

Possibilities and Contradictions of Nanotechnology Applications in Preventive Activities Insurer

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One effective and proven tool for managing risk is insurance. At the same time, insurers, reinsurers, insurance, and reinsurance brokers in search of the relevant value of their services in the eyes of insured and long-term benefits are increasingly paying attention to the possibilities of nanotechnology. On one hand, insurers see unlimited possibilities of nanotechnology in preventive and repressive activity in relation to losses. The obstacle in this case, for high-tech companies, is stiff competition from companies which are not innovation leaders, but with the necessary influence and power at the international and national market. On the other hand, understanding the reasons for the application of nanotechnology in the conflict prevention activities of the insurer allows him to develop and implement a more flexible strategy for sustainable development of the business.

Keywords: possibilities, contradictions, nanotechnology application, preventive activity, insurer

Introduction

A prerequisite for this article began in difficulties in the development of innovative, preventive activities of insurers, and in particular nanotechnology consultants for the commercialization of high technology and business development. The high scientific potential utility of nanotechnology in preventive action insurer and the insured remains unsolved and unrealized through the inertness with respect to all new. The article is addressed to specialists in finance, insurance, nanotechnologies, as well as a wide range of interested readers.

Prevention as an Integral Function of Insurance

One of the concepts that explain the need for active preventive action, as individuals, organizations, and insurance companies, is called "civilization risk". Initial theoretical premise of the concept of civilization was the risk alarm ideas outlined in the Club of Rome report "Limits to Growth" spouses Meadows. It has limited resources and land ambulance inability to resist the economic and technological expansion of people. Philosophical origins of this concept are rooted in the teachings of Cassirer's ambivalence about the technology that makes the domination of man over nature and makes him a slave; it leads to alienation from their essence. Based on this idea, as well as the conclusions of modern Western alarmists, Donella, Dennis, and Jorgen (1972) advocated the idea of civilization risk build hierarchic system risks surrounding the modern man.

Besides technological hazards generated by human activity, people are faced with unfair distribution of social risks and violence, confrontation of cultures, traditions, subordination of one person by another, wars,

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terrorism, etc. Limited energy resources and sustenance of mankind create demographic problems. In a competitive environment in order to survive, subsequently succeed companies and international corporations are forced to resort to decisions contrary to their socially responsible corporate culture and values. Financial institutions, such as banks, insurance companies, pension funds, and investment companies, have accumulated sufficient experience of risk management, not only in financial and economic sphere, but also in international, government, and socio-cultural relations of human activity. However, modern riskology, philosophy of risk, or as it is called riskosophy select all new contradictions and new challenges on both quantitative and qualitative characteristics for human dangers and threats.

The purpose of this paper is to identify opportunities and contradictions characterize nanotechnology applications in preventive activities insurer. Identifying the factors that help the implementation of preventive activities in nanotechnology will allow the insurer to provide guidance on effective management.

Preventive Possibilities of Nanotechnology in Risk Management

On one hand, insurance and reinsurance have a long history. People create financial and resource reserves from accident, in case of war and natural disasters. Factors stimulating the development of insurance and reinsurance include the progress in science and technology. The competition between mutual insurance companies and joint stock insurance companies helped reduce insurance rates and increase the range and quality of insurance services.

However, the social importance of insurance, as an effective tool to protect not only the individual risks, but also catastrophic risks, has become a prerequisite for the establishment of the institute of reinsurance. Insurers are not only competitors but partners reinsuring risks with each other. Then came the professional specialized reinsurers and again there was a competition limiting the spread of knowledge and technology for preventive activities of the insurer. Insurance in the process of development had different forms and methods. With the negative consequences of risk, people are fighting in three ways: prevention, repression, or overcoming the damages and financial compensation. With the development of high-tech, nano insurance appeared, whose main feature is the predominance of knowledge and technology risk management, in particular, prevention and repression of financial compensation.

On the other hand, the history of nanotechnology and nanomaterials has its origins in the last century. The main motivating factor was a revolutionary advancement of science, engineering, and technology, in particular the optical, computer, and biological technology. This may also apply to saving lives or property, as well as the limitation of liability of insurers during an insured event. If the insurer advises on possible preventive measures and their effectiveness and their potential customers are already insured, the reinsurer or reinsurance broker advises mostly reinsured.

