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System Solutions Supporting the Reducion of Risk Related to Biological Threats, Such as COVID-19 in Relation to Security

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Abstract:

Purpose: *The purpose of the article is an analysis and evaluation of the way the sustainable management functions under the COVID-19 conditions, as well as proposals for solutions in the health and safety management system aiming for the prevention or mitigation of crisis situations.*

Design/Methodology/Approach: *The research is based on a combination of both quantitative and qualitative methods. They involve collection of empirical material based on the examples of entities operating in crisis situations. The size of the research sample is representative for the research conducted. The aim of the research has been defined, and it is consistent with the subject of the article. It assumes an innovative character of the conducted research based on a diagnosis of the state of businesses in crisis situations that predestines us to formulate research problems in the form of questions to which we seek answers. The research uses theoretical and empirical methods. The applied methods have been adapted to the conducted research, which consists of: analysis of normative documents, system documentation of the assessed entities, audit assessment by means of direct and indirect interviews with authorized specialists and experts, observation of processes as apart of audit assessments, conclusions and generalisations based on the collected data and practical experience of the author of the article as an auditor.*

Findings: *The conducted research indicates that it is the systemic solutions, e.g., introduced in accordance with ISO 45001 that allow for quick diagnosis of the level of risk in the workplace in crisis situations. The proposed ways of proceeding may contribute to the creation of a universal, systemic approach to health and safety at work based, among others, on systemic procedures and standardization documents, as well as extended responsibility at all organizational levels of the company.*

Practical Implications: *As a result of the research, when looking for a solution to protect workers from undesirable effects caused e.g. by the COVID 19 situation, the requirements according to ISO 45001 were indicated. By implementing this system, which relies, among other things, on activities related to risks and opportunities associated with a safe workplace, companies can obtain effective protection of workers, also against biological risks.*

Originality/value: *The solutions included in the article may have a practical application for all participants of supply chain in the conditions of the COVID-19 epidemic and after its end, as preventive actions. It presents solutions for companies and proposes a change in the approach to health and safety at work during and after the epidemic.*

Keywords: *System, occupational health, safety management system, threat, risk, COVID-19.*

Paper type: *Research in Security Studies.*

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1. Introduction

Entrepreneurs, struggling to save their companies, began to ask themselves questions: how to protect employees in their workplaces or organize work in remote conditions to maintain its continuity. Preventing disruption of production processes and protecting employees' health and safety at the same time has become a huge challenge. This does not mean that employees' safety in the employee's place was addressed before the COVID-19 situation came into existence. The majority of employers systematically carried out occupational risk assessments for individual workplaces and took care of employees' personal and collective protection measures. However, company managers faced difficult decisions and procedures concerning health and safety at work due to biological risks, such as COVID 19. These risks bring specific problems and raise specific questions when people search systems resistant to various types of crises and will prove effective with new and unexpected risks in workplaces.

As part of the empirical research, the commercial management and management systems of 80 Polish companies were analyzed and evaluated in terms of their ability to respond to a new, so far unidentified threat to secure the working environment and respond quickly to threats in workplaces. It should be noted that the surveyed companies have many years of experience in a systemic approach to management based on the PDCA concept, but they do not have an implemented management system for occupational health and safety according to ISO 45001. Why do management systems pay so much attention to the process-based approach? Because it allows organizations to manage processes and resources in an orderly and systematic way, according to the principle: Plan-Do-Check-Act (PDCA) about risks and opportunities for improvement (ISO 9001:2015, p.5-6). If we add the ISO 45001 requirements to the system solutions based on ISO 9001, we will obtain a tool to comprehensively manage the organization without compromising the quality of products and employee safety. This provides a basis for a balanced and flexible response to changing conditions and real supervision of this particular crisis.

Organizations must identify and assess the risks to which workers may be exposed: from physical hazards to mental health problems, to apply appropriate and adequate protective measures. Every organization should assess, control, and reduce identified risks, including those related to biological hazards such as COVID-19. Workers may encounter unprecedented health and safety risks, such as social isolation, remote work from home.

An occupational health and safety management system, according to ISO 45001, can provide a framework to support the effective protection of workers' mental and physical health. The awareness of occupational health and safety within an organization's culture is emphasized with employees' participation and consultation at all levels and functions. Thus, an effectively implemented management system covers all the necessary issues for improving safety while at the same time continuously communicating with all parties involved. The system is designed to reduce the risk of

injury and/or deterioration of health related to the work performed and ensured a safe and healthy working environment. It represents a best practice in managing health and safety risks, which, if implemented correctly, can help organizations to protect their employees from various risks. The methods used in the publication have been adapted to the conducted research consisting of analysis of normative documents, system documentation of evaluated companies, audit assessment using a direct and indirect interview with authorized specialists and experts, observation of processes and activities, conclusions and generalizations based on the collected data.

