

**OPINION**

**by Assoc. Prof. Dr. Hristo Ruskov Hinkov, Ph.D.**

**Director of the National Center for Public Health and Analysis - Sofia**

**Subject: dissertation for the award of a scientific degree "doctor",**

**by**

**Dr. Atanas Radinov Radinov**

**PhD student of independent training in the scientific specialty "Social Medicine and Health Management" with the topic of the dissertation:**

**"Organization and management of the liquidation of the consequences of radiation contamination of the population as a result of a terrorist act and other radiation incidents"**

**Introduction**

The problem considered in the dissertation of Dr. Atanas Radinov is of interest to specialists from different fields of medicine and the organization of health care in our country. The topic of the paper is relevant due to a very important fact that the author highlights in his study - the accumulating knowledge of nuclear incidents around the world, but also the growing threat of various types of terrorism, including the use of nuclear materials and weapons. In this sense, the information that the author has collected is interesting both for medical professionals from different specialties and for all citizens due to its current nature.

**General description**

The dissertation covers 156 pages without bibliography or a total of 168 pages. The bibliography contains 165 titles, of which 12 in Cyrillic and the rest in Latin (English). Over 65% of the titles of the publications are after 2000. The author has made a very useful list of abbreviations at the beginning of the work.

The statement is presented in a logical sequence, according to the nature of the problem under consideration. The content is divided into six sections and bibliography, the first two of which are an introduction and review of the literature, followed by a description of the methodology and objectives, materials and methods, own research on the problem, discussion, conclusions, recommendations, contributions and conclusion.

The dissertation contains 38 figures and 8 tables. The language is in a scientific style, but it is understandable and accessible even for non-specialists on the topic, which makes the dissertation's work readable and attractive.

**Analysis of the content**

The introduction and the general review made by the author show a serious and in-depth knowledge of the history of the problem, which is especially important for understanding the formulated scientific goal - to create an algorithm of organizational behavior of specialists in providing first aid in case of sudden disorders the hematopoietic system caused by nuclear contamination among in large groups of people.

The tasks that the author has set himself are 5 and generally serve the set goal, considering different aspects of the problem arising from radiation pollution from an organizational, medical, psychological point of view. The author has paid serious attention to a specific clinical aspect of radioactive contamination, namely disorders of the hematopoietic system, considered in its clinical manifestations at the individual level and in the context of organizational decisions in morbidity of large groups of the population.

The chosen approach to achieve the goal is convincingly justified based on research done so far in this area. The whole structure of the dissertation is coherent. It consists of a broad review of the literature on the main topic of the dissertation. The construction of a working hypothesis description of the methodology and clear formulation of the goals, results from own research on a sample and description of organizational algorithm to deal with a disaster of this kind.

It should be noted that the created algorithm is situated in a concrete hospital setting, which in my opinion contributes to its practical applicability rather than closing it in the narrow confines of a working environment.

In the first section of the dissertation the author has gone into the depth of the problem by examining in detail the various theoretical and methodological aspects of first aid in a situation of radiation contamination and the specific consequences associated with disorders in hematopoiesis. Historically, various strategies and organizational solutions in leading countries in the world, as well as readiness of medical systems to cope with such situations, staff training and protection of the population are presented.

The effects of radiological contamination are considered at the population level with specific examples from the Fukushima accident, and at the individual level - both in terms of physical and psychological effects of the incident. From an organizational and public health point of view, various challenges related to both a possible incident and a terrorist act have been considered, and models have been developed based on specific events such as the Chernobyl accident and Fukushima.

A typology of terrorist acts is proposed based on specific historical examples.

Special attention is paid to the medical effects of a nuclear accident or terrorist act with a description of the main syndromes of radiation infection - acute radiation syndrome, hematopoietic syndrome, gastrointestinal syndrome, cerebrovascular syndrome, skin reactions.

An important place is given to the psychological reactions of radiation sickness with the characteristics of stress and its effects on the severity of general illness. The methods for examination of possible infection, laboratory and clinical examinations, first aid and methods of treatment are described. In this part of the dissertation the author has shown in-depth clinical knowledge of the problem, which gives additional weight to the overall development.

An important emphasis is outlined in dealing with a radiological problem, namely the collective psychological reaction and the role of the mass media in such a situation. The individual symptoms of an acute stress response in both adults and children are described in detail. I believe that the detailed characterization of this aspect of the radiological incident is an important prerequisite for building a model of organizational crisis management of this nature.

In the section results and discussion, the author has shown in-depth knowledge of the organization and management of emergency medical care in case of radiation pollution. The results of a survey of 109 physicians from several key specialties for the problem are presented - hematologists, surgeons, oncologists, general practitioners. In summary, they show the general lack of training - both theoretical and practical for behavior in risky situations related to radiation pollution. At the same time, the answers show that a behavioral algorithm is needed that would be useful to them.

The next subsection is devoted to such an algorithm, which is the main contribution of the dissertation and logically completes the research so far. The algorithm itself, in my opinion, is extremely necessary due to its clear practical nature, sequence of prescribed actions and guidelines for behavior in an extreme situation. Again, attention is given to the psychological aspects of the reaction to an incident, the necessary prioritization by determining the risk groups, as well as the ways of informing the population.

Despite the fact that the author proposes an organizational model of the work process for implementation in the Department of Hematology at the University Hospital "St. Yves Rilski", in its general part the product is fully applicable to any action plan in an extreme situation, regardless of whether it is caused by a radioactive incident or an accident of another order.

The author's contributions are described clearly and specifically in the last part of the paper together with the conclusions and recommendations and show the critical and objective attitude of the author both to the problem and to his own work.

### **Conclusion**

The presented dissertation work of Dr. Atanas Radinov Radinov, along with the purely theoretical and cognitive contribution of scientific research and review, is a significant contribution to the organization of medical care in disasters and accidents. In this sense, from an organizational and theoretical point of view, it fills a gap, which is shown by the results of the survey among medical professionals.

The work is logically structured, the survey was conducted correctly and has a representative value. The formulated goal has been achieved, and the conclusions made have significant theoretical and practical significance. The dissertation is written in good and accurate Bulgarian. The presented abstract corresponds to the content of the dissertation.

Taking into account all the merits of the dissertation set out in this opinion, as well as its compliance with regulatory requirements, I propose to the esteemed members of the scientific jury to award Dr. Atanas Radinov Radinov educational and scientific degree "Doctor"

**Opinion presented by:**

**Assoc. Prof. Dr. Hristo Hinkov**

**Sofia, 08.01.2021**

