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*Improving public
communication
in case of food
safety issues –
lessons from the
2011 EHEC
outbreak*



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Abstract

This study aims to examine how public communication and management in case of food safety incidents are organized in the Netherlands and where improvements are still needed. The 2011 Enterohaemorrhagic *Escherichia coli* (EHEC) outbreak gave rise for this.

In the spring of 2011 one of the largest Haemolytic Uremic Syndrome (HUS) outbreaks ever reported worldwide took place. Almost 4,000 people became ill (of which one-fifth developed HUS) and over 50 people died. Cases were reported in several countries, including the Netherlands. However, all cases were (in)directly linked to a stay in Germany, except for some cases in France. The outbreak started in the beginning of May and was only officially declared to be over at the end of July. The identification of the source was difficult. Several products (e.g. cucumbers, tomatoes and bean sprouts) were implicated and consumption advices were released in Germany. Epidemiological evidence suggested that fenugreek seeds were the most likely source of the outbreak. However, this was never microbiologically confirmed. The outbreak led to anxiety and a fierce public response. Also the economic consequences for the involved sectors were enormous.

The starting point of this study was Article 10 Regulation (EC) No 178/2002 which has a central position in food law. This Article describes the governments' legal task of public communication about food safety problems. Criticism was expressed on the German approach of the outbreak in terms of management, but certainly in terms of communication. This led to the question how this is organized in the Netherlands, which measures were taken by different stakeholders during the 2011 EHEC outbreak, how this was perceived by the Dutch consumer and consequently which lessons are to be learned from the outbreak and what improvements are needed.

In order to answer those questions the study was separated into three parts. First of all the different stakeholders during the 2011 EHEC outbreak were identified: Dutch food production, retail and the government (Ministry of Health, Welfare and Sport (VWS), Ministry of Economic Affairs (EZ), Netherlands Food and Consumer Product Safety Authority (NVWA), National Institute for Public Health and the Environment (RIVM) and Netherlands Nutrition Centre Foundation (VCN)). Representatives of the different stakeholders were interviewed and documents (e.g. incident- and crisis protocols) were assessed to gain information on the official organization and more specifically the approach during the 2011 EHEC outbreak. Furthermore, a survey (n=182) was designed to gain insight on the perception of management and communication quality during the 2011 EHEC outbreak by the Dutch consumer. Finally, the results from those two parts were combined to identify where improvements were needed and recommendations were given. This study focused primarily on the Dutch process and therefore only Dutch stakeholders and consumers were recruited for this study.

The incident- and crisis protocols from the different stakeholders were analysed and it was found that the approach during a food safety incident is very fragmented. In case of a food safety incident the separate manuals are followed. Different organizations have different tasks in management and communication, but the overview seems to be missing. Representatives of the different stakeholders were not even aware of the division of responsibilities in a food safety incident. This may be called shocking as the aim of communication in a food safety incident should be to inform consumers properly on the consequences of a food safety issue for them. It was found that the responsibility for public communication in case of (routine) incidents officially lies with the NVWA and shifts to the Ministry of VWS in case of crisis. The Secretary general (SG) should decide when a calamity is defined as a crisis. In practice this only happens when the consequences are severe, which means that many people become ill or die. This would mean that the NVWA is responsible in most cases. Despite their legal task, the NVWA was found to point to the producers as those responsible for public communication. In addition, coordination in management of and communication about food safety issues was found to be missing.

When it comes to the 2011 EHEC outbreak specifically it is important to note that the outbreak was categorized as a trade issue rather than a food safety issue in the Netherlands. This means that Dutch communication merely focussed on consequences of the outbreak for Dutch growers. Memories from the survey participants were also clearly linked to this topic. Furthermore, results from the survey show that information on what the outbreak meant for the Dutch consumer and the measures taken to manage the outbreak was missing. It is remarkable that this information was missing as Article 10 Regulation (EC) No 178/2002 clearly describes the obligation of the government to inform the consumer about this. It says to inform the general public where there are reasonable grounds to suspect that a food or feed may present a risk for human or animal health. Results from this study indicate that for the Dutch government “reasonable grounds” means that a substantiated amount of people become ill or die. However, even if people do not fall ill immediately, anxiety can exist among consumer and proper communication is therefore necessary. Article 10 Regulation (EC) No 178/2002 does not require a crisis situation. It even obliges the government to communicate to the public if there is reason to believe that a food safety problem exists. In the Netherlands awareness at this point is missing.

Another important finding from the survey was the communication quality during the 2011 EHEC outbreak was perceived negatively. This quality was found to be largely influenced by consumer trust in the messenger of food safety information. Also consistency was found to predict the communication quality.

Problems were identified in different areas: compliance with law, who should communicate, what should be communicated, when should be communicated and how should be communicated. Recommendations at all of these points were given following the results and a literature review.

First of all, it was recommended that the Dutch government should comply with their legal obligation of public information of food safety issues. In addition, an overall incident- and crisis protocol for the entire chain may be helpful in the preparation on food safety incidents and a more coordinated and consistent approach if incidents occur. The preparation of such a protocol is even a legal obligation as described in Article 13 Regulation (EC) No 882/2004.

Following the legal obligation of the government to inform the public on food safety problems as described in Article 10 Regulation (EC) No 178/2002, the NVWA was identified as the most trusted organization to perform this task. Also, it may create consistency in measures and messages and thereby have a positive influence on the perception of the management and communication quality.

Even though Article 10 Regulation (EC) No 178/2002 clearly describes that the public should be informed about the nature of the risk to health, identifying to the fullest extent possible the food or feed, or type of food or feed, the risk that it may present, and the measures which are taken or about to be taken to prevent, reduce or eliminate that risk, this was found not to be implemented correctly. Consumer did not feel properly informed during the 2011 EHEC outbreak. In future targeted messages with information on the consequences of an incident for the consumer are to be released.

Moreover, in the Netherlands the focus lays on communication in crisis situations. The same thing happened during the 2011 EHEC outbreak, which made the consumer not feel properly informed as it was not defined as a crisis situation. There is a legal obligation to communicate to the public on (potential) food safety problems, but the Dutch government focuses too much on crisis communication, rather than incident communication. It was recommended to make changes at this point and follow the legal obligation to communicate as soon as the consumer (or the media) may perceive something as an incident.

Finally, it was found that communication during the 2011 EHEC outbreak was mainly passive through publication of information on internet. Results, however, indicate that a more active approach is needed. Especially because the media otherwise may create their own story, while accurate information for the consumer is needed.