An implemented system of health and safety at work in the organization can help create a culture of safe and hygienic work, reducing the number of accidents and illnesses at work and providing benefits in reduced costs and reduced sickness absence.

Many Polish companies, despite having clearly defined requirements, do not take the trouble to implement the system, thus risking employees' health and life and exposing them to various threats. The solutions contained in this article may have a practical dimension for many companies.

2. Specification of the Requirements of the Management System of Health and Safety at Work under Threat from Biological Agents

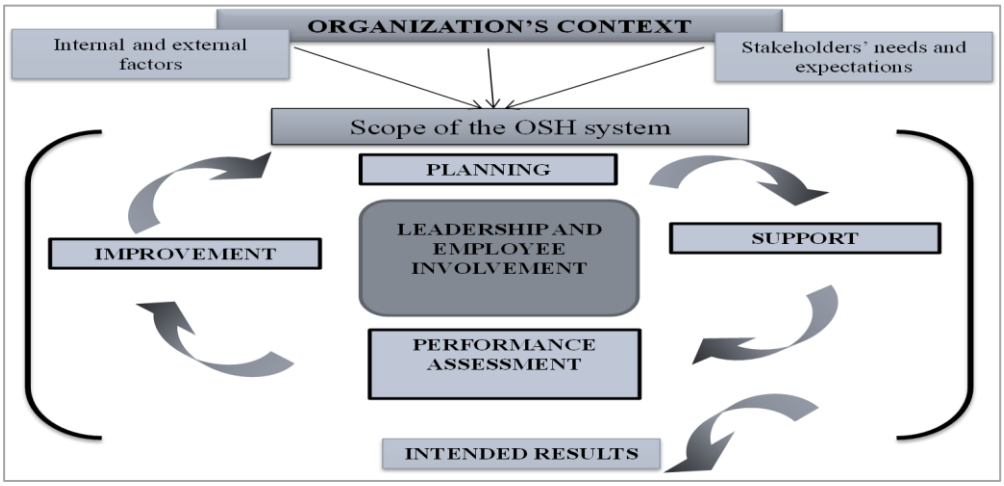
Until now, occupational exposure to biological agents has been associated primarily with health care facilities. People employed in other industries, who worked under conditions that involved exposure to biological agents, remained outside the activity of services dealing with supervision of the working environment and protecting employee health. Protection of workers in all employment areas where there is contact with such agents requires that this issue be taken into account in the daily practice of health and safety services. The classification of biological agents is based on their impact on workers' health. Depending on their contagious properties, biological agents have been classified into 4 hazard groups. The criteria for classifying factors into particular groups are: the ability to cause disease in humans and severity of its course, the possibility of spreading the disease in the population, the possibility of applying effective prevention and treatment.

According to the Labour Code art.2221 § 1, in case of employment of a worker under conditions of exposure to harmful biological agents, the employer shall use all available means to eliminate the exposure or, if impossible, to reduce the degree of such exposure. Therefore, the employer has full responsibility for the employee's safety, health, and life in the workplace. Therefore, it is important to seek support tools outside the legal framework. One of them is the ISO 45001 standard. The key premise underlying the health and safety system, according to ISO 45001, is the identification of hazards and the risk of losses that may occur due to weaknesses in the identified links in the employee protection system. The resulting losses can be severe, sometimes even irreversible for the employee, the employer.

The ISO 45001 standard defines risk as a combination of the probability of dangerous events occurring at work or exposure to threats and the severity of the injury or illness that may result from such events. Risk often refers to potential events and consequences. Examples of risks include COVID 19 infection among the staff, prolonged isolation of the worker, etc. Risks are associated with hazards that include sources potentially causing health problems. On the other hand, OHS opportunities are circumstances or a set of circumstances that can lead to improved OHS performance. They may appear as a result of a situation contributing to the achievement of the intended result, e.g., a set of circumstances that allow the organization to introduce innovative personal protective equipment, adjust procedures in such a way as to communicate with clients safely.

Actions relating to opportunities may also include an analysis of related hazards. A hazard is the result of uncertainty, and any uncertainty can have positive or negative effects. A positive outcome resulting from a hazard may represent an opportunity, but not all positive effects of hazards result in an opportunity (ISO 9001.2015, p. 8). ISO 45001relies on the common elements of ISO standards for management systems and utilizes the already mentioned PDCA model, which provides an opportunity to plan what needs to be done to minimize risks and reduce risks related to employee safety. To meet the requirements of ISO 45001, an organization must plan and implement actions that address both risks and opportunities as well as other requirements relevant to achieving an effective functioning of a health and safety management system. The layout and structure of the chapters in conjunction with the PDCA model are shown in Figure 1.

