



ФАКУЛТЕТ ЗА ИНЖЕЊЕРСКИ МЕНАЏМЕНТ

Бр. 200-3/622

Датум: 09.11.2022 год.

ИЗВЕШТАЈ О ОЦЕНИ ДОКТОРСКЕ ДИСЕРТАЦИЈЕ**-обавезна садржина- свака рубрика мора бити попуњена**

(сви подаци уписују се у одговарајућу рубрику, а назив и место рубрике не могу се мењати или изоставити)

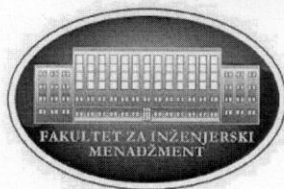
I ПОДАЦИ О КОМИСИЈИ

1. Датум и орган који је именовao комисију
Наставно-научно веће Факултета за инжењерски менаџмент, Универзитет „Унион-Никола Тесла“ у Београду, на седници одржаној дана 04.11.2022. године
2. Састав комисије са назнаком имена и презимена сваког члана, звања, назива уже научне области за коју је изабран у звање, датума избора у звање и назив факултета, установе у којој је члан комисије запослен:
 1. Проф. др Владимир Томашевић, редовни професор, Факултет за инжењерски менаџмент, ужа научна област Инжењерски менаџмент, избор у звање 01.10.2015. године
 2. Проф. др Срђан Томић, редовни професор, Факултет за инжењерски менаџмент, ужа научна област Менаџмент, избор у звање 27.01.2020. године
 3. Проф. др Дарко Танасковић, професор емеритус у пензији, ужа научна област Орјенталистика, избор у звање 2019. године
 4. Проф. др Бранко Крга, редовни професор у пензији, ужа научна област друштвено-хуманистичка, избор у звање 2009. године
 5. Проф. др Душан Пророковић, ванредни професор, Институт за међународну политику и привреду, ужа научна област међународни односи и науке безбедности, избор у звање 2018. Године

II ПОДАЦИ О КАНДИДАТУ

1. Име, име једног родитеља, презиме: Mubarak Saeed Burshaid Al Dhaheri
2. Датум рођења, општина, држава: 18.05.1970, Al-Ain, UAE
3. Назив факултета, назив студијског програма дипломских академских студија – мастер и стечени стручни назив:

B.Sc. – Public Administration – Dec 1993 Faculty of Economics & Administrative Sciences UAE University – Al Ain;
The Master Degree of Strategic and Security Studies – June 2014 National Defense College- Abu Dhabi UAE Master of Management Information Systems - 1999 Strayer University – Virginia – USA



4. Година уписа на докторске студије и назив студијског програма докторских студија:

2019, Inženjering i menadžment strategijskih bezbednosnih sistema.

5. Научна област из које је стечено академско звање магистра наука:
strateški bezbednosni menadžment, inženjerski menadžment

III НАСЛОВ ДОКТОРСКЕ ДИСЕРТАЦИЈЕ:

MEETING THE CHALLENGES OF BIOLOGICAL THREATS: STRENGTHENING
THE UN ROLE IN BIOLOGICAL NON-PROLIFERATION REGIMES

Mentor: Prof. Dr. Elizabeta Ristanović, PhD

IV ПРЕГЛЕД ДОКТОРСКЕ ДИСЕРТАЦИЈЕ:

Навести кратак садржај са назнаком броја страна, поглавља, слика, шема,
графика и сл.