Special agencies in the United States as preventive services use IT tools and mathematical models to develop and offer insurers forecasts of natural disasters, earthquakes, tsunamis, and volcanic eruptions. In automobile insurance, some of the service station as a preventive product against loss presentation offer shampoo Guardian with a special protective nanolayer surface of the car from falling stones. Economic feasibility of preventive products and services for all participants of the insurance market is different. There are situations when applying the preventive service, the risk is acceptable and there is no need for insurance, reinsurance, for example, if you set the security alarm against theft, some companies offer partial or full coverage of the risk of theft and start falling, or there is no need for insurance. When you install a fire alarm

system, usually then you have to be sure to sign the contract of insurance against fire. In the case of nanotechnology preventive products, services, and working well in some situations, their use makes the risk acceptable and there is no need for insurance and reinsurance. It depends on what stage of development the product (prototype, growth, maturity, and disappearance), the appropriate market (prototype, growth, consolidation, colonization, and segmentation), and the system of business management (business, functional, process, networking, knowledge management, and talent) is.

If the first two stages of the development board are in the main policyholder, the following ones are already paying for preventive product and the insurer or together in a certain proportion. The cost-effectiveness of the three-way interaction particularly affects the ability of the company to apply nanotechnology flexible risk management strategy based on diversification as well as the interests of all three parties. If, for example, mandatory health insurance equalizes among all the people using them, the voluntary health insurance provides different price and quality insurance services coverage. Sometimes, a social factor is the basis for the election program of the President and if he wins, he has such an affordable and high-quality health insurance program to implement. Together with significant utility in the prevention of insurers using nanotechnology and nanomaterials, there are many threats to their unfair use at the expense of the life of an individual, company, nature, and society. In this situation, legislators have an important role to regulate and organize to do a qualitative interaction among the insured, the insurer, reinsurer, and nanotechnology company by offering preventive products, works, and services.

Contradictions

If authors try to classify contradictions between the application and in particular high-tech nanotechnology in preventive activities of the insurer, they can distinguish these five basic contradictions.

The first contradiction is among the humane intention of nanotechnology scientist to use his invention, only for humanitarian purposes and the risk of using it in inhumane purposes.

The second contradiction related to the first claim is a conflict for the world championship of individual countries or groups of countries, such as between developed and developing countries.

The third contradiction is due to the conflict between the claims of high-tech industries and traditional sectors of the economy in which the high tech is constantly offering better and cheaper goods substitutes.

The fourth is a contradiction between the current and future financial performance of life insurance companies. Upon receipt of insurance payments, the insurer cares about the customer, so he is less ill and was higher underwriting profit. When it comes to paying additional regular monthly pension until the end of the client's life, insurer loses interest in its longevity.

The fifth contradiction is among the desire to claim the insurer to act as not only a provider, but also the customer, the owner, and the strategic investor of nano technological, and the ability to translate it into practice. Theoretically, it is the strength to the joint efforts of the state of major international investment groups.

Contradictions or disputes arise as discussions between the private interests of owners and managers of large international corporations working with nanotechnology and nanomaterials intra-industry competition and business with those companies, which they are buried or may be buried. These are contradictions and fears of the people, because of unemployment due to the closure of a number of such chemical plants which produce millions of tons of fertilizer because they cannot replace big amount of micronutrients produced using nanotechnology. Unresolved contradiction, between the necessary quality insurance and nanotechnology

services, claims of ownership, management, and staff in the distribution of the surplus product in accordance with the principles of social justice and economic efficiency invariably, gets in the way to effective interaction among the parties. These contradictions are resolved by implementing a special corporate culture or corporate religion and psychologists on the harmonization of the climate in the team.

Many insurance companies are now looking for long-term competitive advantage. Management consultants in such a situation diagnose the management system and develop an individual and relevant long-term business development strategy. As a result, this business strategy will be very difficult to copy by competitors. As practice shows, the successful implement to commercialize nanotechnology has high returns for investors and management of scientific and innovative company. The mechanism of investing in such startups is very risky, because the best is one of the 10 projects. However, companies, investors, and developers of eventually becoming a sustainable competitive advantage have a high experience curve of business acumen and successful implementation of innovative projects that people are witnessing in the American high-tech.

In the difficult financial situation, the insurance company is looking for any means and methods that can increase sales and lower loss ratio, for example, agricultural insurance helps to maintain and ensure the highest yield by increasing the viability of the plants that provide micronutrients, obtained through the use of nanotechnology.

Professional reinsurers through excess of loss contract Casco cover risks damage to the ship as a result of the storm or collision with another vessel. Mutual insurance companies (P&I Club) are also concerned about this risk as fears of civil liability to third parties. Modern nanotechnology allows to cover the hull of the vessel and the special nano increases at times of its strength and resistance to external damage.

Today people can talk about the need to create universal socio-economic clusters focusing on continuous improvement of engineering and technology risk management. Universities, research institutes, and companies of nanotechnologies form clusters, and associations lobby for their interests in state authorities and local self-government. The emergence of the theory and practice of insurance risks of nanotechnologies has now become an urgent task for scientists, inventors, lawyers, and businessmen.