Figure 1. *Basic areas of requirements of OHS management system in accordance with ISO 45001 in the PDCA matrix*



Source: *Own work based on ISO 45001:2018.*

The standard very precisely indicates specific actions that an organization should take to achieve the intended results, which include:

- An analysis of the company's environment, which should identify internal and external factors and stakeholders that may affect its operation in terms of employee safety, e.g., changes in the law concerning the COVID 19 situation, activities of control bodies, e.g., PIP, PIS,
- involvement and responsibility of top management as well as the development of safe work culture in the organization with the participation of employees/representatives,
- health and safety policy aimed at continuous improvement of performance and monitoring of the system, meeting legal and other requirements, and achieving health and safety objectives by the adopted strategy and policy,
- risk- and opportunity-based approach. Identifying hazards and controlling health and safety risks. Risk analysis should take into account health and safety issues (occupational risk assessment) and the management system (risk assessment in processes and activities),
- allocation of necessary resources concerning personnel competence, communication processes, documentation of undertaken actions regarding health and safety.

What is most important when it comes to the effective functioning of a health and safety system? When studying the requirements, it can be clearly concluded that the most important element indicated in the ISO 45001 standard is the planning and application of activities related to risks and opportunities (Figure 2). The need to identify and assess risks and opportunities about the way the organization operates in terms of health and safety at work has been stressed many times.

The analysis of the document shows that 18 points in the document indicate the need to determine the risks and opportunities when, e.g.:

- we analyze and evaluate external and internal factors influencing the way our organization operates,
- we analyze the expectations and needs of our employees as well as all everyone who work with us or are in any way interested in our business,
- we define the scope and policy of the OSH system in our organization,
- we activate and motivate employees to actively participate in activities contributing to the health and safety system,
- we define legal and other health and safety requirements that the organization must meet,
- we implement actions related to identification, elimination of threats, recording of incidents, introducing corrective actions, and reducing risks related to health and safety functioning.

Figure 2. *Set of requirements for an OSH management system in accordance with ISO 45001 with emphasis on points related to risks and opportunities*

4 Context of the organization **4.1 Understanding the organization and its context** **4.2 Understanding the needs and expectations of workers and other interested parties** **4.3 Determining the scope of the OH&S management system** 4.4 OH&S management system 5 Leadership and worker participation **5.1 Leadership and commitment** **5.2 OH&S policy** 5.3 Organizational roles, responsibilities and authorities **5.4 Consultation and participation of workers** 6 Planning **6.1 Actions to address risks and opportunities** **6.1.1 General** **6.1.2 Hazard identification and assessment of risks and opportunities** **6.1.3 Determination of legal requirements and other requirements** **6.1.4 Planning action** 6.2 OH&S objectives and planning to achieve	7 Support 7.1 Resources 7.2 Competence **7.3 Awareness** **7.4 Communication** 7.5 Documented information 8 Operation 8.1 Operational planning and control **8.1.2 Eliminating hazards and reducing OH&S risks** **8.1.3 Management of change** 8.1.4 Procurement 8.2 Emergency preparedness and response 9 Performance evaluation 9.1.1 **General** 9.1 Monitoring, measurement, analysis and performance evaluation 9.2 Internal audit **9.3 Management review** 10 Improvement 10.1 General **10.2 Incident, nonconformity and corrective action** 10.3 Continual improvement

Source: *Own work based on ISO 45001:2018.*

At this point, the question arises as to what methods and techniques should be used to enable the organization's managers at various management levels to identify hazards, including biological hazards properly, assess risks and evaluate the OSH system's effectiveness in their own organization.

For a risk management system, some advice can be found, e.g., in the ISO 31000 standard of 2018. This standard can be complemented by the IEC 31010 standard, which presents possible techniques and methods of risk assessment, e.g., Ishikawa diagram, MAZOP, Tree Analysis (FTA, ETA, CCA), and many others. General information is provided for each of the methods and techniques and the possibilities of their use. This standard's application may influence the choice of the most appropriate method/technique for risk analysis and assessment for a given organization and area. To perform a full assessment of risks and opportunities, several elements have to be taken into account because of its stage-based structure, as shown in Figure 3.