Overall, results from this study indicate that large steps still need to be made before the Netherlands are prepared for a crisis, such as the 2011 EHEC outbreak. The first step in the right direction is compliance of the Dutch government with law and a more active approach in public communication on food safety problems.

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List of abbreviations

AID	Algemene Inspectiedienst (General Inspection Service)
BAO	Bestuurlijk Afstemmings Overleg (Administrative Coordination Meeting)
BfR	Bundesinstitut für Risikobewertung (Federal Institute for Risk Assessment)
BSE	Bovine Spongiform Encefalopathy
BTCb	Beleidsteam Crisisbeheersing (Policy Team Crisis Management)
BVL	Bundesamt für Verbraucherschutz und Lebensmittelsicherheit (Federal Office of Consumer Protection and Food Safety)
CBL	Centraal Bureau Levensmiddelenhandel (Central Bureau Food Trade)
Cib	Centrum Infectieziektenbestrijding (Centre Infectious Disease Control)
CJD	Creutzfeldt-Jakob Disease
CTT	Crisis Toezicht Team (Crisis Monitoring Team)
DboT	Departementaal Beleidsondersteunend Team (Departmental Policy Support Team)
DBT	Departementaal Beleidsteam (Departmental Policy Team)
DCC	Departementaal Crisis Centrum/ Departementaal Coördinatie Centrum (Departmental Crisis Centre/ Departmental Coordination Centre)
DCo	Directie Communicatie (Managing Board Communication)
DCT	Departementaal Communicatie Team (Departmental Communication Team)
DDA	Dienstdoend Ambtenaar (Duty Officer)
DPA	Dutch Produce Association
EC	European Commission
ECDC	European Centre for Disease Prevention and Control
EFSA	European Food Safety Authority
EL&I	Economische Zaken, Landbouw & Innovatie (Economic Affairs, Agriculture & Innovation)
EHEC	Enterohaemorrhagic <i>Escherichia coli</i>
EU	European Union
EWRS	Early Warning and Response System
FAO	Food and Agriculture Organization of the United Nations

GFB	GroentenFruitBureau (VegetablesFruitBureau)
GGD	Gemeentelijke/Gemeenschappelijke Gezondheidsdienst (Municipal/Common Health Service)
GHOR	Geneeskundige Hulpverlening bij Ongevallen en Rampen (Medical Assistance in Accidents and Disasters)
HUS	Haemolytic Uremic Syndrome
LNV	Landbouw, Natuur en Voedselkwaliteit (Agriculture, Nature & Food Quality)
LTO	Land- en Tuinbouw Organisatie Nederland (Dutch Organisation for Agriculture and Horticulture)
NCC	Nationaal Crisis Centrum (National Crisis Centre)
NVWA	Nederlandse Voedsel- en Warenautoriteit (Netherlands Food and Consumer Product Safety Authority)
OL	Operationeel Leider (Operational Leader)
OMT	Outbreak Management Team
OTCb	Operationeel Team Crisisbeheersing (Operational Team Crisis Management)
OT	Operationeel Team (Operational Team)
PD	Plantenkundige Dienst (Plant Protection Service)
PT	Productschap Tuinbouw (Product Board Horticulture)
RASFF	Rapid Alert System for Food and Feed
RIVM	Rijksinstituut voor Volksgezondheid en Milieu (National Institute for Public Health and the Environment)
RKI	Robert Koch Institute
SG	Secretaris-Generaal (Secretary general)
STEC	Shiga toxin producing <i>Escherichia coli</i>
VAT	Vraag en Antwoordteam (Question and Answer Team)
VCN	Stichting Voedingcentrum Nederland (Netherlands Nutrition Centre Foundation)
VGP	Voeding, Gezondheidsbescherming en Preventie (Nutrition, Health Protection and Prevention)
V&J	Veiligheid & Justitie (Safety & Justice)
VTEC	Verotoxin producing <i>Escherichia coli</i>
VWA	Voedsel- en Warenautoriteit (Food and Drug Administration)
VWS	Volksgezondheid, Welzijn en Sport (Health, Welfare and Sport)
WHO	World Health Organization

1. Introduction

In the spring of 2011 a virulent enterohaemorrhagic *Escherichia coli* (EHEC) strain was responsible for a large bacterial outbreak in Germany with a severe public health impact (3,842 patients). EHEC, a verotoxin- or shiga toxin- producing *Escherichia coli* (VTEC/STEC), is a pathogen with a relatively low infectious dose. Transmission mainly occurs through consumption or handling of contaminated food and contact with infected animals or humans. It can cause illness ranging from non-bloody diarrhoea to life threatening Haemolytic Uremic Syndrome (HUS), a severe disease characterized by haemolytic anaemia (accelerated breakdown of red blood cells), acute kidney failure and thrombocytopenia (a low platelet count). Outbreaks of the most common EHEC serotype reported, O157:H7 (“the hamburger bacterium”), have had an enormous public impact and are mostly associated with undercooked ground beef products and raw milk; failure of adequate heating processes has been the primary cause (Adams and Moss, 2008, p223). In the German outbreak the infections were caused by EHEC O104:H4, which is a very rare serotype. In the period 2004-2009 a total of nine cases of EHEC O104 has been reported in the EU Member States, of which four cases were travel-related (countries of origin of infection were Afghanistan, Egypt, Tunisia and Turkey); only two cases were caused by the serotype EHEC O104:H4 (ECDC/EFSA, 2011).

The 2011 EHEC outbreak was one of the largest HUS outbreaks ever reported worldwide. In total 2,987 cases of gastroenteritis and 855 cases of HUS were attributable to the outbreak; 53 patients died (RKI, 2011a). This corresponds to a 17-fold increase in EHEC gastroenteritis cases and a 67-fold increase in HUS cases, when compared to the previous five years. The majority of the cases involved female adults where in previous outbreaks it was primarily a paediatric problem. Next to Germany, cases were reported in 15 other countries, but all cases were (in)directly linked to a stay in Germany, except for some cases in the area of Bordeaux, France (RKI, 2011a).

The identification of the source was quite difficult and the cause of the outbreak was never microbiologically confirmed. Epidemiological evidence first suggested that contaminated cucumbers or tomatoes could be the cause. Later on sprouts became suspected and finally fenugreek seeds were believed to have caused all the illnesses and deaths.

