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# **FOOD SAFETY ISSUES**

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## **Terrorist Threats to Food**

### **Guidance for Establishing and Strengthening Prevention and Response Systems**



**Food Safety Department  
World Health Organization**

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# **Terrorist Threats to Food: Guidance for Establishing and Strengthening Prevention and Response Systems**

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## *Executive Summary*

The malicious contamination of food for terrorist purposes is a real and current threat, and deliberate contamination of food at one location could have global public health implications. This document responds to increasing concern in Member States that chemical, biological or radionuclear agents might be used deliberately to harm civilian populations and that food might be a vehicle for disseminating such agents. The Fifty-fifth World Health Assembly (May 2002) also expressed serious concern about such threats and requested the Organization to provide tools and support to Member States to increase the capacity of national health systems to respond.

Outbreaks of both unintentional and deliberate foodborne disease can be managed by the same mechanisms. Sensible precautions, coupled with strong surveillance and response capacity, constitute the most efficient and effective way of countering all such emergencies, including food terrorism. This document provides guidance to Member States for integrating consideration of deliberate acts of food sabotage into existing programmes for controlling the production of safe food. It also provides guidance on strengthening existing communicable disease control systems to ensure that surveillance, preparedness and response systems are sufficiently sensitive to meet the threat of any food safety emergency. Establishment and strengthening of such systems and programmes will both increase Member States' capacity to reduce the increasing burden of foodborne illness and help them to address the threat of food terrorism. The activities undertaken by Member States must be proportional to the size of the threat, and resources must be allocated on a priority basis.

Prevention, although never completely effective, is the first line of defence. The key to preventing food terrorism is establishment and enhancement of existing food safety management programmes and implementation of reasonable security measures. Prevention is best achieved through a cooperative effort between government and industry, given that the primary means for minimizing food risks lie with the food industry. This document provides guidance for working with industry, and specific measures for consideration by the industry are provided.

Member States require alert, preparedness and response systems that are capable of minimizing any risks to public health from real or threatened food terrorism. This document provides policy advice on strengthening existing emergency alert and response systems by improving links with all the relevant agencies and with the food industry. This multi-stakeholder approach will strengthen disease outbreak surveillance, investigation capacity, preparedness planning, effective communication and response.

The role of the World Health Organization (WHO) is to provide advice on strengthening of national systems to respond to food terrorism. WHO is also in a unique position to coordinate existing international systems for public health disease surveillance and emergency response, which could be expanded to include considerations of food terrorism. This document complements other guides and advice developed by WHO, the Food and Agriculture Organization of the United Nations (FAO) and other international agencies related to the threat of terrorist acts with chemical, biological or radionuclear agents.

# **Terrorist Threats to Food:**

## **Guidance for Establishing and Strengthening Prevention and Response Systems**

### **1. Introduction**

Threats from terrorists, criminals and other anti-social groups who target the safety of the food supply are already a reality. During the past two decades, WHO Member States have expressed concern about the possibility that chemical and biological agents and radionuclear materials might deliberately be used to harm civilian populations. In recent months, the health ministries of several countries have increased their state of alert for intentional malevolent use of agents that may be spread through air, water or food.

On 18 May 2002, the Fifty-fifth World Health Assembly adopted a resolution (WHA 55.16) which expressed serious concern about threats against civilian populations by deliberate use of biological, chemical or radionuclear agents. It noted that such agents can be disseminated via food and requested the Director-General to provide tools and support to Member States, particularly developing countries, in strengthening their national systems. It also requested WHO to continue to issue international guidance and technical information on recommended public health measures to deal with deliberate use of chemical, biological or radionuclear agents to cause harm. In response, WHO has prepared these guidelines, intended primarily for policy-makers in national governments with responsibility for ensuring food safety, to assist them in incorporating considerations of food terrorism into existing systems for food safety.

Deliberate release of a chemical, biological or radionuclear agent could potentially cause severe harm and pose a huge burden on public health systems. Such a release would probably initially be considered as a natural or unintentional event. The Organization's traditional role has been to provide advice and support for strengthening food safety management programmes and public health disease alert and response systems at all levels. However, such systems need to be expanded to specifically address diseases that may be caused deliberately.

All Member States must have basic systems to prevent or deter deliberate contamination of their food supplies and, if attacked, to respond rapidly to minimize the health, economic and other effects of such contamination. However, counterterrorism should be seen as only one aspect of a broader, comprehensive food safety programme, in national and global contexts. WHO and a number of Member States have addressed this issue with strategies to reduce the increasing burden of foodborne illness. The WHO Global Strategy for Food Safety, endorsed in January 2002 by the WHO Executive Board, comprises a preventive approach to food safety, with increased surveillance and more rapid response to outbreaks of foodborne illness. This approach could substantially expand the abilities of Member States to protect the safety of their food supplies against natural and accidental threats and provides a framework for addressing terrorist threats to food.

#### ***1.1 Purpose***

The purpose of this document is to provide policy guidance to Member States for integrating consideration of deliberate acts of sabotage of food into existing prevention and response programmes. Establishing and strengthening systems to address food terrorism, including

disease outbreak surveillance and investigation, precautionary measures and emergency response systems, will give them a basic capacity to prevent and manage food safety emergencies, including food sabotage. This document also supports strengthening of programmes that underlie food production, processing and preparation to respond to food terrorism.