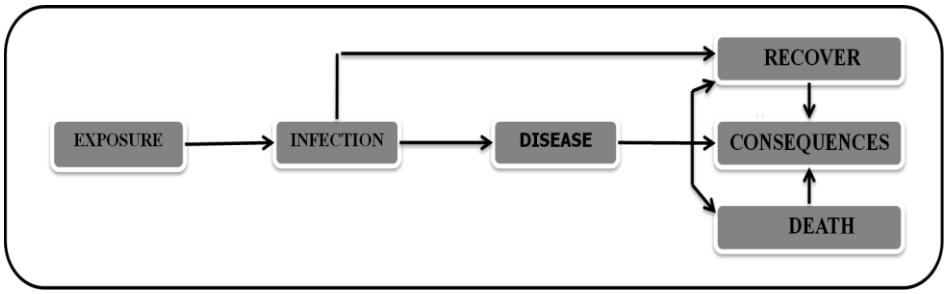
Risk assessment consists of the following elements: hazard identification, hazard characterization, exposure assessment, and risk characterization. The selection of an appropriate process depends on reliable data that reduces uncertainty and increases the estimated risk's reliability (Zietek and Miechowicz, *et al.,* 2012). If we consider

the risks and threats associated with infectious diseases, we must consistently determine the stages of development of such diseases (Figure 4).

Figure 3. *Stages of a risk management process included in the OSH management system*

Source: *Own work based on (Risk management 2018, 2019).*

Figure 4*. Development stages of an infectious disease*



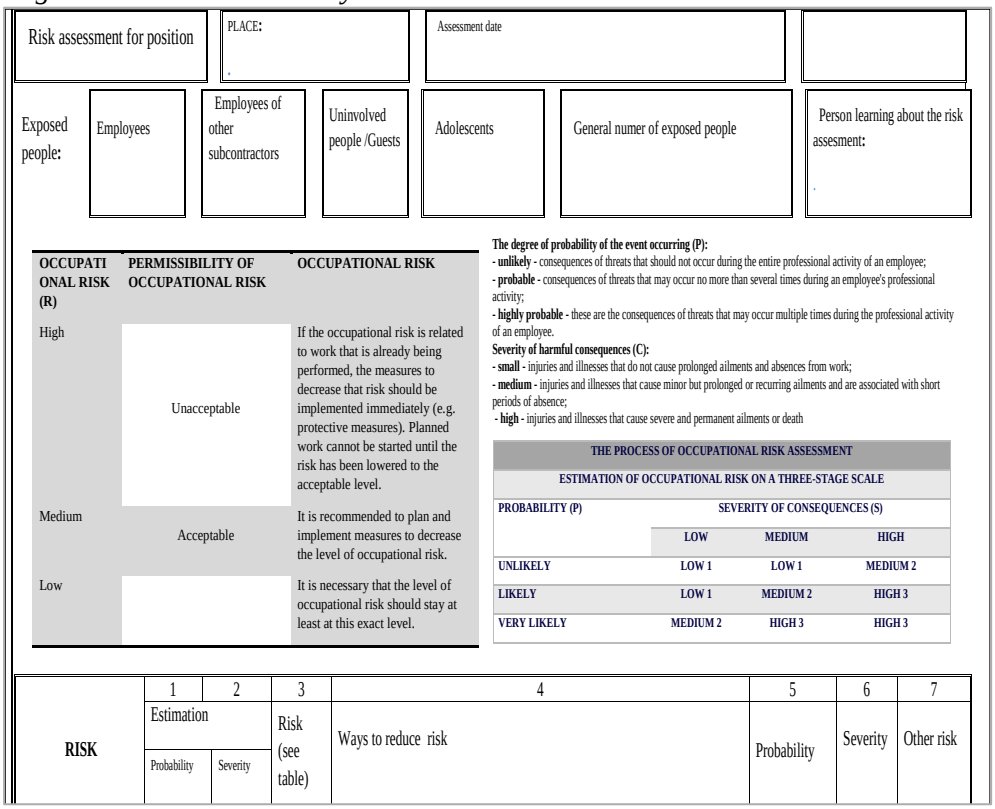
Source: *Own study based on (Zietek, Miechowicz et al., 2012).*

The main development stages of infectious disease include exposure, infection, disease, and consequences, i.e., potentially: recovery, consequences of the disease, or death.

In practice, qualitative methods are generally used to assess risks and opportunities in the OSH management system, including occupational risk assessment. These are methods in which occupational risk assessment is subjective. Only preparation of necessary information and a reliable approach to assessment will make it objective, with the example being the most widespread method – Risk Score. It allows for estimating both the risk related to rarely occurring events with catastrophic consequences and the risk of frequently occurring events with insignificant consequences. The Risk Score method is used to assess processes and workstations

where frequent changes in employees' exposure to working environment factors (Antosz, Miąsik 2015). In this method, the value of occupational risk is determined by multiplying the value of three parameters (potential effects of the threat, exposure to the threat, probability of threat occurrence) selected based on specified tables. Developing a manual is a good practice that helps in identifying potential risks and opportunities in OSH, managing these risks and opportunities, and eliminating and reducing threats. This will facilitate continuous updating of hazards when new hazards appear, as in the case of COVID 19. A model of such assessment is shown in Figure 5.