Nano Insurance as an Effective Risk Management

Insurance is meant for indemnification of loss, not for prevention of loss, although every reasonable step can be taken to eliminate it or minimize it through the agencies engaged in prevention of loss. Thus, insurance may help in two ways: indemnification and preventive efforts. Last suggest and good behaviors are insured and insurance until and during the policy period and during the occurrence of the insured event.

There are various causes of risks:

- incompleteness and lack of knowledge of situations and problems encountered;
- lack of information about current events and developments;
- randomization (natural phenomena, equipment failure, illness employee, labor dispute, etc.);
- countering caused by a conflict of interests, competition, changing socio-political situation, etc.

Under English law, the behavior of the insured is considered good, if it behaves exactly as if he had not been insured. Insurance company spends on selection, as it allows competition in the market for underwriting risks creating a balanced insurance portfolio of homogeneous and of equal magnitude of risks. Finding ways to reduce risk before insurance insurers' advice on risk management can be done to decrease the frequency and magnitude of the consequences of the loss of the expected loss.

In the world today, there is a social or public insurance, commercial insurance, micro-insurance, and nano insurance. Nano insurance is the connection of classical insurance and innovative approaches to risk management. Also, nano insurance can be seen as an interdisciplinary science from different areas of technology, business, economics and management, finance and law, ecology, health, culture, and, of course, the science of risk (riskology risk) and risk philosophy (riskosophy).

Nano insurance is leveling and risks of products and services produced using nanotechnology. It can be liability insurance for manufacturers and distributors of nanomaterials and nanotechnology. Of course, the insurance is the use of nano innovative nanotechnologies and nanomaterials in preventive and remedial action insurer for damage to the policyholder.

In other words, nano insurance—risk is a practical philosophy and science of risk, combines the interaction of the state regulator, nanotechnology companies in general and in particular, offering products and services to reduce the risk, recovery, resilience, and long life in conjunction with insurers, brokers, insurers, and reinsurers. One of the world's leading nano insurance is considered to be the United States. The United States set up the organization and online platform special nano insurance forum. Its mission is to study the cross curricular nanotechnology, insurance law, as well as exchange knowledge and experience in these areas.

The importance of the *Nano Insurance Forum* is two-fold: First, since the products of nanotechnology impact such a wide range of industry sectors, there is a great need for the insurance industry to understand and manage the potential risks associated with these products which will vary from industry to industry and location to location; second, since nanotechnology is such a recent development in manufacturing, the actual processes may pose different occupational risks than traditional manufacturing. Management of any risks associated with nanotechnology production and use will be critical to insurance companies. At a minimum, insurance companies will need to evaluate their product lines to determine the extent of any potential liabilities and proactively manage their exposure.

The *Nano Insurance Forum* is composed of top regulatory, toxicological, legal, insurance, and risk management experts from across the globe. Its experts provide members with the most up-to-date scientific and regulatory information related to nanomaterial safety (Blaunstein, 2014). The problem for the insured patient is that he does not possess the necessary supply of medical knowledge to set himself the correct diagnosis and to determine the optimal treatment. Scientists, economists, and philosophers offer two behaviors—physician and patient behavior rational or irrational, each of which plays for the recovery of the patient deciding.

To reduce the risk of their potential customers, insurers often use monitors and technical innovation, for example, the case of insurance car theft declined significantly at risk of its special equipment beetle, allowing satellite constantly to monitor his whereabouts. Nanotechnology today does not yet have the scientific classification of nano. Among the approaches, the definitions of “nanotechnology” are the following.

In the Technical Committee ISO/TC 229, nanotechnology refers to the following:

- knowledge and management processes, as a rule, in a scale of 1 nm, but not precluding the scale of less than 100 nm in one or more dimensions, when putting into action, the size of the effect (phenomenon) leads to the possibility of new applications;
- use of properties of objects and materials in the nanometer scale which are different from those of free atoms or molecules and also on the bulk properties of a substance consisting of the atoms or molecules to create

improved materials, devices, and systems implementing these properties (Retrieved from <http://www.horvath-partners.com/de/publikationen/buecher/detail/das-controllingkonzept-der-weg-zu-einem-wirkungsvollen-controllingsystem/>).

The rapid development of nanotechnology is observed today in the United States, European Union, CIS, Japan, South Korea, and China. Applications of nanotechnology apply to many areas of human activity. This information electronic device, solar cells, nano with nanobots and nanopharmacology nano complexes micronutrients, nanomaterials, and nano-services solve some technical or biological problems and others. Nano-science promises, in the next 20 years, the biological and the technological revolution.