ABSTRACT (SUMMARY):

There is no doubt that the security architecture of the world is rapidly and dynamically changing in the time we live in. These changes bring new security challenges. One of them is certainly the increasing danger of possible use of biological weapons in war and terrorist activities. Biological warfare has always attracted people, since the earliest times of civilization, and in all wars, many people died from epidemics of infectious diseases that are a natural companion of war conflicts. During the Cold War period, biological weapons (BW) were part of the arsenals of both world superpowers. Nevertheless, September 11, 2001 represents a turning point after which the use of weapons of mass destruction (WMD), including biological ones, becomes part of the propaganda narrative following each local or regional war conflict that have been fought since then. Until the beginning of the COVID-19 pandemic, in the background of which all the time was taking place serious geopolitical game, as well as the beginning of the great re-composition of the world that is inexorably moving towards multicentrism, as it is clearly confirmed by recent events on the world stage, assessments of the prospects and the effects of the possible use of biological weapons were reduced to the formulation "low probability-high consequence", and therefore great attention was paid to preventing and deterring of potential users, primarily by establishing legal regulations in national frameworks in order to sanction the potential production, storage, transfer and use of biological agents and their products - toxins. The basis for drafting such acts was the



Convention on Biological Weapons (BWC) - Biological Convention from 1972 (full name of the document: *Convention on the Prohibition of the Development, Production and Storage of Bacteriological (Biological) and Toxic Weapons and on Their Destruction*), which has certain shortcomings, like any act of this nature and represents only an umbrella document in this area. According to the current regulations, the main role and responsibility for the implementation of the Convention rests with the signatory states, and it takes place through three levels (one of which is legally founded, the second is political, while the third one is completely voluntary). The UN Security Council has the role of final arbiter in the case of allegations of violations of the Biological Convention. The Implementation Support Unit supports Member States in their efforts to implement the provisions of the Convention, while the World Health Organization (WHO), the Food and Agriculture Organization of the UN (FAO) and the World Organization for Animal Health (OIE) have a potential expert and advisory role in clarifying events as well as the situations in this domain, in order to help the signatory states in comprehensively and successfully dealing with this complex international phenomenon. However, the level of verification remains one of the basic challenges related to the disarmament and prevention of the proliferation of biological weapons, because for some reason an independent expert international body under the auspices of the UN - *the Organization for the Prohibition of Biological Weapons* has not yet been formed. It seems for some reason politically unacceptable to most actors on the world stage, such as the negotiations on verification mechanisms that have been stalled for the past 20 years. The progress of science, especially in the field of molecular biology, biotechnology and nanotechnology, pharmacology, synthetic biology, can lead to serious consequences in terms of the further development of more dangerous and deadly biological weapons, whether it is a completely new, even genetically or ethnically specific or a result of modification of the existing ones, as well as it could present a combination with other biological, chemical and radiological, but also with conventional weapons. Accordingly, within the framework of international arrangements and multilateral agreements for prevention of the proliferation of weapons of mass destruction and subsequent control mechanisms, including those related to dual-use goods and assets, this problem should be a subject of specific and continuous monitoring.



All this primarily refers to the already mentioned rapid development of science in this area, which brings fantastic benefits in the development of new drugs, diagnostic tools, therapy, but also makes possible development of potentially deadly and very specific biological weapons, as well as means and opportunities for their dissemination and spreading. This is precisely why databases related to the structures of the genomes of humans and microorganisms should be secured, the work of laboratories and their capabilities should be carefully monitored, the epidemiological and epizootological situation in the various geographic fields should be followed, and preventive measures and an adequate response should be undertaken in the event of a potential threat appearance. It must be a constant proactive task and obligation of all participants and the signatories of the Biological Convention, as well as of the mentioned international control body, the formation of which would be an imperative of the times, especially at the actual geopolitical moment. Rules and obligations must be equally binding for all actors, regardless of the size and power of states in the geopolitical arena. It is extremely important to implement measures of constant education and raising the awareness of researchers in this domain, as well as strengthening their ethical code, so that their knowledge is not misused for the further development of dangerous biological weapons. It is certainly a specific task for the intelligence-security, academic, medical-biological sectors, but it also must be an important area for the improvement of international cooperation in this domain. Preventing the proliferation of biological weapons certainly requires a qualitatively new approach and strengthening of mechanisms for the implementation of the Biological Convention at the international level, sincere cooperation, as well as essential results in the field of verification and control in order to strengthen international security and common development and prosperity.