Figure 5. *Example of a method and form of occupational risk assessment on a three-stage scale used in an OSH system*



Risk assessment for position | PLACE: | Assessment date

Exposed people: | Employees | Employees of other subcontractors | Uninvolved people /Guests | Adolescents | General numer of exposed people | Person learning about the risk assesment:

OCCUPATIONAL RISK (R)	PERMISSIBILITY OF OCCUPATIONAL RISK	OCCUPATIONAL RISK
High	Unacceptable	If the occupational risk is related to work that is already being performed, the measures to decrease that risk should be implemented immediately (e.g. protective measures). Planned work cannot be started until the risk has been lowered to the acceptable level.
Medium	Acceptable	It is recommended to plan and implement measures to decrease the level of occupational risk.
Low		It is necessary that the level of occupational risk should stay at least at this exact level.

The degree of probability of the event occurring (P):
- **unlikely -** consequences of threats that should not occur during the entire professional activity of an employee;
- **probable -** consequences of threats that may occur no more than several times during an employee's professional activity;
- **highly probable -** these are the consequences of threats that may occur multiple times during the professional activity of an employee.

Severity of harmful consequences (C):
- **small -** injuries and illnesses that do not cause prolonged ailments and absences from work;
- **medium -** injuries and illnesses that cause minor but prolonged or recurring ailments and are associated with short periods of absence;
- **high -** injuries and illnesses that cause severe and permanent ailments or death

THE PROCESS OF OCCUPATIONAL RISK ASSESSMENT			
ESTIMATION OF OCCUPATIONAL RISK ON A THREE-STAGE SCALE			
PROBABILITY (P)	SEVERITY OF CONSEQUENCES (S)		
	LOW	MEDIUM	HIGH
UNLIKELY	LOW 1	LOW 1	MEDIUM 2
LIKELY	LOW 1	MEDIUM 2	HIGH 3
VERY LIKELY	MEDIUM 2	HIGH 3	HIGH 3

	1	2	3	4	5	6	7
RISK	Estimation		Risk (see table)	Ways to reduce risk	Probability	Severity	Other risk
	Probability	Severity					

Source: *Own work.*

- Hazard identification should begin by listing all workstations present in the organization and then analyzing the following: (also in terms of exposure to biological factors):
- the activities performed as well as the manner and frequency of their performance,
- applied physical measures/infrastructure, basic and auxiliary materials/substances and their composition, work technology used,

- manner of work organization (supervised work, independent work, teamwork, work in open spaces),
- conditions of the working environment, i.e., dust, noise, lighting, chemical agents, biological agents, temperature, air humidity,
- qualification and health requirements for employees,
- employees: women, men, adolescents, the disabled,
- applied technical, organizational, collective, and individual protective measures, procedural safeguards (instructions) for individual machines, devices, networks, and activities,
- maintaining the ergonomics,
- markings, signaling;
- human factor
- situations that occur in the close vicinity of the workplace as a result of the actions taken.

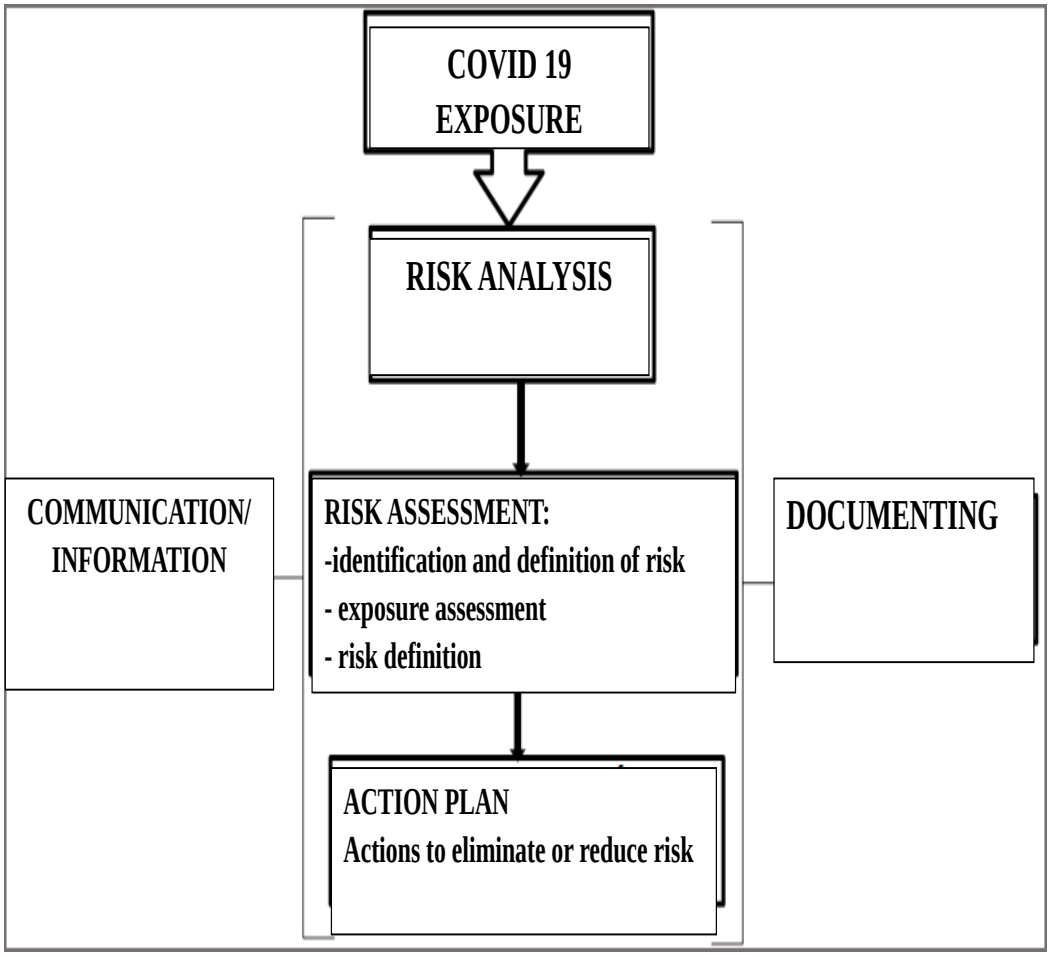
Having such a list (which is not exhaustive because it depends on many factors specific to the organization), we can choose a risk assessment method. An organization may apply different methods of risk assessment about the identified hazards. We have mentioned some of the above. The method and its complexity do not depend on the organization's size, but rather on the way the OSH system is implemented and on the hazards that occur.