Although the first patients already became ill on 1 May 2011, the outbreak was only recognized after several weeks and therefore the epidemiological investigation and identification of the specific bacteria started late (Frugi Venta, 2012). Almost at the peak of the outbreak of new cases research to the outbreak was started¹. On top of that the German communication during the outbreak was criticized by different Dutch stakeholders. For instance some members from the Dutch food industry (LTO, personal communication, 10 Dec 2012; Frugi Venta, personal communication, 19 Dec 2012) and the Nederlandse Voedsel- en Warenautoriteit (NVWA; Netherlands Food and Consumer Product Safety Authority) (personal communication, 28 Feb 2013) mentioned that the German communication was unstructured and chaotic. In their opinion they communicated careless, too fast and based on speculations (facts were not known) (LTO, personal communication, 10 Dec 2012; Frugi Venta, personal communication, 19 Dec 2012). Also Minister Schippers from the Ministry of Volksgezondheid, Welzijn en Sport (VWS; Health, Welfare and Sport) called the German communication on the outbreak “confusing”². This is partly caused by how Germany is organized on political level (CBL, personal communication, 26 Nov 2012; NVWA, personal communication, 28 Feb 2013), but one can question whether

¹Available from: <http://www.vmt.nl/informatie-ehec-was-te-laet-en-onduidelijk.157461.lynkx> (Last visited: 2 Mar 2013).

²Available from: <http://nos.nl/artikel/246660-schippers-duitse-ehecaanpak-warrig.html> (Last visited: 2 Feb 2013).

the communication in Germany was organized properly. The poor communication during the 2011 EHEC outbreak also led to a large public response.

In case of incidents, often an overreaction (risk-control reflex) from the government is seen: the promise of more interventions (e.g. more supervision), implying that guarantees for the future can be issued (Rob, 2012). People try to prevent the same thing from happening again by adopting new legislation and extensive research in the field. However, the question is whether an incident is a structural problem and whether complete prevention is possible. Moreover, as mentioned extensively in literature, a 100% security or safety does not and will never exist (e.g. RIVM, 2004; LNV & VWS, 2005). Therefore appropriate and sufficient actions may be much more important than new rules, because food safety issues are usually hardly predictable (e.g. RIVM, 2004). Although proper risk communication and risk messages will not always decrease conflict and distrust, it is clear that inadequate risk communication and risk messages will certainly increase both (FAO/WHO, 1995). Moreover, the loss of trust and confidence and the amount of time that a topic is covered by the media will be minimized when communication is effective (Lok & Powell, 2000). This illustrates that good communication to the public is essential in case food safety incidents occur as it may prevent panic and provide positive information. In order to be able to adequately respond to food safety issues it should be clear how responsibilities are divided and what actions are supposed to be taken in case of an incident.

The 2011 EHEC outbreak clearly shows us what effects food safety incidents may have on consumer trust and thereby on the whole food chain (from farm to fork). Although the epicentre of the outbreak was in Germany, also large consequences were seen in the Netherlands. In the beginning of the outbreak in the media the news appeared that Dutch cucumbers were the probable cause of the diseases³ or that a Dutch company was involved⁴. Moreover consumption advices given in Germany and consumer agitation led to an extreme drop in demand of Dutch fresh vegetables (Frugi Venta, 2012). Germany is the largest market for Dutch growers and therefore the financial consequences for Dutch growers were huge. In addition, even though all of the cases were directly or indirectly linked to a stay in Germany in the Netherlands 11 patients were found of which 4 with the HUS syndrome; no deaths were reported in the Netherlands. Also, the 2011 EHEC outbreak was an important topic in the Dutch media. This led to the question how public communication on food safety incidents is organized in the Netherlands and what lessons can be learned from the 2011 EHEC outbreak to improve this communication.

1.1. Research objective and questions

This research will focus on the organization of Dutch public communication in case of food safety incidents and will attempt to explore where gaps are found and improvements are needed in order to effectively react on future food scares. The following objective can be deduced:

This study aims to determine which organizations or public authorities can be considered responsible for public communication on food safety issues in the Netherlands, how tasks are divided in case of an incident, to what extent discrepancies exist between official responsibilities and what was really done during the 2011 EHEC outbreak and how the communication and management of the 2011 EHEC outbreak was perceived by the Dutch consumer. In consequence recommendations on the Dutch public communication on food safety issues can be given.

³Available from: <http://www.ad.nl/ad/nl/4560/Gezond/article/detail/2439306/2011/05/30/EU-Nederlandse-komkommers-toch-bron-EHEC-besmetting.dhtml> (Last visited: 4 Mar 2013).

⁴Available from: <http://www.vwa.nl/actueel/nieuws/nieuwsbericht/2013100/nederlandse-betrokkenheid-bij-besmette-komkommers-nog-steeds-niet-zeker> (Last visited: 4 Mar 2013).

First of all it is important to know what the official responsibilities of the different Dutch stakeholders (organizations and public authorities) are with regard to public communication and management in case of a food safety incident. The following research question can be derived:

(i) How is public food safety incident communication and management officially organized in the Netherlands?

The first research question gives us an idea about how the process is organized in theory. However, it is also important to determine what happens in practice. In order to get an idea about this incident- and crisis protocols of the different stakeholders will be examined. In addition, the 2011 EHEC outbreak will be analysed and the role of the different stakeholders will be discussed based on an assessment of (online) documents and interviews with representatives of the organizations. In this analysis focus will be on the Dutch situation and thereby also the Dutch firms, institutions and the Dutch government. Actions taken in practice will be compared to the official organization and eventual discrepancies will be discussed. This leads to the following research question:

(ii) Which measures are to be taken in case of food safety incidents, which measures were taken during the 2011 EHEC outbreak by the different responsible authorities and to which extent are discrepancies found?

If risk management processes are to be optimized, it is important to understand why consumers react as they do to an incident or a crisis, and which factors influence their behaviour (Van Kleef et al., 2009). The same accounts for communication. In order to improve public communication on food safety incidents one should know how this is may be perceived and what the consumer wants to know. Based on a literature review a survey will be designed and will be spread among Dutch consumers to assess the consumer perception of management and communication quality during the 2011 EHEC outbreak. The corresponding research question is:

(iii) How was management and communication quality of the 2011 EHEC outbreak perceived by Dutch consumers and which factors influenced this perception?