Keywords:

Weapon of mass destruction (WMD), Biological weapons (BW), Biological Weapons Convention (BWC), Non-Proliferation Control Regimes, Organization for prohibition of bioweapons (OPBW).

The doctoral thesis is written on 156 pages and consists of four chapters. The first chapter INTRODUCTION have five subchapters and 41 pages, the second one is related to PROBLEM, SUBJECT AND GOAL OF RESEARCH, while the third



chapter dealing with **RESEARCH METHODOLOGY**. In the fourth chapter are presented the obtained **RESULTS AND DISCUSSION** and it consists of five subchapters, each of one is then subdivided in different paragraphs in 68 pages. The **CONCLUSIONS** are derived precisely in 4 pages. The chapter **REFERENCES/LITERATURE** includes the list of 195 references and internet sources in accordance with APA classification. **APPENDIX I** includes the full text of the Protocol for the Prohibition of the Use of Asphyxiating, Poisonous or Other Gases and Bacteriological Methods of Warfare (Geneva, 1925) and **APPENDIX II** contains the text of Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on their Destruction from 1972. The contents of this acts are discussed in details in this thesis.

V ВРЕДНОВАЊЕ ПОЈЕДИНИХ ДЕЛОВА ДОКТОРСКЕ ДИСЕРТАЦИЈЕ:

Abstract (Summary) with Key words is given in both Serbian and English. It shows the clear, briefly summary of the doctoral thesis with the most important points.

INTRODUCTION chapter dealing with the history of biological warfare and bioterrorism, as well as great epidemics in history and their geopolitical implications, and process definition, main characteristics and BW manners, as well as methods of prevention and fight against bioweapons and discuss BW disarmament and other control regimes. All presented data are relevant and showed in correct scientific manner.

PROBLEM, SUBJECT AND GOAL OF RESEARCH are adequately presented as well as defined research questions and suggested **RESEARCH METHODOLOGY** in accordance with mutidisciplinary character of the research, that was designed as **explorative research**. Data type selection, methods of sampling and sample analysis were also presented as well as objective assessment of the research importance and the topic relevance and limitations/weaknesses of the research and open questions.

The chapter **RESULTS AND DISCUSSION** try to find the answer the established question in the line with the defined design of research and analyse them in the scientific, critic and objective manner. In the first subchapter entitled **International legal framework of the fight against biological weapons** are discussed *basic principles of*



the Geneva Protocol and the Biological Convention, it was presented detailed consideration and *Analysis of the Biological Convention and its weak points* as well as scientific and critical access to the current *Verification measures, their weaknesses, as well as confidence building and strengthening as the biggest challenge* related to BTWC. It was also critically analyzed *UN Security Council Resolution 1540: contribution to the fight against bio-weapons*. **Misuse of Science in the Context of Biological Weapons Development** is the following subchapter analyzing *some experiments of concern conducted before and their potential consequences, while the principles in biomedical and biodefence research where discusses as the question of ethics or control? Biological research in the arena of current geopolitical battles were also discussed as an important challenge*. **Control of the transfer of strategic commodities** as a part of joint efforts to prevent the risks of proliferation of WMD including the BWs, were processed from the regulative to the practical point of view. **MEDICAL INTelligence as a powerful tool for protection against biothreats** was also discussed in details and implications of its development for the effective prevention and response to appearance of biological threats.

CONCLUSIONS are defined clearly as a precise recommendations for further improvement of non-proliferation regimes and strengthening the executive role of the UN in the BTWC conducting and joint struggle against biothreats. The formation of the OPBW will be the the right contribution to that. **REFERENCES/LITERATURE** consists of the list of 195 relevant papers including articles, book chapters, as well internet sources. **APPENDIX 1** contains the full original text of Geneva Protocol from 1925, while the **APPENDIX 2** includes the full text of BTWC which was signed in 1972 and ratified by 184 countires, untl now. Their presence here is particularly useful.

