

**P E E R   R E V I E W**

**From Prof. Dr. Emil Vlaykov Vodenicharov, MD, PhD**

**Medical University of Sofia, Medical Faculty, Department Epidemiology and Hygiene**

**Member of the Scientific Jury, according to Order with № P-100-823/27.11.2023 of**

**The Rector of Medical University "Prof. Dr Paraskev Stoyanov "- Varna,**

**considering the Protocol № 215/ 14.12.2023 and decision of the Faculty Council of the Faculty of Public Health under protocol № 104-1479/19.12.2023**

**Subject: Dissertation and abstract on the topic**

**"Pollution of the Varna region of the Black Sea with plastic waste and possible risks to human health"**

Presented for public defence to a scientific jury for the award of scientific and educational degree "Ph Doctor" in the field of higher education "7. Healthcare and sports ", professional field" 7.1. Medicine", in the scientific speciality Hygiene (including occupational, communal, school, radiation, etc.).

**Author:**       Assistant Professor Dr Yavor Hristov Chenkov, MD  
Department of Hygiene and Epidemiology

The documents and materials on electronic and paper media, attached by Assistant Professor Dr Yavor Hristov Chenkov, are in compliance with the requirements of the Law for the development of the academic staff in the Republic of Bulgaria, the Regulations for its application and the Regulations for the development of the academic staff in MU "Prof. Dr Paraskev Stoyanov "- Varna.

**Biographical data and career development of author:**

Yavor Hristov Chenkov graduated from High School with teaching of Western languages - city of Sliven. In 2016, he graduated from Medical University "Dr. Paraskev Stoyanov - city of Varna. Even as a student, he was a member of the Association of Medical Students in Bulgaria (AMSB). In 2016, he was enrolled as a part-time assistant in the Department of "Hygiene and Epidemiology" to Medical University - Varna. From 2015 to 2017, he was the regional coordinator of Greenpeace

international for the city of Varna, where he participated and coordinated the implementation of numerous environmental projects and initiatives. Since 2017 also works as a psychiatric paramedic at the First Psychiatric Clinic of the St. Marina Hospital - Varna. In 2018 was enrolled as a full-time resident at the Second Psychiatric Clinic of the same hospital. In 2019 is enrolled as a full-time doctoral student at the "Hygiene and Epidemiology" department. From 2019 to the present, he is an expert at the "Green Sea Yard of Varna" - a center for early socialization, diagnosis and prevention of children from 0 to 3 years old. In 2021. participates in the "Mars 25" project, which reached the semi-finals in the traditional annual NASA competition, in which hundreds of teams from all over the world participate. He is a member of Bulgarian Medical Association, the Bulgarian Public Health Association, the Bulgarian Psychiatric Association and the Bulgarian Association for Aviation, Maritime and Space medicine. Dr. Chenkov continuously improves his qualifications by annually attending conferences and training courses. He has participated in numerous national and international scientific forums and acquired additional qualifications in the field of psychiatry. He has been a certified hypnotherapist since 2021. His professional interests are in the field of preventive medicine, communal hygiene, radiation medicine, aviation and space medicine and psychology, sleep disorders and evolutionary psychiatry. He has published in a number of scientific journals and proceedings, including those with an impact factor. Serious knowledge and interests in space science, ecology, and the arts.

**Relevance and significance of the topic:**

Environmental pollution is taking an increasingly serious place in public health with increasing evidence of the impact of certain pollutants on human health. This includes the growing body of scientific evidence regarding the impact of plastic pollution on the well-being of both natural ecosystems and the human population.

Due to the scarce amount of data regarding plastic pollution of the environment in Bulgaria, and the potential resulting harm to human health, the topic of the dissertation prepared by Dr. Yavor Chenkov - "Pollution of the Varna region of the Black Sea with plastic waste and possible risks for human health" - is gaining extreme relevance and importance at present.

The urgent need for a quantitative and qualitative research of plastic pollution in different regions of Bulgaria and the risks arising from this type of pollution for ecosystems and humans, proves its



scientific place not only among young scientists from all fields of knowledge, but also a deeper look at this problems in the teaching of Hygiene in medical universities.

#### **Statement on the structure and content of dissertations:**

The scientific work submitted for peer review is structured according to the modern standards adopted in our country and the requirements of the Medical University "Prof. Dr. Paraskev Stoyanov" – Varna, regarding a dissertation for awarding the scientific degree "Doctor" in medicine. The dissertation is written on 168 pages. It is well balanced and includes: literature review (45 pages), aim and objectives, material and methods (8 pages), results and discussion (41 pages), conclusions and contributions (4 pages). The work is richly illustrated with 2 tables, 21 figures and 2 diagrams. The appendices contain an archive of photographic evidence, as well as an author's questionnaire from the attached survey. The bibliography includes 337 sources - 2 in Cyrillic and 335 in Latin.