All information will be combined in order to highlight which problems still exist in the Dutch public communication process on (emerging) food safety issues and where adjustments and improvements are desirable, leading to the following question:

(iv) Which lessons are to be learned from the 2011 EHEC outbreak and how can we use these insights to improve Dutch public food safety incident communication in future food scares?

1.2. Thesis outline

The first part of the research (Chapter 2) will give an overview of the 2011 EHEC outbreak, based on a literature and online review. In addition the term *public food safety incident communication* will be explained. In Chapter 3 the legal framework for public food safety incident communication is given and the different Dutch stakeholders involved in the 2011 EHEC outbreak are identified. Furthermore an assessment of the actions and communications performed by those stakeholders will be carried out. Chapter 3 will also give an answer to research question (i) and (ii). The consumer perception of the outbreak will be assessed in Chapter 4, which will give information to answer research question (iii). Finally, Chapter 5 will attempt to answer the fourth research question by discussing which recommendations for the public food safety incident communication may be desired based on the empirical research and survey. Conclusions are outlined in Chapter 6.

2. General background

An assessment of literature and online materials was done to summarize the 2011 EHEC outbreak chronologically. The overview is given in paragraph 2.1. Paragraph 2.2. aims to explain the term *public food safety incident communication*.

2.1. 2011 EHEC outbreak

On 20 May 2011 a team from the Robert Koch Institute (RKI) (Germany's national public health authority) investigated three paediatric HUS cases, but it became clear that also adults were affected and an outbreak investigation was initiated in collaboration with responsible authorities of federal and state level (RKI, 2011a). Germany posted an Early Warning Response System (EWRS)⁵ message to the European Union (EU) on 22 May 2011 saying that STEC caused a significant increase in the number of patients with HUS and bloody diarrhoea. Updates were sent to the EWRS and World Health Organization (WHO) on a daily basis; also epidemiological reports were distributed to responsible authorities, physicians and laboratories on a daily basis (Wadl et al., 2011). EHEC O104:H4 was identified as the causative agent.

Frank et al. (2011) reported an estimated median incubation period of 8 days, and a median of 5 days from the onset of diarrhoea to the development of HUS was found; HUS was developed in more than 20% of the identified cases. As can be seen in Figure 2.1.1. the first patients fell ill already on 1 May and the outbreak's peak was reached on 22 May 2011.

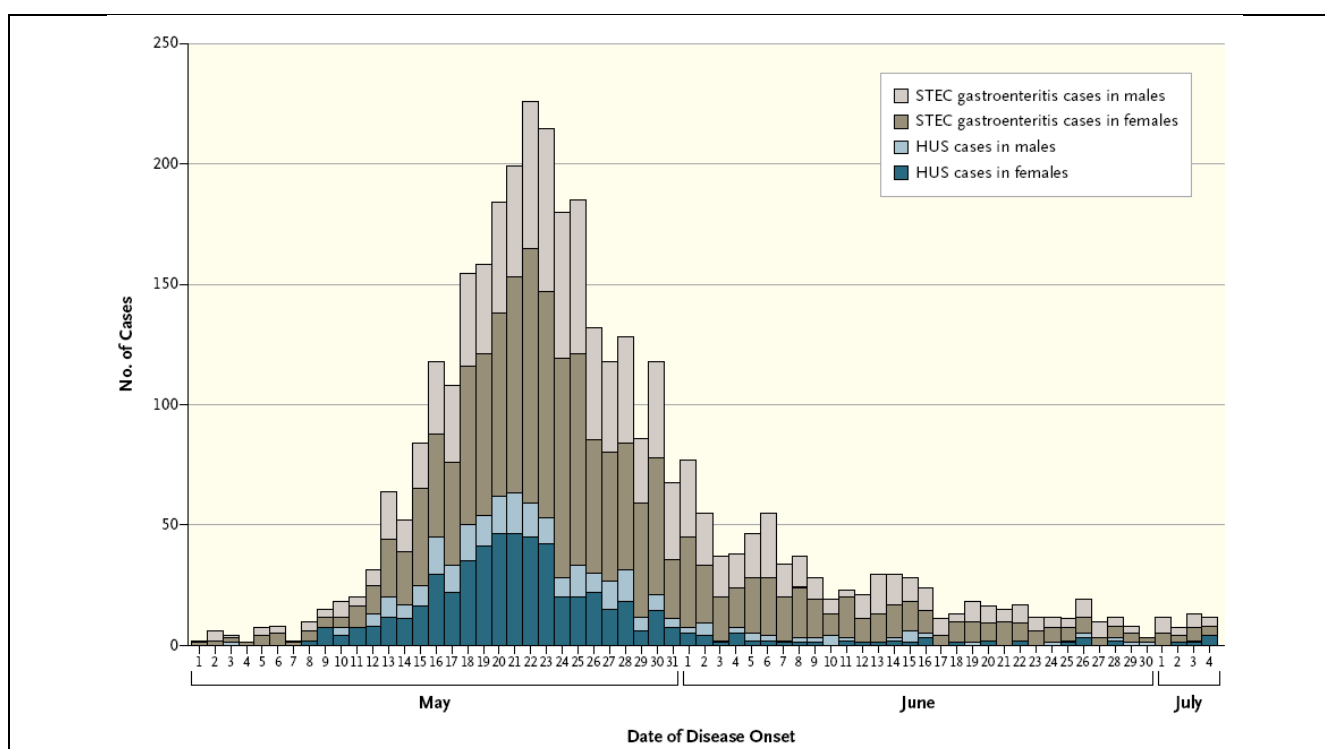


Figure 2.1.1. Epidemiologic curve of the outbreak. Only cases with a known date of onset are included (Frank et al., 2011, p1775)

The epicentre of the outbreak was in Northern Germany as can be seen in Figure 2.1.2.

⁵ERWS is a network of epidemiological surveillance and control of communicable diseases in the EU.

