

International Food Safety Authorities Network (INFOSAN)

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Food Safety in Natural Disasters

SUMMARY NOTES

When natural disasters strike, food safety is a crucial public health concern that is too often neglected. Under the extraordinary conditions that may occur during and after such disasters, the following issues require immediate attention:

- Preventive food safety measures
- Inspecting and salvaging food
- Provision for safe food and water
- Recognition and response to outbreaks of foodborne disease
- Consumer education and information on food safety

Need for Food Safety Advice

During or following natural disasters, such as the recent earthquake and tsunami in South East Asia or cyclone and flood in New Orleans, food in affected areas may become contaminated with dangerous microbiological and chemical agents. Consequently, those populations are at risk for outbreaks of foodborne diseases, including hepatitis A, typhoid fever and diarrhoeal diseases, such as cholera and dysentery. In particular, floods are often followed by a general increase of diarrhoeal diseases but rarely by specific outbreaks¹.

Food safety risks are mainly linked to unsafe food storage, handling and preparation. In many cases cooking may be impossible during natural disasters due to the lack of facilities or fuel. Poor sanitation, including lack of safe water and toilet facilities, can compound the risks. As persons suffering from the direct effects of the disaster may already be at risk through malnutrition, exposure, shock and other traumas, it becomes essential that the food they consume is safe.

¹ **Water-borne diseases** - Flooding is associated with an increased risk of infection, however this risk is low unless there is significant population displacement and/or water sources are compromised. Of the 14 major floods which occurred globally between 1970 and 1994, only few led to diarrhoeal disease outbreaks. The major risk factor for outbreaks associated with flooding is the contamination of drinking-water facilities. The risks can be minimized if well recognized and the provision of clean water addressed as a priority. A typhoon in Trust Territories of the Pacific in 1971 disrupted water sources and forced people to use different sources of groundwater, heavily contaminated with pig faeces. This resulted in an outbreak of balantidiasis, an intestinal protozoan. A cyclone and flooding in Mauritius in 1980 led to an outbreak of typhoid fever. The only epidemic-prone infection directly from contaminated water is leptospirosis, a zoonotic bacterial disease. Transmission occurs through contact with water, damp soil or vegetation, or mud contaminated with rodent urine.

Vector-borne diseases - Floods may lead to an increase in vector-borne diseases through the expansion of vector habitats. Standing water can act as breeding site for mosquitoes, and enhance the exposure of the disaster-affected population and emergency workers to infections such as dengue, malaria and West Nile fever. (Cited from: WHO | Flooding and communicable diseases fact sheet (2005))

Authorities must maintain existing support for food safety and heighten their vigilance against new foodborne risks introduced by the disaster. Basic messages, such as those contained in the WHO Five Keys for Safer Food, should be reinforced to all food handlers, especially those involved in large scale food preparation.

WHO's Advice for Food Safety in Natural Disasters

In order to assist governments in their planning and response to natural disasters, the World Health Organization has developed the guide *Ensuring Food Safety in the Aftermath of Natural Disasters*. It offers specific advice to those involved in food storage, handling and preparation during disaster situations. The guide is modelled after the WHO Five Keys to Safer Food (<http://www.who.int/foodsafety/consumer/5keys/en/>) and is intended to:

1. Provide public health and other authorities with guidance on key food safety issues to be considered in such disaster situations;
2. Remind authorities of the need to restore and maintain basic support for food safety infrastructure;
3. Heighten their vigilance against the introduction of new foodborne risks;
4. Serve as a quick reference to those involved in providing emergency food aid, such as managers of refugee camps and food distribution centres; and
5. Provide guidance for the development of simple food safety messages to those involved in food handling and preparation in disaster areas, including ordinary consumers.

While the guide has been primarily developed to be used following natural disasters, most of its food hygiene advice may also be applicable to other emergencies such as those caused by armed conflicts and serious social disruptions.

Overview of the Guide²

1. Preventive food safety measures in the aftermath of natural disasters

During and following natural disasters, particularly floods and tsunamis, food may become contaminated by surface water. At times, surface water may itself have been contaminated by pathogenic bacteria from sewage, wastewaters and dead animals or humans. The need for preventive measures should be immediately investigated, including:

- Water for drinking and food preparation should be treated as contaminated unless specifically confirmed as safe. Therefore, all water should be boiled or otherwise made safe before it is consumed or used as an ingredient in food.
- What agricultural production has been adversely affected and what areas exist where food can still be harvested or where food has been safely stored after harvesting.
- What agricultural produce may be contaminated with microorganisms (from raw sewage or decaying organisms) and potentially hazardous chemicals. Note that while it is sometimes possible to eliminate potentially hazardous microorganisms by thoroughly cooking or disinfecting the produce, such actions may not completely remove chemical hazards.
- If crop fields have been contaminated, an assessment should be carried out to establish measures to reduce the risk of transmitting pathogens and hazardous chemicals.