3. Occupational Risk Assessment with Regards to the COVID-19 Biological Hazard on Selected Examples - Empirical Results

Based on the theoretical premises presented above, we can move on to the analysis of threats related specifically to the case of the announced epidemic. For employees, the risk related to SARS-CoV-2 depends on how the virus spreads between people: the severity of the resulting disease and pre-existing illnesses that employees may have. According to the CDC (Centers 2020), some people, including the elderly and people with underlying diseases such as heart disease, lung disease, or diabetes, are more likely to have more serious complications as a result of COVID-19. The risk of workers being exposed to SARS-CoV-2 during a pandemic may partially depend on the type of industry and direct contact with a person potentially at risk of being infected by the virus. Other factors, such as the social conditions in which workers live and work, their out-of-work activities (including traveling to COVID-19 outbreak areas), and individual health conditions may also affect the risk of COVID-19 infection developing complications after the disease.

In 80% of the organizations surveyed, the risk assessment activities were undertaken in five clearly defined stages. A schematic diagram of a procedure used for exposure risk assessment in the company is presented in Figure 6.

Figure 6. *Procedure for the analysis and assessment of risk related to COVID 19 exposure in enterprises*



Source: *Own work.*

Analyzing the methods used for risk assessment in the surveyed organizations, the author cannot agree that the Risk Score method is prevalent. This is especially evident where there are frequent changes in the exposure of employees to working environment factors. This method was used by 30% of the surveyed organizations, whereas 60% chose a simple method by the PN-N-18002 standard, indicated as an example in this publication, and 10% used other methods indicated in the IEC 31010 standard, including Preliminary Hazard Analysis Method (PHA), Risk Graph Method, Occupational Safety Analysis Method (JSA).

The risk of exposure to COVID-19 was divided into many levels, depending on the method chosen and the division criterion used: from critical, very high, high, medium, and lower risk, although the three-stage division was the most popular choice.

The lower risk (unlikely) of exposure to SARS-CoV-2 included works that do not require contact with people who are known or suspected to be infected with SARS-CoV-2. Employees in this category are characterized by minimal occupational contact with the public and co-workers. For example, this may include but is not limited to:

- remote workers (working from home),
- office workers who do not have frequent contact with other employees, customers, suppliers,
- production workers who do not have frequent and close contact with the environment,
- employees providing services only via telephone.

The medium risk (likely) of exposure to SARS-CoV-2 included works requiring frequent/close contact with people who are not known to be infected with COVID-19, but this may be very likely due to the type of work they do. Employees in this category are people who may have:

- frequent contact with travelers who return from delegations, other company branches, both at home and abroad,
- frequent contact with different social groups (e.g. at schools, in densely populated working environments and large stores).