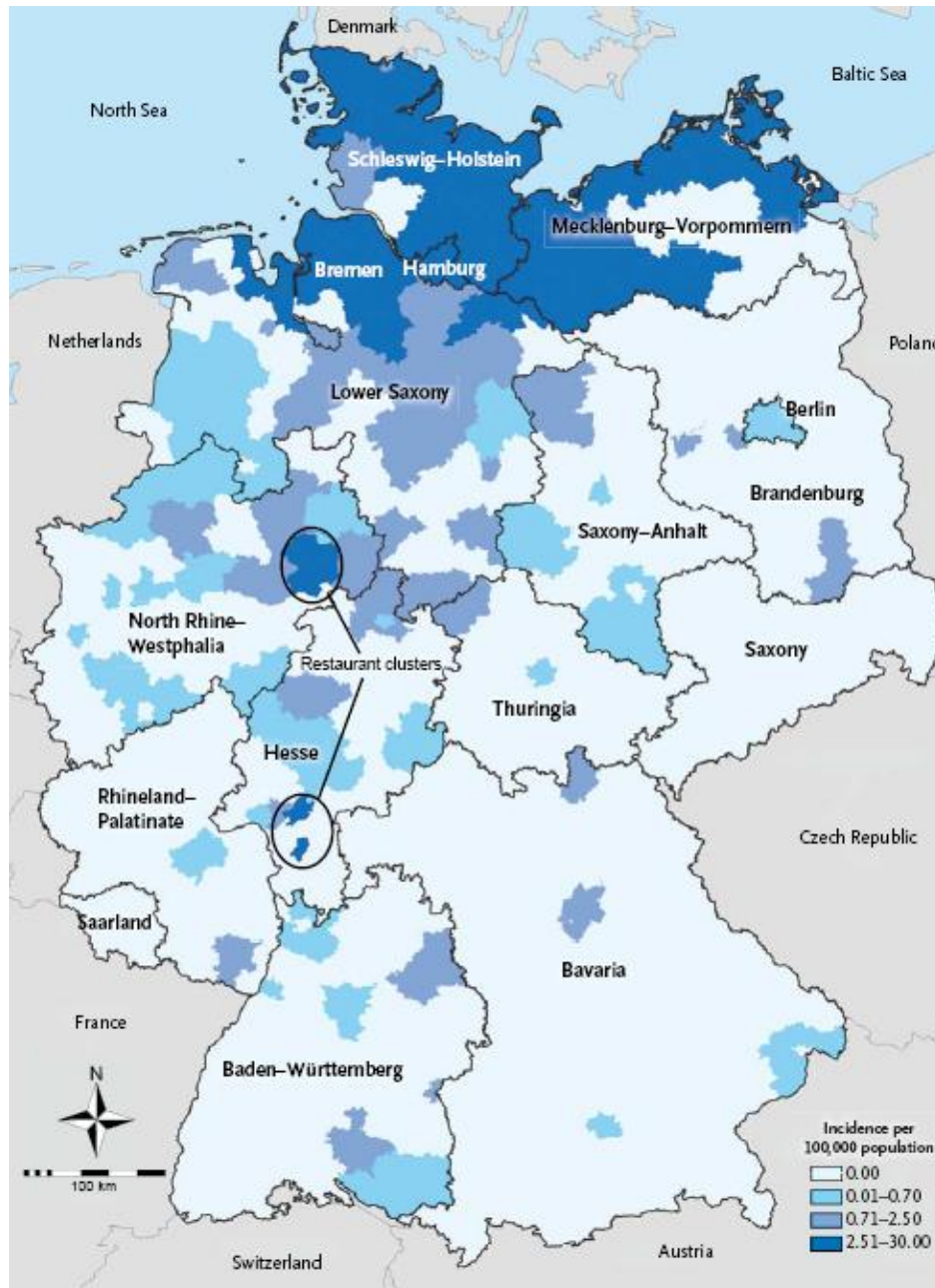


Figure 2.1.2. Incidence of HUS (per 100,000 population); cases are attributed to a particular county if that county was the probable site of infection (Frank et al., 2011, p1773).

The RKI and the Hamburg health authorities conducted a case-control study in which food histories from patients and controls from the week before symptom onset were collected and preliminary results showed a significant association between disease and consumption of raw tomatoes, cucumbers and leafy salads. This first case-control study was conducted on 23 and 24 May 2011. In a joint statement on 25 May 2011 the Bundesinstitut für Risikobewertung (BfR; Federal Institute for Risk Assessment) and RKI recommended the following: *“Against the backdrop of the serious ongoing outbreak event, with partly severe health consequences, RKI and BfR recommend by way of precaution, in addition to the usual hygiene rules in dealing with fruits and vegetables, not to consume raw tomatoes, cucumbers and green salads, more particularly in Northern Germany, until further notice”* (BfR & RKI, 2011, p1). Also recommendations on good kitchen hygiene to avoid EHEC infections continued to apply. The next day BfR (2011) mentioned that the usual hygiene measures (e.g. washing and peeling) were not sufficient because of the low infectious dose of EHEC. Reduction of the EHEC was achieved by washing, but the pathogen would not be eliminated safely; only heating safely killed EHEC.

Samples of fresh cucumbers, originating from Spain, taken in Hamburg were tested positive for STEC on 26 May 2011 by the Hamburg Hygiene Institute. The first Rapid Alert System for Food and Feed (RASFF)⁶ notification (2011.0702⁷), an alert on food poisoning, was released by Germany on 27 May 2011. EHEC was found in cucumbers that originated from Spain, and were packaged in Germany; cucumbers were sampled on 24 May 2011. However, the results of the second analysis were negative for STEC and thus the notification was withdrawn.

In the second RASFF notification of 27 May 2011 (2011.0703⁸), that was released by Germany that same day it became clear that organic cucumbers from Spain, sampled on 25 May 2011, were found to be contaminated with EHEC O8:H19 (not O104:H4). According to another RASFF notification (2011.0707⁹) of that same day EHEC was found in cucumbers from the Netherlands or from Denmark. Results from the second analysis were negative for STEC and therefore the notification was withdrawn later.

Despite the fact that EHEC O104:H4 was not found in any of the samples taken, two firms in Spain were implicated of being the source of the outbreak. Moreover, Russia started an import ban for EU vegetables. In the meantime the losses for growers kept rising as was the need for an EU emergency fund for duped growers. Another case-control study was conducted between 29 May 2011 and 4 June 2011 and the focus of this study was the consumption of fruits and vegetables during two weeks before onset of symptoms (Buchholz et al., 2011).

