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Counter terrorism and food safety

Submitted by the Netherlands

1. This working paper is based on the presentation made on July 28 by Prof. Paul W.J. Peters, DVM, PhD, Chief Public Health Officer Food, of the Food and Consumer Product Safety Authority (VWA) of the Netherlands.

Introduction

2. The Food and Consumer Product Safety Authority (further referred to as VWA) is responsible for:

- (i) Food safety tasks, including handling crises and counter terrorism;
- (ii) Integrated law enforcement in food chains, incl. risk communication;
- (iii) Independent risk evaluations and research;
- (iv) Inspection and control of animal diseases and feed chain.

3. The VWA is concerned about possible terrorist acts directed at foods because:

- (i) Potential for delivering incapacitating or lethal quantities;
- (ii) Among most vulnerable routes;
- (iii) International nature of marketplace;
- (iv) Psychological impact; daily essential for everybody;
- (v) Short and long term effects;
- (vi) Accessibility food chain.

4. Furthermore “Recipes” on how to affect the food chain are available in open literature, particularly the internet. Many chemical and microbiological agents and precursors to be used for this end are also widely available.

5. Problems that the VWA is confronted with in this regard are:

- (i) Analytical assays not available for a number of potential threat agents;
- (ii) Background interferences in many food matrices;
- (iii) Time required for detection and identification;
- (iv) Sensitivity;
- (v) Ascertainment patient & food borne infections and intoxications;
- (vi) Lack of sampling plans.

Counter terrorism measures

6. Food Counter Terrorism calls for an integrated approach in which the following aspects are simultaneously addressed:

- (i) Recognition;
- (ii) Detection;
- (iii) Outbreak response;
- (iv) Prevention.

7. *VWA activities with regard to Recognition are:*

To make an inventory of hazards and risks: human and animal diseases, food, feed. To maintain and increase knowledge about possible exposures and to have in place databases chemicals, microorganisms, analyses and effects

8. *VWA activities with regard to Detection:*

To monitor for contamination and disruption based on Unexpected outliers, disturbing results from routine samples, inspections or examinations during food law enforcement activities. To use available information sources such as:

- (i) Call centre (24/7, 0800-0488): consumers, retailers, press;
- (ii) RASFF (European Commission); INFOSAN, GOARN, CSR (WHO);
- (iii) Information about ‘recalls’;
- (iv) Terrorist activities;
- (v) OIE.

9. *VWA activities with regard to Outbreak Response are:*

Identification of the agent (stool & food), exposure measurement, risk assessment, contacts with risk management dept.'s, producers and retailers, recall of the product, communication with consumers, press etc. and evaluation.

10. *VWA activities with regard to Prevention are:*

- (i) Hazard Analysis Critical Control Points (HACCP), esp. accessibility;
- (ii) Tracking and tracing;
- (iii) Enforcement;
- (iv) Responsibility producer;
- (v) Training in outbreak responses.

11. **Case study:** Outbreak fall 2001 in NL: an epidemic of epileptic seizures after consumption of herbal tea.

Case History

Patient A 26 yr., female:

- (i) With general nausea, malaise and vomiting about 2 hrs after 4 cups of a mixture of herbal teas (oriental, star mix, fantasy mix); no use of drugs, alcohol or medicines
- (ii) No other physical, neurological problems; electrolyte conc. normal; ECG normal.
- (iii) During clinical examination epileptic seizure: treatment 5 mg diazepam i.v.
- (iv) Patient one night in intensive care
- (v) No further complications
- (vi) Next day she went home in healthy condition
- (vii) (a friend with same conditions in other hospital after drinking tea)
- (viii) On 24.9.01 and 26.9.01 1st and 2nd complaints, followed on 1.10.01 by 2 complaints with identical symptoms and circumstances (tea, i.c. hospitalisation, nausea, vomiting and seizures); total 8 patients.

12. On this basis, the Chief Public Health Inspector Food took the decision that a severe incident was at hand.

Outbreak management

13. The following actions were taking in the context of outbreak management:

- (i) Inspections were carried out at home, retailer, distributor and importer;
- (ii) Different brand names; different distribution canals and retailers;
- (iii) Samples for chemical analyses, f.e. pesticides (350) were taken;
- (iv) Organoleptic examination of tea-mixtures was done.