The literature review (45 pages) presents comprehensively and systematically interdisciplinary, with different scientific perspectives - historical, geographical, ecological, toxicological, medical - the different aspects of plastic pollution in the environment. Quantitative and qualitative aspects of plastic pollution in different regions of the planet are described, with an emphasis on aquatic environments (seas, oceans, rivers, lakes) and adjacent coastal areas. Scientific data describing the harmful effects of plastics on environmental ecosystems and the potential risks they pose to human health are presented.

The purpose of the dissertation is precisely and clearly formulated. The dissertation student sets five specific and realistic tasks, which are based on the hypothesis of the presence of plastic pollution in the coastal areas of the city of Varna and the various aspects of this type of pollution.

The methodology of the dissertation work applies a wide range of diverse methods, including, in addition to the documentary method used to build the literature review, sociological method, field methods, microscopic analysis, statistical and graphical methods.

#### **Results and discussion**

The results of the observations and measurements provided very important initial data for future studies of plastic pollution in the Varna region, in view of the extremely scarce scientific literature on this topic. In addition, some preliminary data on the aging behavior of plastics in marine and

coastal environments are provided, as well as data on the presence of potential polymeric constituents in commercially available personal care products. The summary assessment after the analysis of the results of the expedition field studies, which the doctoral student realized, shows the presence of plastic pollution in a part of the coastal areas around the city of Varna. It is important to note that the results of the conducted expeditions present a snapshot of the pollution, at a precisely defined point in time, in precisely defined locations. The findings in the current scientific work regarding the amount and composition of the waste are the first to be published for the specific visited locations in the region of the city of Varna.

The conclusions drawn are correctly formulated. They correspond to the set goals and tasks, logically follow the results, the statistical analysis and the discussion.

I support the presented conclusions and recommendations for a phased and segmental study of plastic pollution in the coastal areas of and around the city of Varna, with all its aspects and circumstances.

I approve the contributions, which are 9 in total. I consider the main merit of the dissertation to be the following of them:

1. The fundamental steps have been taken to implement ecological monitoring regarding the detailed morphology of plastic pollution in the coastal areas of the Varna region.
2. The first detailed categorization of the quantities, sizes and types of plastic waste in some coastal areas of the city of Varna was carried out.
3. An initial assessment was made of some of the most common types of microparticles of potential plastic nature added to commercially available personal care products.
4. For the first time, a microscopic analysis of waste from plastic pollution in the Varna region was carried out, with the aim of tentatively determining the degree of fragmentation and degradation of plastic waste left in the environment.
5. A narrative theoretical review of the scientific literature addressing plastic pollution in water basins and coastal zones and the resulting potential risks to ecosystems and human health was carried out.



The dissertation is written in good language, precise in terms of terminology. Technically, the dissertation is formatted according to the requirements, and the bibliography, represented by 337 sources, is comprehensive.

The abstract authentically reproduces the content of the dissertation. It is prepared in a volume of 83 standard pages and is composed of the mandatory components accurately representing the structure and content, contributions and publications of the dissertation work.

The doctoral student presents three real publications that meet the criteria laid down in the Regulations for the Development of the Academic Staff of MU-Varna. I believe that these publications and the additional participation in conferences and scientific forums really represent the achievements of the doctoral student and contribute to their popularization among the scientific community.

The scientific work presented by Dr. Chenkov gives me reason to confidently state that he is a precise scientific researcher with diverse scientific interests and an innovative approach that contributes to a deeper understanding of plastic pollution in the environment and the resulting risks to living beings organisms and humans. In the peer-reviewed dissertation work and the presented publications, Dr. Chenkov demonstrates knowledge of the subject and skills for organizing and conducting independent scientific research, analysis of scientific theses and author's interpretation and real presentation of the achieved results.

In conclusion, the dissertation meets the requirements of the Law on the Development of Academic Personnel. The work is presented in a complete and well-formed form. I find the topic developed by the PhD student extremely relevant and timely. The content of the dissertation is legitimately and thoroughly developed, well illustrated and presented in good professional language.

All this gives me the reason to positively evaluate the dissertation work "Pollution of the Varna region of the Black Sea with plastic waste and possible risks to human health" and to give my positive vote for the awarding of the educational and scientific degree to Assistant Professor Yavor Hristov Chenkov "doctor".

08.02.2024

Sofia

Scientific jury member:

(Prof. Dr Emil Vodenicharov, MD)

Заличено на основание чл. 5,  
§1, б. „В“ от Регламент (ЕС)  
2016/679