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Nanotechnology and Nonproliferation

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Abstract

Nanotechnology has demonstrated performance in top technologies of the 50s-60s of the XX- century such as nuclear, cosmic and other domain. Although the first results were promising, the crucial point for further development took place later in 2000 with the adoption by the US of the National Nanotechnology Initiative (NNI) [1]. This served as an impetus for third countries that have adopted similar programs or strategies (EU member states, the Russian Federation, etc.) [2, 3]. Today, nanotechnologies are an indispensable component of the 4th industrial revolution, which radically changes the world. Nanotechnology is considered as a new frontier of engineering and research with an unimaginable long-term potential impact, giving rise to new interdisciplinary fields of research, engineering and education. Unfortunately, like any cutting-edge technology, it can also lead to the development of a new destructive technologies, especially of weapons of mass destruction (WMD). Therefore, risk assessment becomes critical in the context of dual-use technologies.

This can be achieved only through joint efforts and consensus of the governments, researchers and large producers, and requires long negotiations. We find that a promising solution would be by regulating this domain at a national level, as well as via a Codes of Ethics for professional societies. The implementation can be initiated with a new University course covering the responsibilities of engineers and researchers in the preventing proliferation of WMD via nanotechnology and nanoscale science. This path has been followed by

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the Technical University of Moldova by developing a new curriculum in engineering and non-proliferation culture for master degree study.

Keywords: nanotechnology, nanoscale science, weapons of mass destruction, curriculums in engineering, risks

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