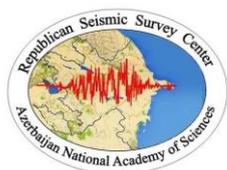


Eurasian RISK2019 CONFERENCE 22-24 MAY 2019 - Baku/AZERBAIJAN

**AMIR TECHNICAL SERVICES LLC  
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# **INNOVATIONS IN MINIMIZATION OF NATURAL AND TECHNOLOGICAL RISKS**

**ABSTRACTS  
OF THE FIRST EURASIAN CONFERENCE  
“RISK – 2019”**

*22 – 24 May 2019, Baku, Azerbaijan*

**Baku – 2019**

**Book of abstracts and Program of the First Eurasian Conference "Innovations in minimization of natural and technological risks", May 22 - 24, 2019, Baku, Azerbaijan, 136p.**

Main purposes of conference were *to unite* scientists and specialists from different fields of knowledge and give them opportunities to share - information, ideas and innovative solutions in minimization of the natural and technological risks on Eurasian continent, *promote* knowledge exchange on risks, innovations and advanced technologies of risk minimization and *support* Millennium Challenges and Sendai (Japan) Framework for Disaster Risk Reduction 2015-2030 under UNO.

**Книга тезисов и Программа Первой Евразийской конференции «Инновации в минимизации природных и технологических рисков», 22 – 24 мая 2019, Баку, Азербайджан, 136с.**

Основными целями конференции были объединить ученых и специалистов различных отраслей знаний и предоставить им возможности обмена информацией, идеями и инновационными решениями минимизации проблем в области природных и техногенных рисков, на Евразийском континенте, способствовать передаче знаний о рисках, инноваций и передовых технологиях минимизации рисков, а также поддерживать Вызовы третьего тысячелетия и Сендайскую (Япония) рамочную программу действий ООН по снижению риска бедствий на 2015–2030гг. в качестве руководящего базового документа, в котором отражены стратегические цели и приоритетные направления действий, а также ожидаемые результаты.

## **Technological safety**

### **Технологическая безопасность**

#### **Protection of Electric Equipment against High Altitude Electromagnetic Pulse**

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Some 20-30 years ago the concept of High-Altitude Electromagnetic Pulse (HEMP) resulting from the high-altitude (30 – 400 km) explosion of a nuclear charge, was only mentioned in the brochures on civil defense. Military men were well informed about this effect of nuclear explosion; however, information on this topic was strictly confidential. It was pretty sound at that time, considering technical obstructions and expenses related to obtaining of this information. However, this resulted in the fact that until recently civil specialists working in different fields of engineering science had no idea (and some of them are not aware even now) about this phenomenon and the danger that it may pose.

Meanwhile, modern trends of engineering development, resulting in wide-spread use of microelectronics, microprocessors, PCs, quick improvement of microprocessors' capacity accompanied by sharp increase of micro-transistors count per a unit of volume, reduction of operation voltage and insulation level between internal elements and the layers in a crystal, lead to sharp increase of susceptibility of modern equipment to HEMP and stimulated interest of army men to use HEMP as a self-sufficient and very efficient type of weapon. Now it becomes clear that HEMP is an ideal non-lethal weapon capable to destroy the infrastructure of the enemy almost completely without hecatomb, if a nuclear weapon is exploded at high altitude. This has inspired the military men so much that they ordered development of purely electromagnetic weapon was underway, where powerful electromagnetic emission affecting modern microelectronic and microprocessor-based systems is generated by non-nuclear source. Electromagnetic bombs, shells, grenades and missiles with electromagnetic war-heads, mobile units on wheel or track chassis that generate powerful directed electromagnetic radiation capable to destroy electronic equipment from large distances are not science fiction anymore, but contemporary realities.

Unfortunately, these realities are still not broadly addressed by specialists of many field of engineering science, particularly those in the field of electric energy industry. Indeed, electric energy is the foundation of a country's infrastructure, without which neither water supply system nor communication or any other vital system can operate.

More than 400 pages on the phenomenon, known to military specialist only described in the new book from De Gruyter publishing house: "Protection of Electric Equipment. Good Practices for Preventing High Altitude Electromagnetic Pulse Impacts", 2019.

The difference of this book from all previous publications on this topic is that it describes practical technical engineering solutions for protection against electromagnetic pulse, and not theoretical reasoning, as it has been until now.

This book is a first practical guide for engineers and technicians about electromagnetic pulse that has not yet been on the book market.