VI СПИСАК НАУЧНИХ И СТРУЧНИХ РАДОВА КОЈИ СУ ОБЈАВЉЕНИ ИЛИ ПРИХВАЋЕНИ ЗА ОБЈАВЉИВАЊЕ НА ОСНОВУ РЕЗУЛТАТА ИСТРАЖИВАЊА У ОКВИРУ РАДА НА ДОКТОРСКОЈ ДИСЕРТАЦИЈИ

Таксативно навести називе радова, где и када су објављени. Прво навести најмање један рад објављен или прихваћен за објављивање у часопису са СЦИ листе односно са листе министарства надлежног за науку када су у питању друштвено-хуманистичке науке. У случају радова прихваћених за објављивање, таксативно навести називе радова, где и када ће бити објављени и приложити потврду о томе.

1. M23: Елизабета Ристановић, Мубарак С.А. Буршаид Ал-Дахери, MEETING THE CHALLENGES OF BIOLOGICAL THREATS AND



BIOWEAPONS IN THE 21ST CENTURY, Часопис српског социолошког друштва, LVI/2022 *in press* (biće objavljen do kraja 2022.godine, Potvrda o prihvatanju postoji)

2. **M31.** Ristanovic E, Gligic A, **M.B.Al-Daheri**: 50th anniversary of the biological weapons convention and the smallpox epidemic in the ex-Yugoslavia: experiences and challenges in the new security architecture. (introductory lecture of the forum-work by invitation) VIII international scientific professional conference: Security and crisis management-theory and practice (SeCMan) –Safety for the future 2022, 29-30th September 2022, Sremska Kamenica, Republic of Serbia. Proceedings. p.31-38 ISBN-978-86-80692-09-8 (ПОЗИВНО ПРЕДАВАЊЕ)
3. **M33.** Tomašević, V., Al DAhaheri, M.B, Ilić-Kosanović T. Security aspects of waste disposal, Udruženje ekonomista i menadžera Balkana. Zbornik radova. 2022

VII ЗАКЉУЧЦИ ОДНОСНО РЕЗУЛТАТИ ИСТРАЖИВАЊА

Based on all of the above, it is clear that there is a need to strengthen the plan of a coordinated and defined international response to biological threats, which includes preventive, surveillance and control mechanisms, as well as the adequate response in case of biological threats. Taking into account that in the existing security architecture of the world, the risk of using WMD, including biological weapons, is becoming greater (Ristanović, 2016), as well as all previous experiences, but also the possible consequences of its application, both in war and in bioterrorist acts, as well as through epidemics, pandemics and their possible consequences, it is clear that it is necessary to strengthen, first of all, international cooperation in this domain, which must be based on a genuine, impartial, dedicated and professional approach and must represent a joint obligation and responsibility of all actors on the international stage. All this must be coordinated within the UN security system, whose role in this segment needs to be reaffirmed in accordance with the challenges of the times. This is clearly demonstrated by the recent experience of the COVID-19 pandemic, as well as the issues of biological research that have become the subject of sharp polemics and confrontations between the leading powers of the time, while everyone would suffer the potential consequences.

Precisely in this context, based on the set goals and defined research questions, after an extensive analysis of the current moment, which represents a turning point in the future determination of the world, and an analysis of available relevant sources and experiences, the following conclusions can be clearly formulated:



