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## ZAHRANIČNÍ PŘÍSPĚVKY

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### FOOD AS A POTENTIAL WAY OF BIOTERRORISTIC ACTIVITY

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#### Summary

*This work describes the possibilities of using food as an element of bioterrorist activity. At the present time the infection or contamination of food products is considered to be easier than the use of aerosols in bioterrorist attacks. Terrorists can use food in their attacks which can cause casualties but can also provoke fear and panic, a reduction in confidence or even distrust of the authorities. The effect of bioterrorist activity on food producers can cause a constant reduction of production and sales which can lead to significant material losses.*

**Key words:** Food bioterrorism; Biological factors.

One of the fighting ways in arm conflict is possibility to use biological weapon i.e. use of alive bacteria, viruses, rickettsia, protozoa, fungi, and toxins produced by these microorganisms or insects as a weapon. Obligatory world regulations i.e. "Geneva Protocol" issued in 1925 and „Convention on Prohibition on Performing Researches on Biological Weapon" from 1972 introduced ban on use biological agents and toxins for military purposes. Convention obliges the signatories to destroy possessed biological weapon and use possessed facilities for peace purposes. An annex to the convention issued in 1999 contains list of pathogens including 9 bacteria species, 3 rickettsia species, 2 protozoa species, 16 viruses, 19 different pathogens and 14 animals' and 16 plants' pathogens (2).

According to international terminology ([www.nbc-med.org](http://www.nbc-med.org)):

- Biological agents are living organisms (bacteria, rickettsia, fungi and viruses) or material of their origin and different sorts of biological origin toxins causing diseases and damages among humans, animals or plants or causing decay and worsening of these products quality. These agents can be used for bioterroristic activities.
- Bioterrorism is an unlawful, illegal use of biological agents against people with intention to force some activity or intimidate the authorities and civilians to achieve personal, politics, social or religious aims.

Biological weapon is a convenient instrument for terrorist activity because thanks to it they can

easily achieve the aim of the attack. Results of bioterroristic attack may be as follows:

- To provoke epidemic resulting in death of many people
- To provoke epidemic of the diseases that do not cause mass death however cause significant social and economic losses;
- To spread panic in community;
- To lead to economic paralysis of the country.

The frightful agent in bioterrorists hands is use or threat to use biologically active toxic substances or pathogens causing infection diseases. The aim of the bioterroristic attack may be not only population but also breeding animals, cultivated plants, food and potable water.

Biological factors may be used by bioterrorists for food infection and contamination. It is considered that infection or contamination of food products is easier than use of aerosols in bioterrorists attacks. Pathogenic or toxigenic microorganisms (botulinus toxin, dioxin) spread through alimentary ways may be used for this purpose. There are two kinds of effects – immediate - enterohaemorrhagic infection with Escherichi Coli, or Salmonella and distant – dioxin infection. Food bioterrorism may be used in two ways:

- Direct influence of contaminated or infected food on human where link of the nutritional chain is a biological agent transmitter;
- Indirect influence through carrying out the biological attacks on agriculture and food industry.

Food may be treated as specific „weapon" in

bioterrorists hands because use of infected or contaminated food allow realization of their intentions and goals. Methods of transforming food into „weapon” are food falsification, food infection or contamination or its pollution. Food may be transformed into „weapon” through genetically modification, addition of chemical substances during plants growth, addition of chemical and infectious substances to food during harvest, storage, processing, preparing and serving. Irrigation systems draining off sewages in production and processing may be used for food contamination.

Why do terrorists choose food as a weapon? Terrorist can use food in their attacks what can cause accidental casualties but can also provoke fear and panic, reduce or even distrust of authorities. The result of bioterroristic activity on food industry i.e. food producers may be unsettlement on food products and food producers market what is closely related with significant material loss (6).

Falsification, poisoning or food contamination causes sudden decrease of interest in this food and disturbances in its production and distribution. Moreover terrorists may use poisoned food everywhere population is depended on outside food supply what can happen during ecological disasters. It should be assumed that the aim of bioterroristic attacks with food as a „weapon” use may be places and people concentration, food sellers and gastronomic service nets as well as sources of the food for special consumers groups for instance military bases, schools, airplanes, ships and food manufacturers. Terroristic attack with food use as biological weapon transmitter may be carried out both inside and outside the country. In the first case the object of terrorists interest may be food manufacturing plants, mass alimentation places and mass ventures (jamborees, meetings, picnics). Especially attractive for terrorists may be use of catering firms waiting on mass ventures, particularly with VIPs participation. External attack may take place as a result of prior food contamination outside the country – raw materials, semi-finished products, feeding stuff, corn. Such attacks can be carried out using bacteria, viruses and biotoxins.