The following step was a “recipe-based restaurant cohort study”, to be less dependent on memories of patients and controls. The patients and controls were asked which dishes they had consumed and the chef of the restaurant was interviewed about the type and quantity of ingredients used in the different dishes offered in the restaurant (Buchholz et al., 2011). A total of 176 participants dined in the same restaurant (“restaurant K”) in Lübeck during the period from 12 to 16 May 2011 and it was found that the chance of disease was 14.2 times higher for those customers that consumed a mixture of sprouts¹⁰ (either as garnish or as ingredient of a side salad), containing fenugreek sprouts, alfalfa sprouts, adzuki bean sprouts and lentil sprouts (Buchholz, 2011; RKI, 2011a). Interestingly, in the first case-control study only 25% of the case subjects mentioned the consumption of sprouts in contrast to 88% for cucumbers; therefore sprouts were not tested analytically (Buchholz et al., 2011). “Restaurant K” received the sprouts from a company in Lower Saxony (“sprout producer A”), which was temporarily closed.

After cucumbers, now sprouts were suspected and another RASFF notification (2011.0752¹¹) was released on 7 June 2011 by Germany: there was “*suspicion of shigatoxin-producing Escherichia coli in organic sprouts mixture from Germany.*” A large amount of samples (452) was taken from the incriminated company, including samples from sprouts,

⁶RASFF is a network between the member states, EFSA and the Commission for the exchange of direct or indirect food- or feed-related health risks (Article 50 Regulation (EC) No 178/2002).

⁷Available from: https://webgate.ec.europa.eu/rasff-window/portal/index.cfm?event=notificationDetail&NOTIF_REFERENCE=2011.0702 (Last visited: 16 Oct 2012).

⁸Available from: https://webgate.ec.europa.eu/rasff-window/portal/index.cfm?event=notificationDetail&NOTIF_REFERENCE=2011.0703 (Last visited: 16 Oct 2012).

⁹Available from: https://webgate.ec.europa.eu/rasff-window/portal/index.cfm?event=notificationDetail&NOTIF_REFERENCE=2011.0707 (Last visited: 13 Mar 2013).

¹⁰Sprouts are germinated seeds often consumed raw and sometimes briefly blanched to use as topping or decoration. Well-known sprouts are soybean sprouts and alfalfa sprouts. As seeds and beans need warm and humid conditions to sprout and grow they can be a risk of food-borne illness, as these conditions are ideal for growth of bacteria.

¹¹Available from: https://webgate.ec.europa.eu/rasff-window/portal/index.cfm?event=notificationDetail&NOTIF_REFERENCE=2011.0752 (Last visited: 16 Oct 2012).

seeds, water and surface, but unfortunately EHEC O104:H4 was not found in any of the samples. Two-third of the employees of this company became ill and according to interviews they regularly ate sprouts produced at the company with a preference for fenugreek, broccoli and garlic sprouts (Buchholz et al., 2011). Tracing forward let to more than 20 distributors that obtained sprouts from the company in Lower-Saxony and the two different sprout mixtures, packaged for distribution, both contained lentil and fenugreek seeds and were supplied to most of the outbreak clusters (Buchholz et al., 2011).

In a joint statement from the BfR, the Bundesamt für Verbraucherschutz und Lebensmittelsicherheit (BVL; Federal Office of Consumer Protection and Food Safety) and the RKI on 10 June 2011¹², it was stated that: *“the existing general recommendation not to consume cucumbers, tomatoes and leaf lettuce in northern Germany no longer has to be complied with”*. Also, as a precaution over standard hygiene measures it was recommended that: *“sprouts should not be consumed raw”*. Households and catering businesses were advised *“to destroy any sprouts that may still have in stock along with any other foods with which they may have come in contact”*.

In mid-June sprouts seeds were suspected, when it became clear that two patients consumed sprouts grown by themselves from a sprout seed mix (including fenugreek seeds), that was purchased from a retail store that also supplied the seeds for the company in Lower-Saxony (Buchholz et al., 2011; RKI, 2011a). Then it was also advised not to eat home-grown sprouts.

Next to the outbreak in Germany also a small outbreak was reported in France among participants of an event near Bordeaux (Aldabe et al., 2011). The identified strain was again EHEC O104:H4 and showed the same characteristics (e.g. virulence and antibiotic resistance) as the outbreak strain in Germany. Patients were interviewed to explore food consumption, travel history and contact with other people suffering from diarrhoea in the seven days before symptoms onset. No results were found, so in a second questionnaire patients were asked for their vegetable consumption two weeks before onset of symptoms. Again an association was found between illness and consumption of home-grown fenugreek sprouts. The sprouts served at the event were grown from rocket, mustard and fenugreek seeds; only fenugreek seeds were present in the mixtures in France and Germany. On 25 June 2011 France released a RASFF notification (2011.0842¹³): *“foodborne outbreak suspected (shigatoxin-producing E. coli O104:H4) to be caused by fenugreek seeds for sprouting from Egypt, packaged in the United Kingdom, via the Netherlands and via Germany”*.

The hypothesis that contaminated fenugreek seeds were involved in both cases was supported by trace-back activities from a task force which was set up by the European Food Safety Authority (EFSA) and included members from the European Commission (EC), EU Member States, European Centre for Disease Prevention and Control (ECDC), WHO, Food and Agriculture Organization of the United Nations (FAO) and EFSA. On 5 July 2011 this task force concluded that the most common link between the outbreaks in Germany and France were two specific lots of fenugreek seeds imported from Egypt in 2009 and 2010 (“supplier X”), however, the specific point of contamination (e.g. production or packaging), was never found (Buchholz et al., 2011). Subsequently the EC decided to withdraw certain types of seeds imported from Egypt from the market and also import of these products was temporarily banned. The source was only epidemiologically confirmed and microbiological evidence was never found. Figure 2.1.3. represents the trading connections from “supplier X” to “sprout producer A” and through four distributors to five outbreak clusters.

26 July 2011 was the day that the outbreak was officially declared to be over by the RKI (2011b).

¹²Available from: http://www.bfr.bund.de/en/press_information/2011/16/ehec_current_state_of_knowledge_concerning_illnesses_in_humans-70978.html (Last visited: 4 Mar 2013).

¹³Available from: https://webgate.ec.europa.eu/rasff-window/portal/index.cfm?event=notificationDetail&NOTIF_REFERENCE=2011.0842 (Last visited: 4 Mar 2013).