- a) The Biological Convention, signed exactly 50 years ago, is much more important today than ever before. It cannot remain only a declarative act, nor a legal-political framework, but it must represent a relevant international document that must always be critically reviewed, refined and changed. The Convention must produce certain effects, binding not only for its signatories and depositors, but also for all subjects on the international stage. A critical look at the existing provisions of the Convention points to deficiencies that must be corrected, which enable omissions and violations of non-proliferation multilateral regimes by states, including first of all the most powerful, as well as non-state actors, scientific and economic subjects, but also terrorist organizations and groups. Therefore, it is extremely important to reaffirm the role of the UN, as the final arbiter in the context of preventing possible abuse, as well as strengthening and controlling non-proliferative regimes related to the use of WMD, especially biological weapons, which today can be considered a strategic threat. In this context, the tasks and obligations of all actors on the international and national scenes must be clearly defined and become the subject to truly independent and impartial monitoring.
- b) As this research shows, the biggest problems of the Biological Convention are related precisely to the lack and failure in the existence of objective verification measures that would enable constant monitoring and supervision and determine the existence of non-compliance or violation of the provisions of the Convention. All that mentioned include the necessity of applying multidisciplinary expert knowledge, based on postulates of objective science, responsibility, independence, impartiality, as well as executive powers that can only be reached through the formation of a special expert body *Organization for the Prohibition of Bacteriological (Biological) and Toxin Weapons (OPBW)* under the direct jurisdiction of the UN Security Council. Of course, the question arises as to why the same was not constituted earlier, as it happened in the case of chemical or nuclear weapons, and whether the political will of the most powerful, along with the lack of awareness of the threat posed by biological weapons, decisively contributed to the fact that such a body has not yet been constituted under the UN



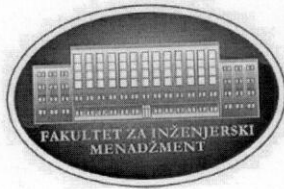
system.

- c) The development of science, especially molecular biology, genetic engineering, biotechnology and nanotechnology, opened the way to the understanding of life processes at the fundamental level, as well as the clarification of evolutionary processes, the understanding of immunopathogenetic mechanisms, unimagined possibilities in terms of diagnostics, prevention and prophylaxis of numerous diseases. On the other hand, it opened the way for the possible misuse of this knowledge, which can be directed to the creation of dangerous and deadly biological weapons, which can act on the genome of people, even selectively on a certain nation, population, target group. The development of technology also opens up unsuspected possibilities of its abuse in order to develop and adapt systems for the dissemination of biological agents, including, for example, modern drones and other means. Preventing the potential abuse of science must be a matter of legal regulation at the international and national levels, as well as possible sanctions, but also an appropriate code of ethics of the scientists themselves and the biomedical profession in general. The greatest responsibility in this context lies with the most technologically superior and powerful states, but these areas would be precisely defined in the context of the obligations of the previously mentioned independent international expert body under the jurisdiction of the UN. This does not exclude the need to strengthen awareness of this problem at the level of States Signatories, but also other countries that must take measures based on a multidisciplinary approach, cooperation and strengthening capacities for biological defense, as well as the necessity of educating scientists in order to raise awareness of the possible abuse of their work, as well as the promotion and affirmation of the provisions of the BWC and its sincere application.
- d) The free movement of people, information, goods, services and capital increases the availability of potentially dangerous substances and creates a favorable environment for increasing the likelihood of misuse of dual-use commodities, i.e. unauthorized transfer of technologies by groups, non-state actors or individuals in order to develop and use WMD as a transnational asymmetric security threat and



its application as a threat to international peace and security. In this context, biological weapons and the means for their application have numerous specificities in relation to other types of WMD. So, the special attention must be paid to BW regarding their specific features (e.g. easy availability and presence in nature all around us, the possibility of their application in human and veterinary medicine, agriculture, pharmaceutical, food industry, agro-engineering etc.). In this context, it is not possible to establish a control regime for BW that is specific for other types of WMD. However, numerous international regulations exist in this area and their implementation is of particular importance, by creating assumptions for the effective control of any type of arms and dual-use commodity traffic, including the electronic transfer of software and technology, which can be used in the production of WMD and means for their transmission and dissemination. Different subjects - governments, industry, science, public health, the security system, as well as the general public must be part of a joint program that has different organizational levels, ensuring that biotechnology and its benefits are equally accessible throughout the world and used for the common good of all people.