Previous examples confirm that terrorists can use food as a transmitter of biological agents to achieve their goals.

In 1964-1966 several typhoid fever and dysentery endemic focuses in Japanese hospitals were stated what was a result of food and beverages infection caused by hospital microbiologist. Total of 100 persons was infected and 4 of them died. The reason of his activity was wish to get suitable research material for his doctorate.

In 1984 religious sect „Rajneesh” infected salads in salad bars in well-known restaurants in

Dalles, Oregon. Total of 751 cases of *Salmonella Typhimurium* infection was confirmed. The aim of this activity was making impossible to carry out local election. In 1996 employee of the hospital laboratory in Dallas, Texas, infected cakes with *Salmonella Dysenteriae*, causing 12 cases (6).

Bioterroristic attack may concern each link of the nutritional chain from the field and down to the table. Elements favoring bioterrorists in carrying out attack on the food industry is monoculture of the animal husbandry and concentration of the animals in husbandry and slaughtering. At the processing stage favoring factor is centralized processing and great amount of raw material.

The object of terrorists interest is microorganism causing diseases resulting in huge economic losses. Therefore the threat for national economy may be potential bioterroristic attack on live stock or cultivated plants. Investigation carried out about reasons of the recent foot and mouth disease epidemic in Great Britain did not permit to establish from where the pathogen came. It is assumed that the virus source was feeding stuff originating from RPA or pork carcasses imported from Thailand. Many experts think that foot and mouth disease epidemic in Great Britain could be an effect of bioterroristic attack. (5).

Arsenal of biological weapon includes microorganisms that through cultivation devastation may contribute to serious economical losses originating both directly through harvest loss and indirectly through assignation additional funds for food import.

Genetically modified food is worthy of notice. Intensive development of biotechnology make possible genetically modification of food that may negatively influence on human health. There is possibility of genetical changes in cultivated plants that will cause considerable decrease of harvest efficiency or the food will not be fit for human consumption because of unprofitable organoleptic quality or content of undesirable toxic elements (9).

At present agriculture is considered as one of the best bioterroristic targets. It is called agroterrorism. Attack on the agriculture may cause various effects, mainly economical and social, what can be a reason of serious economic disturbances and lead to crash in food industry. It is anticipated that effect of bioterrorists attack the food industry may be (9):

- Deep social life disorganization,
- Direct loss in harvests and animal husbandry, that may lead to food shortages and drastic increase in prices and may cause increased unemployment in food industry branches,
- Destabilization of social and political structures,
- Losses resulting from activities to reduce food

borne diseases effects that may enormously exceed losses caused directly by the diseases.

- Losses resulting from introduction of the fitosanitary regulations in international trade,
- Losses resulting from indirect effects (market destabilization) (1).

In relation with real threat of use the food as a biological weapon transmitter on 12.06.2002 President of the USA signed the act "Public Health Safety and Bioterrorism" which introduce the most important amendments to FDA regulations regarding food (4). Subsection A, of the section III, of this act includes 15 articles related with food safety. FDA, as institution dealing with legal regulations about food is responsible for working out and introducing means of food safety including four main rules: „Registration of food plants”, „Early information about planned arrival of imported goods”, „Placing and keeping the records ” and „Administration apprehension”(3).

Danger of bioterroristic attack through the food and its elements mediation is present in NATO defensive strategy considering mainly easiness to carry out such attack, possibility to provoke mass casualties and secondary negative economical and social effects.

In Poland problems related with food safety are regulated by „Act on food and sanitary conditions” dated 11 May 2001 with following amendments (8). For further permanent improvement of food safety in our country and according to UE requirements the „Food Safety Strategy was worked out (7).

The task of m/a legal acts is not only improvement of the food quality according to EU requirements but also harmonization of the food laws regarding food safety.

Taking into consideration real danger related to bioterrorists activity with use the food as biological agents transmitters or direct attacks on human nutrition chain, food safety during its manufacturing come into prominence. Local and state establishment should cooperate with farmers, breeders,

and manufacturers, transport companies, wholesale establishment and shops and restaurants. Farms, transportation and distribution system, food manufacturers and retail sale units make an important part of country economy and its protection should be included in national security system.

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