The risk of high and very high exposure (very likely) included work with a high potential for exposure to known or probable sources of SARS-CoV-2. For example, this may include, but is not limited to:

- employees who have very frequent contact with travellers who return from delegations, other branches, both at home and abroad,
- employees of large organizations who have very frequent contact with different groups in the workplace
- health care and support staff (hospital staff),
- medical transport workers (drivers of ambulance vehicles),
- funeral services workers,
- healthcare professionals (e.g. doctors, nurses, dentists, paramedics) who perform aerosol-generating procedures (e.g. intubation, some dental procedures or collecting invasive samples) on patients who are infected or are suspected of being infected with COVID-19,
- medical or laboratory personnel collecting samples from patients who are infected or are suspected of being infected with COVID-19,
- employees in the retail business, especially in critical environments and/or environments with large numbers of customers,
- workers in solid waste and wastewater treatment facilities, environmental services (i.e. cleaning), home repair services

– social workers in positions requiring contact with community members who may be spreading the virus.

Of course, this is not an exhaustive list, as the organizations surveyed represented different industries. In 96% of the organizations, employers analyzed, evaluated, and updated risks very carefully to determine if and when their employees are at greater risk of contracting the virus while performing their jobs in the workplace. A snippet of such an assessment is shown in Table 1.

Table 1. *Example of occupational risk assessment on a selected example of a company*

OSH service	**Occupational risk assessment for workplaces with a potential risk of SARS-COV-2 contraction** **Factors associated with the necessity to perform action involving exposure to biological, psychological and social factors**			Version 1, 30.03.2020 UNTIL FURTHER NOTICE
Hazard	**Hazard source and consequences**	**Transmission route**	**Risk reduction measures**	**Occupational risk assessment**
SARS-CoV-2 virus	source: office building, production floor, people Consequences: muscle pain, cough, respiratory diseases COVID – 19, pneumonia, myocarditis, death.	contact with co-workers, /customers /suppliers; droplet transmission exposure, direct	disinfection of rooms, surfaces and frequently touched devices, reduction of contact with co-workers, customers, suppliers, introduction of home office, shift work, employee rotation, contact via telephone or email, maintaining a safe distance from the interlocutor, use of personal protective equipment – disposable gloves, masks, face shields, frequent hand washing and disinfection adherence to the existing work organization procedures, following the introduced hygiene and sanitary procedures, informing superiors about contraction symptoms and/or contact with people with confirmed infection with SARS-CoV-2, zachowanie szczególnej	high Po zastosowaniu środków zapobiegawczych Low Continuous supervision
Stress, depression, anxiety, fear of	Source: SARS-CoV-2 virus Consequences: diseases,	contact with co-workers, /customers / suppliers;	reduction of contact with co-workers, customers, suppliers, improvement of comfort during work exercising special caution and following general hygiene rules (disinfection)	high after introduction of preventive measures

infection	insomnia, isolation, fear of social rejection, nervousness,	droplet transmission exposure, direct	use of personal protective equipment – disposable gloves, masks, face shields, frequent hand washing and disinfection adherence to the existing instructions, following the introduced hygiene and sanitary procedures workstation training, conversations with the superiors	Low

Source: *Own work based on the documentation provided by the companies.*

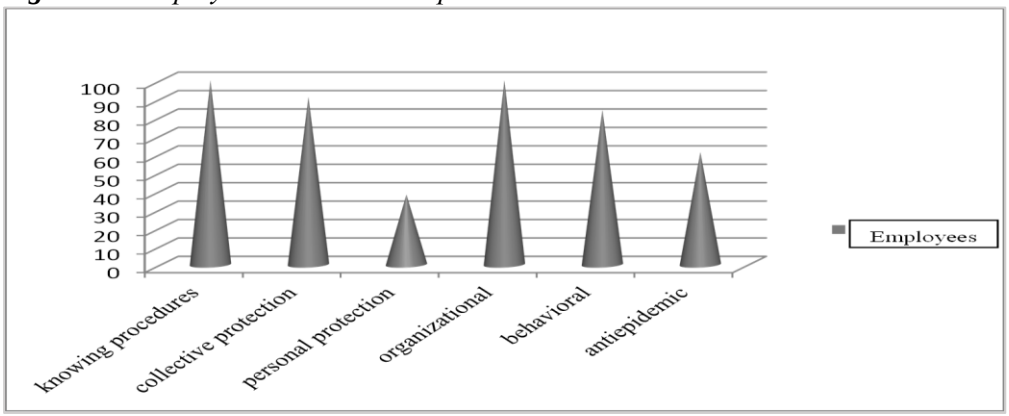
Empirical research in 80 companies shows that 21% of companies have not developed an action plan to reduce or eliminate risk or have developed an imperfect one, even though properly planned safety and control measures may affect normal operation and prevent the spread of SARS-CoV-2.