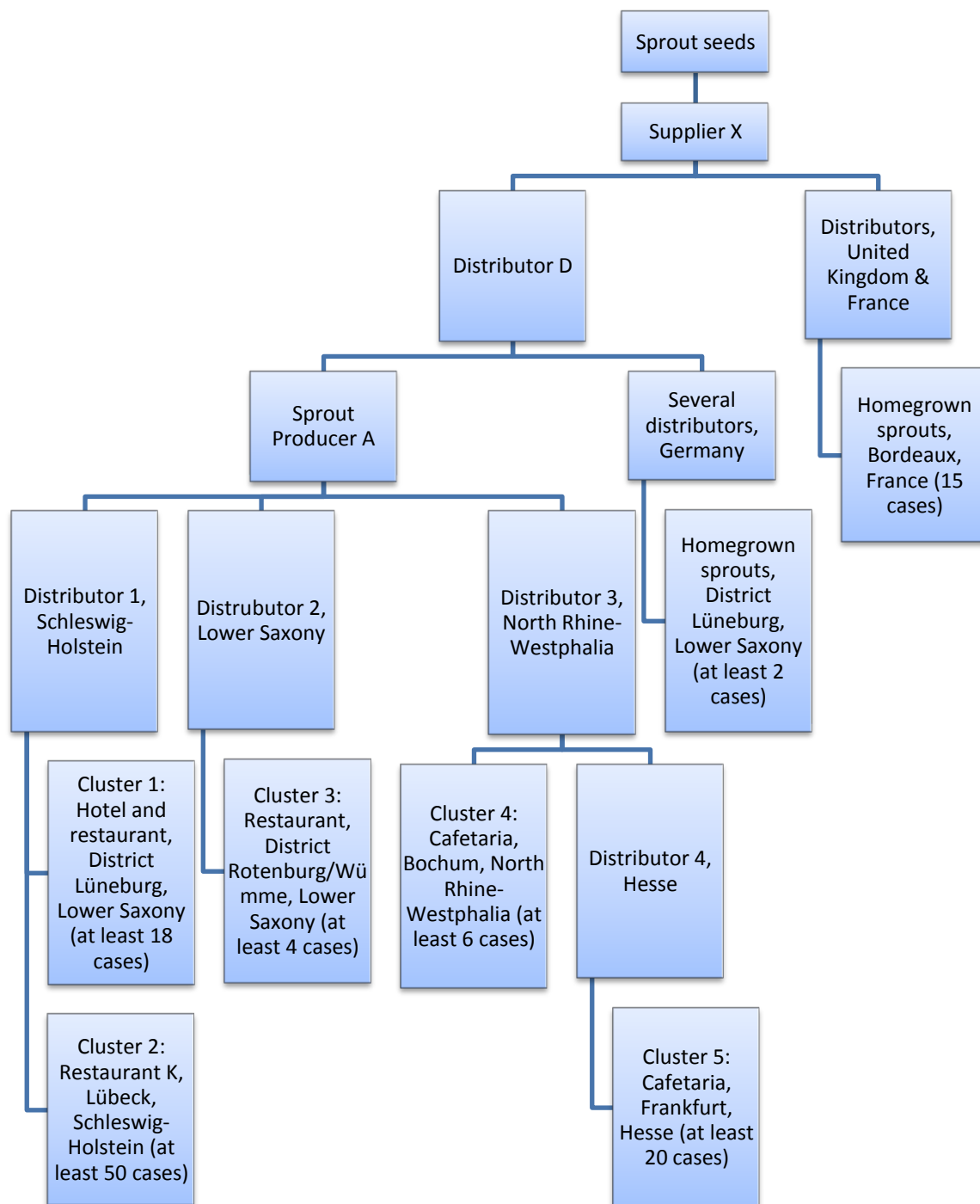


Figure 2.1.3. Anatomy of the German outbreak: “Shown are the trading connections from supplier X to sprout producer A and through four distributors to five outbreak clusters, as well as to two other distributor groups leading to a cluster of illnesses caused by Shiga-toxin–producing *E. coli* in Lüneburg and an outbreak in France unrelated to producer A” (Buchholz et al., 2011, p1768).

In summary, the outbreak started already in the beginning of May, but was only recognized at the end of the month. From that moment on an intensive search (on national and European level) to the source of the outbreak was started and the most probable source was only epidemiologically confirmed in the beginning of July. In the meantime, approximately 4,000 people ill and over 50 people died from an infection with EHEC. Approximately one-fifth of the patients developed HUS. During the outbreak several consumption advices were released and the suspicion that salad vegetables were contaminated with EHEC caused enormous losses in the greenhouse vegetable sector in 2011 in

different countries in Europe. In addition specific names of companies were made public. Overall, the economic consequences were huge.

The advice not to consume salad vegetables was given at the start of the high season for the greenhouse vegetable sector in the Netherlands. Only 20% of the Dutch companies ended with a positive result in contrast to 60% in 2010 and this was partly caused by the EHEC crisis (LTO, 2011c). The German market for fresh vegetables collapsed, which is the most important export country for vegetables from the Netherlands. German consumers consumed very little salad vegetables in June 2011 and there was a clear decrease in export of Dutch cucumbers to Germany in comparison to the average export numbers for cucumbers in 2008-2010, even after these products were not suspected anymore. In some countries up to 80% of the production was destroyed and the price of products like cucumbers, tomatoes and lettuce decreased with 75% (LTO, 2011b). As Russia, next to Germany and England, is a very important market for Dutch growers also the Russian import ban on fresh European vegetables (e.g. return loads due to border closures) was of large influence on the losses in the sector (LTO, 2011a). In the Netherlands 56 million kilo vegetables was destroyed, products on 500 acres were not harvested and prices decreased dramatically which resulted in bankruptcy of multiple companies and €230 million damage for the growers; they only received a compensation of €25,5 million from the EU (LTO, 2011d). The Productschap Tuinbouw (PT; Product Board Horticulture) reported in their evaluation report of the outbreak a financial loss of even €300 million for the growers, traders and exporters of greenhouse vegetable and sprouts and mentioned that the EHEC outbreak marked the year 2011 for the Dutch vegetable sector (PT, 2011a).

In addition there were 11 Dutch patients and from the standard measurement of the 'Risk and Crisis Barometer'¹⁴, (NCC, 2011) of June 2011 it was clear that Dutch people worried about the 2011 EHEC outbreak. Participants were asked the following question: *"When you think about things and events that are currently playing in the Netherlands or can play in the Netherlands, which makes you feel more or less personally concerned?"* As well as in November 2009, a significantly higher proportion of participants worried about a *"disease wave in humans"* in June 2011; respectively 11% and 15% against 0% in June 2010, November 2010 and November 2011¹⁵. Results are compiled in Table 2.2.1. This difference can be explained by the Q-fever in 2009 and the EHEC outbreak in 2011 (MarketResponse, personal communication, 22 Nov 2012). From these results one can conclude that the outbreak was a point of concern for the Dutch consumers.

