

ABSTRACT

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Title of diploma tehsis: Bioethics I - Nanotechnology in the biomedicine

Background: Create basic summary of ethical theories and bioethics principles. Compile summary of used and investigated nanotechnology applications - particularly their influence on human health and living environment. Furthermore, chart contemporary research and practical nanotechnology use regulation state.

Main findings: Nanotechnology is presently one of the fastest developing technologies. Many authors think, that it is a significant breakthrough for society, similar to discovery of steam or electronics in recent history. Usage of nanotechnology is able to considerably extend society potential in material engineering, electronics, optics and particularly in medicine and pharmacy. We can imagine treatment of cancer without side effects of chemotherapy, more sensitive examination methods, durable a biocompatible implants or nanobots monitoring biology functions of human body. Many products and production materials based on nanoparticles or nanotechnology have been commercially exploited until today. Despite of wider and wider applications in daily life, like cosmetics or textile with silver nanoparticles, some related areas are relatively little explored.

It is mainly lagging research in fields of ethics and social aspects. The most significant are studies that concern nanoparticles health hazards on human, live organisms and living environment. In separated studies was already proved ability of nanoparticles to penetrate into human organism via airways, negatively influence living organisms and accumulate in some organs. The negative influence of nanoparticles on organisms living in soil and water ecosystems was confirmed too. Meant studies however, are not sufficiently long-lasting, numerous and comparable. Their standardization is still in progress.

Conclusions: Practical usage of nanotechnologies promises considerable extension of society potential. It is sure a branch of knowledge which needs to be kept investigated, as it is demonstrated by research projects of all developed countries. At the same time it is necessary to devote attention to ethical and social aspects of this field of study. Sooner than the usage of nanotechnologies became common part of our lives, we should be certain of all health and environmental consequences brought. These are the reasons why these days the standardization of nanotechnology risks in European Onion is in progress. Big challenge is also mapping of possible social impacts and related regulation or restrictions concerning nanotechnologies. At least for that nanotechnologies are able to cause considerable change of society and due to interdisciplinarity of nanotechnologies all impacts cannot be anticipated.