What types of measures have been planned and applied to eliminate risks in the surveyed organizations? In 79% of companies, the following measures were taken immediately after the biological threat was announced:

- Collective protection measures, e.g., plexiglass enclosures, separation of workstations with partitions. It was not possible to use partitions, e.g., on production floors, in certain warehouses; an additional social distancing space was established for the employees. In 87% of companies, the occupational health and safety services once again inspected the ventilation in staff rooms,
- organizational measures, e.g., changing work organization to a one with a greater share of remote work, where possible. In places where this was not possible, threats to employees were minimized, shifts work, increased duration and number of breaks at work,
- Personal protective equipment, e.g., FFP2 and FFP3, N95 and other half masks,
- behavioral measures, e.g., observation of compliance with procedures and instructions, management, supervision of employees to observe how they adapt to the changes,
- anti-epidemic measures, e.g., agents for disinfecting hands and the working environment - frequently touched technical equipment, increasing the frequency of workspace cleaning and reminding them about hygiene rules.

Did the employees comply with preventive measures? To answer this question, the author used a direct interview method with employees of companies that applied 5 groups of preventive measures to reduce occupational risk. The results are presented in Figure 7.

Figure 7. *Employees' adherence to preventive measures*



Source: *Own work.*

Direct research conducted on a group of 100 employees shows that only 38 people complied to use personal protective equipment, while 61 people complied with the order to use anti-epidemic measures. More than 80% of the employees who did not follow the recommendations for wearing masks and disinfection did not believe in their effectiveness or even doubted the validity of any coronavirus restrictions. In places where there was no supervision and monitoring, these measures were not applied.

On the other hand, in situations where there was a threat of direct sanctions or where it was not possible to disobey recommendations or orders, the results were much better due to direct coercion or fear of dismissal. Many criticize the official recommendation that the SARS-CoV-2 threat is taken into account in the risk assessment (ATEST 2020). Companies should assess the risk of infection for the sake of their operations and their employees, but this is not about the occupational risk. The health and safety service may be involved in companies' preventive activities, but it should explain to employers what the essence of occupational risk is. Therefore, as indicated by ISO 45001, the authentic participation of employees and their representatives in the process of hazard identification and risk assessment verification is essential.

As in normal working conditions, the identification of physical, biological, chemical, and psychosocial risks and a properly conducted risk assessment in the working environment is a starting point in occupational health and safety management.

4. Conclusions

It is too early to conclude about the coronavirus situation. Regardless of what kind of threat the working environment has been affected with, one thing is certain: hygiene is a factor that has a huge impact on health. During the announced epidemic, the organization of work in Polish organizations changed. Workplaces are most often

equipped with cleaning and disinfecting agents, remote work is introduced, and direct customer service activities are limited.

For many employers, ad hoc countermeasures are not enough, and they are looking for systemic solutions, e.g., compliant with ISO 45001. Many employees are exposed to risk every day in their professional life. Risk assessment is an important element in creating appropriate working conditions for an employee, eliminating hazards, and improving employees' safety and health. Properly conducted risk assessment provides a basis for preventing illnesses and accidents caused by hazards in the workplace. That is why it is important to increase employees' involvement in establishing and implementing measures for safe and healthy work in situations of particular exposure to risk. The risk assessment process is not a one-off process, and organizations should periodically carry out such assessments to eliminate or reduce risks at the workplace.

The paper refers to examples of risk assessment methods that are not perfect. The main weakness of qualitative assessment is that the assignment of a risk to the appropriate category is often based on subjective and arbitrary indications, especially regarding the probability of the threat. However, the qualitative risk assessment allows for developing general guidelines that are completely sufficient at a certain stage of the assessment, e.g., the method implemented by the PN-N-18002 standard, which showed compliance with other methods' greatest number of threats. Today, organizations need to remain vigilant to address the wide range of health and safety risks to which workers can be exposed: from mental health problems to physical hazards, and now risks such as COVID-19.

Some workers may be exposed to hazards resulting in an infection. Others, who do not face an immediate risk, may encounter new health and safety risks, such as the impact of isolation at home on their psyche. Ensuring employees' safety and maintaining the organization at the usual level during the coronavirus (COVID-19) pandemic is a major challenge. Therefore, the ISO 45001 occupational health and safety management system helps to set up a framework to support effective protection of employees' mental and physical health.

The awareness of occupational health and safety within an organization's culture emphasizes involvement and consultation with employees at all levels and functions. The system is designed to reduce the risk of injury and/or deterioration of health related to the performed work and ensure a safe and healthy working environment. It represents a best practice in managing health and safety risks, which, if implemented correctly, can help organizations to protect their employees from various risks. This is important because, despite the gradual switch to normal business, some of the safety measures implemented at workplaces to limit the virus's spread may be maintained because of the potential risk in the future. It is important to remember that employers are required to correct the risk assessment in the event of changes in the work process and include all new risks in it.

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