Its revolutionary nanotechnology materials and products insurers provide virtually unlimited opportunities to reduce risk on the frequency and size of potential losses in effectively managing their risks as well as policyholders. However, high-tech companies in particular nanotechnology companies in the pursuit of discovery, innovation, and profit occur or are likely to face the future unpredictable threats and are able to put mankind on the brink of extinction. One of the futurists in the novel devoted nanobots is a warning that if you fail in their program, they will use people as a raw material for biomass production of self-replicating life. Innovation potential of nano insurance attracted the attention of not only physicists, economists, mathematicians, lawyers, and businessmen, but also philosophers and psychologists who found it in the answers to some of your questions.

Nano Insurance as a Risk Philosophy and Practice

Philosophers sphere of risk management are also a number of contradictions that will hinder the development and application of nanotechnology, including both preventive efforts in insurance. After all, they may soon make human life almost eternal, making it one side of this priceless and the other does not lose its sense of security and perform its intended. Another controversy that inevitably gets in the way of preventive use of nanotechnology in general and insurance in particular is the conflict of interests of innovators with international companies practicing classical technologies, for example, if micronutrient can replace harmful and indigestible soil potash and phosphate fertilizers, the refusal of the latter carries a heavy social consequences of the closure of plants that are sometimes the main function of providing for themselves.

One of the most successful practices using preventive measures to insure international nanotechnology group shows "Avatar". This company has several lines of nanotechnologies in preventive activities of insurers. One relates to the reduction of disease risk by increasing the consumption of immunity necessary for the organism to complex micronutrients in health insurance. This complex contains microelements citrates germanium, selenium, and other rare earth metals. Interaction mechanism provides that the insurer, having an insurance policy for health insurance, runs diagnostics and takes a particular set of trace elements and again at the end of runs diagnostics.

The second direction of prevention is to reduce the risk of disease in livestock, animal insurance pigs, and birds. Other micronutrient complex also increases the immunity of animals to disease and is more environmentally friendly substitute for drugs.

The third area of prevention is to reduce the risk of yield agro culture. Applications using nanotechnology complexes of trace elements "Avatar 1" and "Avatar 2" enhance the vitality of plants, as their use reduces the risk of plant disease by 40%. Also, for example in the insurance silkworms, their use reduces the risk by 50% using these complexes microelements.

The fourth trend is the use of preventive action to complex micronutrients for disinfection, processing facilities or plants for the keeping of animals, birds, and pigs, providing the necessary hygiene and preventing the spread of dangerous diseases. Some nanotechnology products are included in the insurance contract and seem so attractive to potential policyholders that are on the Internet (Dimchev, 2013). Market barriers for innovative nanotechnology are so great that they successfully debunk the myth ration of market behavior of his players (Fox, 2009).

Chasing the same bank and insurance institutional investors for speculative excess profits while ignoring the global political, financial risks led to a loss of 50% to 80% of the value of their shares (Laeven, 2008).

One of the world's leading providers of nanotechnology to protect American companies from competitors while reducing losses in the insurance applies patenting their policyholders (Bakos & Nowotarski, 2008). The most successful providers of nanotechnology products to reduce losses are global insurance companies, which are often the holders of small stakes tech companies. Following them are of course major international professional reinsurers, which provide customers insurers technical and technological support, including preventive efforts (Grocot, 2012).

However, the application of nanotechnology prevention activities insurer saddled a number of risks. Environmental safety of nanotechnology lacks proper state control. State taking into account the prospects of development of nanotechnology could provide tax incentives to domestic nanotechnology companies. In addition, authors could arrange financing from the innovation fund on a tender basis for competition among high-tech enterprises to solve socio-economic problems and needs with the help of nanotechnology. Insurance life companies, through the mechanism of state guarantees could also acquire shares of high-tech companies, thereby forming risk management sector and ensuring sustainable social and economic development.

Conclusions

Every day, modern man is facing the challenges of uncertainty and risk of future dangers and threats of various kinds every day that challenge him. Relevant response to these challenges can become widespread prophylactic use of nanotechnology insurers. An important role in these processes of the society is given to high-tech companies, universities, research centers, and the media. The combined efforts of all co-ordinated stakeholders will not only make the most of the unlimited possibilities of nanotechnology in the preventive activity of the insurer, but also allow the attendant contradictions.

All of the above allows to make some generalizations:

- (1) The possibility of using nanotechnology products in preventive activities of insurers has stupendous potential for high socio-economic importance in addressing the environmental, energy, and humanitarian issues;
- (2) Organization of high-tech clusters with well thought-out system of regulation of their activities, namely the scope of nanotechnology focuses on preventive activities of insurers and reduces the risks of policyholders;
- (3) Successful resolution of these contradictions is possible when joining all efforts of socially responsible representatives of the state, society, scientists, businessmen, and innovative nano-technology companies, insurers, insurance brokers, and insured.

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