This document also describes the role of WHO, with its public health mandate, in responding to food safety emergencies of significance to international public health, which include food terrorist threats, and in providing assistance to Member States if their capacity to deal with such incidents is overwhelmed.

## **1.2 Definitions and scope**

Food terrorism is defined as an act or threat of deliberate contamination of food for human consumption with chemical, biological or radionuclear agents for the purpose of causing injury or death to civilian populations and/or disrupting social, economic or political stability. The chemical agents in question are man-made or natural toxins, and the biological agents referred to are communicably infectious or non-infectious pathogenic microorganisms, including viruses, bacteria and parasites. Radionuclear agents are defined in this context as radioactive chemicals capable of causing injury when present at unacceptable levels. This document covers all food and includes water used in the preparation of food, as well as bottled water. However, water supply is not included in this document.

This document focuses on terrorist acts by non-State entities against governments, organizations and civilian populations and does not deal with acts of war perpetrated by one nation against another with chemical, radionuclear or biological weapons. It includes consideration of all means by which individuals seeking personal revenge or gain might deliberately contaminate food, including local acts of sabotage. Terrorist threats to animal or plant health or to the availability of food in sufficient quantity and variety to meet the nutritional needs of a population are not addressed.

A number of conventions prohibit the signatories from using biological, chemical or radionuclear weapons of mass destruction<sup>1</sup>. The objective of use of such agents by terrorists against a civilian population is essentially the same as that of their use in warfare against military targets: to cause widespread incapacitation and injury and to effect terror and panic. Civilian populations are usually more vulnerable than military personnel to chemical, biological or radionuclear weapons because they are of all ages and health status, whereas military personnel are generally healthy adults. Furthermore, the latter are usually prepared for attack by training and in many cases protected by immunization, prophylactics and protective clothing and devices. The potential agents and circumstances of terrorist attacks in civilian settings are more diverse than those directed at military personnel. As a result, rapid diagnosis and appropriate, readily available treatment may be difficult to assure. Because of this diversity the agents used by terrorists may be more readily obtainable than those used against military personnel.

## **1.3 Food as a vehicle for terrorist acts**

There have been many instances where civilian food supplies have been sabotaged deliberately throughout recorded history, during military campaigns and, more recently, to terrorize or

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<sup>1</sup> WHO. Public health response to biological and chemical weapons – WHO guidance – Projected second edition of Health aspects of chemical and biological weapons: report of the WHO group of consultants, Geneva 1970, republication issue for restricted distribution, November 2001.

otherwise intimidate civilian populations<sup>2</sup>. Deliberate contamination of food by chemical, biological or radionuclear agents can occur at any vulnerable point along the food chain, from farm to table, depending on both the food and the agent. For example, in 1984, members of a religious cult contaminated salad bars in the USA with *Salmonella typhimurium*, causing 751 cases of salmonellosis. The attack appeared to be a trial run for a more extensive attack intended to disrupt local elections. The cult was also in possession of strains of the causative organism of typhoid fever, a severe invasive illness<sup>3</sup>. In 1996, a disgruntled laboratory worker deliberately infected food to be consumed by colleagues with *Shigella dysenteriae* type 2, causing illness in 12 people. Although few incidents or threats of deliberate contamination of food with chemical, biological or radionuclear agents on a massive scale have been documented, it is prudent to consider basic countermeasures.

The potential impact on human health of deliberate sabotage of food can be estimated by extrapolation from the many documented examples of unintentional outbreaks of foodborne disease. The largest, best-documented incidents include an outbreak of *S. typhimurium* infection in 1985, affecting 170 000 people, caused by contamination of pasteurized milk from a dairy plant in the USA<sup>4</sup>. An outbreak of hepatitis A associated with consumption of clams in Shanghai, China, in 1991 affected nearly 300 000 people and may be the largest foodborne disease incident in history<sup>5</sup>. In 1994, an outbreak of *S. enteritidis* infection from contaminated pasteurized liquid ice cream that was transported as a pre-mix in tanker trucks caused illness in 224 000 people in 41 states in the USA<sup>6</sup>. In 1996, about 8 000 children in Japan became ill, including some deaths, with *Escherichia coli* O157:H7 infection from contaminated radish sprouts served in school lunches<sup>7</sup>.

Episodes of foodborne illness caused by chemicals have also been reported in the published literature. The chemicals that can contaminate food include pesticides, mycotoxins, heavy metals and other acutely toxic chemicals such as cyanide. In perhaps one of the most deadly incidents, over 800 people died and about 20 000 were injured, many permanently, by a chemical agent present in cooking oil sold in Spain in 1981<sup>8</sup>. In 1985, 1 373 people in the USA reported becoming ill after eating watermelon grown in soil treated with aldicarb<sup>9</sup>.

Contamination of food in one country can also have a significant effect on health in other parts of the world. In 1989, staphylococcal food poisoning in the USA was associated with eating mushrooms that had been canned in China<sup>10</sup>. Outbreaks of cyclosporiasis in the USA in 1996

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<sup>2</sup> Khan A. S., Swerdlow D. L., Juranek D. D. Precautions against biological and chemical terrorism directed at food and water supplies. Public Health Rep 2001;116:3-14

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