2. Inspecting and salvaging food

- If feasible, all food stocks should be inspected and assessed for their safety. Ideally such food should be labelled as such or otherwise segregated from contaminated or uninspected food stocks.
- When salvaged foods are reconditioned to be fit for consumption, they should be labelled accordingly.

² "Ensuring Food Safety in the Aftermath of Natural Disasters" http://www.who.int/foodsafety/foodborne_disease/emergency/en/

- In areas that have been flooded, whatever intact foods remain should be moved to a dry place, preferably away from the walls and off the floor.
- Any food stocks found to be unfit for human consumption must be disposed of properly
- If necessary, consumers should be clearly informed of measures they need to take to render food safe.
- Discard canned foods with broken seams, serious dents, or leaks; and jars with cracks.
- Undamaged canned goods and commercial glass jars of food are likely to be safe. However, if possible containers should be sanitized before opening them for use. Foods that are exposed to chemicals should be thrown away. Chemicals generally cannot be washed off the food.
- Inspect refrigerators and freezers to determine if they have been affected by the lack of electricity or flood waters. Where food has remained cold and otherwise unaffected, the food is probably safe to consume.
- Where power is not available, try to use refrigerated food before it is held in the danger zone (5 - 60°C) for more than two hours, especially meat, fish, poultry and milk.
- Some foods normally stored in the refrigerator can be kept in the danger zone for longer than others, but food should definitely be discarded if it shows signs of spoilage (off odours, colours or textures).
- Check all food for physical hazards, such as glass, wood splinters and stones that may have been introduced.
- Mouldy food should not be consumed as it may contain toxic substances. The likelihood of mould growth on stored dried vegetables, fruits and cereals is greater in a humid environment and where food has become wet.

3. Provision of Food after a Natural Disaster

- After a natural disaster as soon as families have re-established their capacity to cook, any food they may be given is usually distributed in dry form for them to prepare and consume in their homes or temporary shelters. People may not always be familiar with all kinds of dry foods. When given, they should be shown how to prepare dry foods especially to use safe water if the food is not cooked.
- In addition to safe water for food preparation, safe water for washing hands and utensils will be needed.
- A shortage of fuel for cooking may also be a major constraint and is essential for ensuring adequate cooking and reheating of cooked food.
- In some cases, as an alternative to mass feeding, it may be possible to help households by setting up temporary shared neighbourhood kitchens where people can prepare food for their own families or in groups.
- Where basic infrastructure is lacking, shelf-stable rations that do not need cooking or hydration should be provided.

4. Identification and response to outbreaks of foodborne disease

It is vital to detect foodborne disease outbreaks as early as possible in order to limit their spread.

Indications of a foodborne disease outbreak that should trigger further investigation include:

- Increase in persons visiting clinics with symptoms of diseases, especially diarrhoea and other gastrointestinal symptoms;
- Field reports on cases of foodborne disease symptoms from health workers;
- Reports from pharmacists of unusual demand for anti-diarrhoeal agents, anti-emetics or other medication for gastrointestinal problems, e.g. antibiotics;
- Upsurge in inexplicable customer complaints to a food caterer, supplier, food industry;
- Reports of unusual death;
- Unusual absenteeism from schools and the workplace, especially in large industries.

Investigation of and response to a suspected foodborne disease outbreak:

- Timely treatment of the ill;
- Removal (recall) of the contaminated food from circulation;

- Rapid identification of the causative agent and the suspected foods by patient interviews and by appropriate diagnostic laboratory testing;
- Epidemiological investigation to identify the causative agent, the responsible food and the manner of contamination;
- Timely provision of information to the public on food-related outbreaks and the actions they should take to minimize those risks.

5. Consumer education and information

- All advice should be tailored to the local situation and existing conditions. In many cases, consumers will be preparing food under conditions that are more primitive than normal due to lack of fuel, water supply and electricity.
- Consumers should be advised to take special care regarding food safety when procuring food and water. For example, where warehouses, chemical plants, and other sources of chemicals are present, an assessment of potential chemical contamination should be made. People should be advised to avoid such foods unless decontamination procedures are available.
- General information and advice should also be provided to the population on the risks of foodborne diseases to remind the population that dangerous communicable disease outbreaks in disaster areas have the potential to claim as many lives as the disaster itself and that safe food and water are essential to prevent such outbreaks.

References

"Ensuring Food Safety in the Aftermath of Natural Disasters" developed by the World Health Organization is available at http://www.who.int/foodsafety/foodborne_disease/emergency/en/
 "Environmental health in emergencies and disasters"
http://www.who.int/water_sanitation_health/hygiene/emergencies/emergencies2002/en/

INFOSAN serves as a vehicle for food safety authorities and other relevant agencies to exchange food safety information and to improve collaboration among food safety authorities at both the national and international level.

INFOSAN Emergency, embedded in INFOSAN, links official national contact points to address outbreaks and emergencies of international importance and allows for the rapid exchange of information. INFOSAN Emergency is intended to complement and support the existing WHO Global Outbreak Alert and Response Network (GOARN).

INFOSAN is operated/managed by WHO, Geneva. It currently includes 145 Member States.

More information is available at: www.who.int/foodsafety