14. From the investigations it became apparent that the product involved was 'star mix' tea. Following this other activities were carried out:

- (i) Contact with NPCC;
- (ii) 2.10.01 letter to inform ministers of Health, and Agriculture ;
- (iii) Info to Consumer Organisation, Regional Health Centres 3.10 importer and distributor known; the latter advertised in public media announcing total recall of products from consumers and retailers;
- (iv) Telephone meetings with VWA regions;
- (v) Rapid Alert to Brussels;
- (vi) Call centre asked callers to complete info form;
- (vii) Q & A and press info in WWW pages;
- (viii) Sampling at all levels ;
- (ix) Pedigree of network suppliers

15. Star mix has the following composition: Chinese (Indian, Badin) anis, fennel seed, juniper berry, radix liquiritiae, peppermint, black- and raspberry leaves.

16. On 5.10.01, based upon uniformity of clinical symptoms in 57 patients, and presence of Japanese (pH, KOH, smell, taste) instead of Chinese star anise in tea of patients, the conclusion was drawn that *Illicium anisatum* was most probably the causative factor. The question was still open whether other substances could be the causative factor, such as Myristin, myristicin, anisatin, or pesticides. Therefore chemical analyses were prepared.

17. After 8.10.01 no more complaints were received. By 25.10.01 only one patient was still in hospital with additional myalgia and muscular degeneration. He drunk very concentrated 'only star' tea. Within a month, on 26.10.01, there was confirmation from the National Institute of Public Health and the Environment presence anisatin in Japanese star anise (NMR-spectroscopy).

18. Anisatin is a toxin with insecticide properties in seeds and leaves of *Illicium anisatum* (Japanese anise) Anisatin is a non-competitive GABA-antagonist which can cause hyperactivity of the CNS and tonic-clonic seizures.

19. Finally, 63 patients associated with clinical symptoms and drinking 'star mix' tea (22 hospitalised, 16 patients with tonic-clonic convulsions, 6 patients with preceding auditory hallucinations). It was a rare and unknown outbreak of disease: literature only indicated one publication with convulsions in young children in Mexico after *Illicium* tea.

Conclusions drawn from the case:

- (i) HACCP; product chain responsibility is very important;
- (ii) Underreporting; difficulty to associate with food poisoning;
- (iii) Close collaboration between clinicians, the VWA, National Poison Control Centre and experts played a vital role in rapid detection, and in preventing further harm;
- (iv) However, severe delay in recognition of food related poisoning.

20. During the *Assessment and Evaluation* the following was noted:

- (i) Public health and/or animal health problem;
- (ii) Incidental or structural problem;
- (iii) Political, societal and international context;
- (iv) Be suspicious for terrorist activities;
- (v) Note and respect signals;
- (vi) Transparent system for judgements;
- (vii) Transparent communication structure with policy departments.

Specific analyses of efficacy of Food borne infections and intoxications in the Netherlands

21. According to estimates for food borne infections and intoxications in the Netherlands in 2003 the following data had to be taken into account for planning: there should have been approximately 300,000 - 750,000 cases, which should have been caused primarily by:

- (i) Norovirus
- (ii) Salmonella
- (iii) Campylobacter
- (iv) Cl. perfringens

22. However, based on Statutory notifications over the year 2003, the following was seen:

- (i) There were 86 reported outbreaks (with 1076 cases <51hosp), caused by the following:
 - Salmonella (41%)
 - Norovirus (23%)**
 - Campylobacter (12%)

Note: a 50% increase of S.enteritidis due to imported eggs was not reflected in the number of Salmonella outbreaks

**new emerging variant II4

In 80% of the reported outbreaks there was a confirmation etiological agents.

Based on Consumer notifications over the year 2003 the numbers were even more different from the estimates:

(ii) There were 324 outbreaks (with 582 cases) of which the etiological agent was confirmed in 13%. The primary agents were:

- B. cereus (4.1%)
 - Salmonella (1.3%)
 - Viral origin (8%)**
- **indirectly determined

Concluding Statements

23. Based on both the Case Study and the specific analyses of Food borne infections and intoxications in the Netherlands, the following concluding statements can be made:

- (i) The existing systems of reporting outbreaks of food borne infections and intoxications are relatively insensitive for epidemics such as those caused by intentional/terrorist activities.
 - (ii) Intensify risk communication
 - (iii) The delay in reporting and the fact of underreporting of food borne infections and intoxications inhibits a quick rapid response to these conditions, their identification and treatment (outbreak response).
 - (iv) Add accessibility as a CCP in HACCP system; and inspect and enforce this.
 - (v) Improvement notifications and case/food analysis is imperative.
 - (vi) International early warning systems such as RASFF/ INFOSAN to be scrutinized.
 - (vii) Without competition international collaboration laboratory assays and exchange of methods.
 - (viii) International attention for food virology and assessment of real contribution of viral food pathology.
 - (ix) International exercises and ring tests for food borne infections and intoxications.
 - (x) Stimulate public perception of food borne infections and intoxications and the use of notifications.
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