- e) The intelligence-security aspect is extremely important in the prevention of potential biological endangerment at the national, regional and international level, and within that, special attention should be paid to MEDINT as an important tool for monitoring the epidemiological-epizootological situation on the ground, development of capacities for the biological research and concerning on its eventual abuse, possession of appropriate equipment and professional staff, as well as research interest in the context of the specificity of certain populations that may become subject of biological threats. In this segment, it is important to have trained experts who, along with professional knowledge, must have knowledge of the necessary intelligence-security procedures. And in this context, international cooperation and exchange of information is extremely important in order to prevent biological threats and strengthen the global security.



VIII ОЦЕНА НАЧИНА ПРИКАЗА И ТУМАЧЕЊА РЕЗУЛТАТА ИСТРАЖИВАЊА

Експлицитно навести позитивну или негативну оцену начина приказа и тумачења резултата истраживања.

All scientific and obtained results are showed and interpreted in the realistic manner using clear language and considering the used scientific methodology suited for explorative design of research.

IX КОНАЧНА ОЦЕНА ДОКТОРСКЕ ДИСЕРТАЦИЈЕ:

Експлицитно навести да ли дисертација јесте или није написана у складу са наведеним образложењем, као и да ли она садржи или не садржи све битне елементе. Дати јасне, прецизне и концизне одговоре на 3. и 4. питање:

1. Да ли је дисертација написана у складу са образложењем наведеним у пријави теме :YES

2. Да ли дисертација садржи све битне елементе: YES

3. По чему је дисертација оригиналан допринос науци:

Considering the achieved development of science and the current contradictions that exist in the security architecture of the world, which, as said, changes rapidly and dynamically, one of the biggest security threats in the 21st century is certainly the possibility of the outbreak of biological and IT warfare. Therefore, the creation and legal regulation of measures sanctioning the violation of the Biological Convention, including legal prohibitive measures and sanctions related to research, development, technical and financial support, storage, transfer, acquisition and use of potential biological agents, as well as internal mechanisms which reveal and determine the violation of the Convention is certainly extremely important in the national framework, but even more important is the constitution of an international expert body under the jurisdiction of the UN that would cover all the discussed segments and expand them to the international framework, thus ensuring the formation of a safer world of equal peoples and states. Relevant, analytical and critical analysis of all mentioned above, using adequate science-research method, present original, actual and unique contribution to the scientific view to this problem, as well as to the global efforts for establishing of more secure world.

4. Недостаци дисертације и њихов утицај на резултат истраживања:



The sensitivity of the moment in which the research is carried out, as well as the limited availability of information and its different interpretation in real time, set various limitations and difficulties in interpretation and analysis, but also gave it special importance. In this regard, this research presents a special challenge. The research is limited to publicly available and published data.

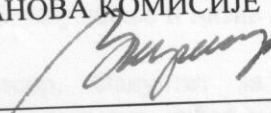
X ПРЕДЛОГ:

На основу укупне оцене дисертације, комисија предлаже:

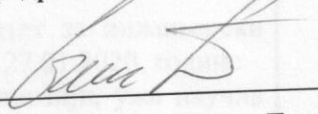
- да се докторска дисертација прихвати, а кандидату одобри одбрана
- да се докторска дисертација враћа кандидату на дораду (да се допуни односно измени) или
- да се докторска дисертација одбија

ПОТПИСИ ЧЛАНОВА КОМИСИЈЕ

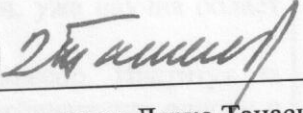
1.


Проф. др Владимир Томашевић

2.


Проф. др Срђан Томић

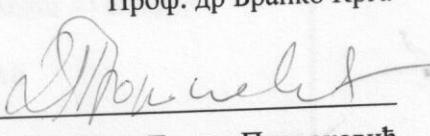
3.


Проф. емеритус Дарко Танасковић

4.


Проф. др Бранко Крга

5.


Проф. др Душан Пророковић

НАПОМЕНА: Члан комисије који не жели да потпише извештај јер се не слаже са мишљењем већине чланова комисије, дужан је да унесе у извештај образложење односно разлоге због којих не жели да потпише извештај.