as text, as digital information relating to them such medications, test results, suggested or prescribed treatments. Also allows data transmission from the registered systems to be connected to the central database from external systems that are not a part of the internal system. This subsystem runs on the Application Server and its main features are:

1. Taking measurements - subsystem provides transfer of related information from the database in each individual software.
2. User management - subsystem provides input functions and information in order to allow the user registration.

The basic safety and health legal acts lay down general principles concerning the prevention of work accidents and diseases. It contains concepts concerning the prevention of risks, the protection of health, the assessment of risks, the elimination of risks and accident factors, the obligations of the employer, the employee and the supervisory persons. It is the employer's obligation to ensure the safety and health of an employee in any aspect related to work and may not impose financial costs on the workers to achieve this aim. If a worker commits a work-related injury, this shall not discharge him from its responsibilities in this area.

The general principles of prevention are the following:

- Identifying the risks - involving the risks source - adapting the work to the individual, taking the necessary precautions to reduce the less dangerous - developing a coherent overall prevention policy - protecting collective and individual protective measures - giving appropriate instructions to the workers

The software allows the use of the same device by a large number of users. Also allows data transmission from the registered systems to be connected to the central database from external systems that are not a part of the internal system. The subsystem allows the simultaneous use of the same device by a large number of users. This subsystem allows several people communicate in real time, the concept of the OMS can be found by accessing any information in the database, transmitted, stored, processed and distributed throughout the network.

The software enables the use of the same device by a large number of users. The system is based on a standardized architecture and uses a modular design that can be easily extended and maintained. The database stores the user's personal record with all his medical history, medications, test results, and suggestions for treatment.

The database can be accessed through the user management subsystem, which is a web application hosted on the Application Server. This subsystem provides a way to manage the central database from external systems that are not a part of the internal system. This subsystem allows the elimination/minimization of mistakes due to the human factor intervention; improved control over the human factor risks; carrying out of simultaneous measurements.

Results:
The new technologies and innovative methods and solutions contribute to the creation of an increased level of safety and healthy working conditions in the organizations included in Telemedec.

Conclusion: Management principles and modern telemedical methods require that employees are a necessary success factor for the organization and don't include disadvantage for the individual and the corresponding leadership principles include participation of the employees in the management process. The organization's performance must be improved. The work organization principle provides the employee with the necessary balance between job demands, control over their own work, level of skills and social support.

Discussion:
The software platform has a decisive impact on:
• reduction of the service time for one employee;
• increase of capacity for more enterprises and remote businesses;
• improved control over the human factor risks;
• elimination/mitigation of mistakes due to the human factor intervention;
• carrying out of simultaneous measurements.

Smart Medical Monitoring Device

Multifunctional monitoring device for measurement of ECG/blood pressure, body temperature, blood pressure and pulse oximeter. It is a modular, all-in-one remote medical monitoring device that can be used in a variety of applications, such as in patient monitoring, telemedicine, and home care. It is designed to improve clinical outcomes and reduce the risk of errors due to the human factor.

The database stores the user's personal record with all his medical history, medications, test results, and suggestions for treatment.

The database can be accessed through the user management subsystem, which is a web application hosted on the Application Server. This subsystem provides a way to manage the central database from external systems that are not a part of the internal system. This subsystem allows the elimination/minimization of mistakes due to the human factor intervention; improved control over the human factor risks; carrying out of simultaneous measurements.

Results:
The new technologies and innovative methods and solutions contribute to the creation of an increased level of safety and healthy working conditions in the organizations included in Telemedec.

Conclusion: Management principles and modern telemedical methods require that employees are a necessary success factor for the organization and don't include disadvantage for the individual and the corresponding leadership principles include participation of the employees in the management process. The organization's performance must be improved. The work organization principle provides the employee with the necessary balance between job demands, control over their own work, level of skills and social support.

Discussion:
The software platform has a decisive impact on:
• reduction of the service time for one employee;
• increase of capacity for more enterprises and remote businesses;
• improved control over the human factor risks;
• elimination/mitigation of mistakes due to the human factor intervention;
• carrying out of simultaneous measurements.

Smart Medical Monitoring Device

Multifunctional monitoring device for measurement of ECG/blood pressure, body temperature, blood pressure and pulse oximeter. It is a modular, all-in-one remote medical monitoring device that can be used in a variety of applications, such as in patient monitoring, telemedicine, and home care. It is designed to improve clinical outcomes and reduce the risk of errors due to the human factor.

The database stores the user's personal record with all his medical history, medications, test results, and suggestions for treatment.

The database can be accessed through the user management subsystem, which is a web application hosted on the Application Server. This subsystem provides a way to manage the central database from external systems that are not a part of the internal system. This subsystem allows the elimination/minimization of mistakes due to the human factor intervention; improved control over the human factor risks; carrying out of simultaneous measurements.

Results:
The new technologies and innovative methods and solutions contribute to the creation of an increased level of safety and healthy working conditions in the organizations included in Telemedec.

Conclusion: Management principles and modern telemedical methods require that employees are a necessary success factor for the organization and don't include disadvantage for the individual and the corresponding leadership principles include participation of the employees in the management process. The organization's performance must be improved. The work organization principle provides the employee with the necessary balance between job demands, control over their own work, level of skills and social support.

Discussion:
The software platform has a decisive impact on:
• reduction of the service time for one employee;
• increase of capacity for more enterprises and remote businesses;
• improved control over the human factor risks;
• elimination/mitigation of mistakes due to the human factor intervention;
• carrying out of simultaneous measurements.

Smart Medical Monitoring Device

Multifunctional monitoring device for measurement of ECG/blood pressure, body temperature, blood pressure and pulse oximeter. It is a modular, all-in-one remote medical monitoring device that can be used in a variety of applications, such as in patient monitoring, telemedicine, and home care. It is designed to improve clinical outcomes and reduce the risk of errors due to the human factor.

The database stores the user's personal record with all his medical history, medications, test results, and suggestions for treatment.

The database can be accessed through the user management subsystem, which is a web application hosted on the Application Server. This subsystem provides a way to manage the central database from external systems that are not a part of the internal system. This subsystem allows the elimination/minimization of mistakes due to the human factor intervention; improved control over the human factor risks; carrying out of simultaneous measurements.

Results:
The new technologies and innovative methods and solutions contribute to the creation of an increased level of safety and healthy working conditions in the organizations included in Telemedec.

Conclusion: Management principles and modern telemedical methods require that employees are a necessary success factor for the organization and don't include disadvantage for the individual and the corresponding leadership principles include participation of the employees in the management process. The organization's performance must be improved. The work organization principle provides the employee with the necessary balance between job demands, control over their own work, level of skills and social support.

Discussion:
The software platform has a decisive impact on:
• reduction of the service time for one employee;
• increase of capacity for more enterprises and remote businesses;
• improved control over the human factor risks;
• elimination/mitigation of mistakes due to the human factor intervention;
• carrying out of simultaneous measurements.