Table 2.2.1. Spontaneous answers to the question: *"When you think about things and events that are currently playing in the Netherlands or can play in the Netherlands, which makes you feel more or less personally concerned?"*

Topic	Nov 2011 (%)	Jun 2011 (%)	Nov 2010 (%)	Jun 2010 (%)
Financial (euro) crisis	48	15	19	20
Health care	11	14	8	10
Unemployment/employment	9	5	5	4
Government/politics	6	7	17	27
Cutbacks	6	8	4	0
A disease wave in humans	0	15	0	0
Norms and values/ manners	4	5	4	4
No worries / don't know	27	30	32	33

In conclusion it can be said that only two months after the start of the outbreak the most probable source, fenugreek seeds from Egypt, was epidemiologically confirmed. The seeds were used to produce sprouts by a farm in Lower Saxony and by private individuals. The exact point of contamination was never determined. The outbreak had a severe public

¹⁴The 'Risk and Crisis Barometer' is a tool (public telephone survey) used to adjust to the information need of the public. Every six months (June and November) the survey is performed with the same questions and also an additional survey can be carried out in case of a (potential) crisis. Results of the standard survey can be used as comparison.

¹⁵It involves spontaneous answers.

health impact, financial consequences were enormous and even though the epicentre of the outbreak was in Northern Germany and all patients could be linked to a stay in Germany, also concerns existed among the Dutch consumer.

2.2. Public food safety incident communication

Communication on risks is part of a process (risk analysis) that consists of three interconnected components: risk assessment, risk management and risk communication. Risk assessment is *“the scientific evaluation of known or potential adverse health effects resulting from human exposure to foodborne hazards”* and *“consists of the following steps: (i) hazard identification; (ii) hazard characterization; (iii) exposure assessment; and (iv) risk characterization”* (FAO/WHO, 1995, p6). *“The process of weighing policy alternatives to accept, minimize or reduce assessed risks and to select and implement appropriate options”* is called risk management and risk communication is defined as *“an interactive process of exchange of information and opinions on risk among risk assessors, risk managers, consumers and other interested parties”* (FAO/WHO, 1995, p6). The interested parties may include different stakeholders: government (e.g. EC and national ministries), food industry representatives, food retail representatives, representatives of primary production, consumer organizations, the media, scientists, professional societies, other public interest groups and concerned individuals. More in general risk communication closes the gap between experts (risk assessment), policy makers (risk management) and other stakeholders by explaining the risk assessment findings and risk management decisions taken. In this study the focus lays on the communication-part of the risk analysis process.

Communication of risks usually takes place between different responsible authorities or between responsible authorities and the public. This thesis focuses on communication of information from responsible authorities to the public. The definition by FAO/WHO (1995) implies that consumers share their opinion as well, but in case of food safety incidents consumers merely receive information and have to process that without having an active role in the communication process themselves. The communication described in this study is thus a one-way exchange of information from responsible authorities to the consumer. In addition, in literature food risk communication is typically described in the context of non-emerging risks (e.g. high-fat diets and acrylamide). It is associated with health communication, which are actually more long-term issues. However, this thesis focuses on the (rapid) communication of information on emerging food safety issues (actual incidents or crises) from responsible authorities to the consumer. The term *food risk communication* is not suitable for the communication described in this study because of the reasons described above. A term that fits better is *public food safety incident communication*. In the following chapters this term will be used to describe the communication of food safety issues to the consumer.

3. Responsible authorities' perspective

This chapter aims to answer two questions: *“How is public food safety incident communication and management officially organized in the Netherlands?”* and *“Which measures are to be taken in case of food safety incidents, which measures were taken during the 2011 EHEC outbreak by the different responsible authorities and to which extent are discrepancies found?”*. In order to answer these questions available documents of the different stakeholders involved in the Dutch public communication on food safety issues were reviewed. Further insights were given in open interviews with several representatives of the involved organizations. An overview of the contact persons of the different organizations is given in Appendix I. In paragraph 3.1. the legal framework behind public communication on food safety issues is outlined. The relevant pieces of law are described in order to explain how this is legally organized. In order to get an idea about how Dutch public crisis communication is organized in practice the following paragraphs describe the (official) approach that is taken by different identified stakeholders in case of a food safety incident. More specifically the role of the different stakeholders during the 2011 EHEC outbreak is also described. Finally, paragraph 3.6 gives a summary of the previous paragraphs. In this paragraph the organization of Dutch public food safety incident communication is summarized and some drawbacks of the approach during the 2011 EHEC outbreak are discussed.

3.1. Legal framework

The responsibility for food safety lies primarily with the producers of food products. They should not place a product on the market if this is unsafe (Article 14(1) Regulation (EC) No 178/2002) and they should ensure that food safety requirements are met (Article 17(1) Regulation (EC) No 178/2002). However, also the government has a responsibility in this, which is described in Article 17(2) Regulation (EC) No 178/2002.

Article 17 Regulation (EC) No 178/2002 - Responsibilities

1. Food and feed business operators at all stages of production, processing and distribution within the businesses under their control shall ensure that foods or feeds satisfy the requirements of food law which are relevant to their activities and shall verify that such requirements are met.

2. Member States shall enforce food law, and monitor and verify that the relevant requirements of food law are fulfilled by food and feed business operators at all stages of production, processing and distribution.

For that purpose, they shall maintain a system of official controls and other activities as appropriate to the circumstances, including public communication on food and feed safety and risk¹⁶, food and feed safety surveillance and other monitoring activities covering all stages of production, processing and distribution.

Member States shall also lay down the rules on measures and penalties applicable to infringements of food and feed law. The measures and penalties provided for shall be effective, proportionate and dissuasive.

¹⁶‘Risk’ means a function of the probability of an adverse health effect and the severity of that effect, consequential to a hazard (Article 3(9) Regulation (EC) No 178/2002), where ‘hazard’ means a biological, chemical or physical agent in, or condition of, food or feed with the potential to cause an adverse health effect (Article 3(14) Regulation (EC) No 178/2002).

The Article describes that standards are to be followed by food business operators and those activities are monitored by the government to ensure safe food. Food business operators have the responsibility to ensure that foods satisfy the requirements of food law and Member States should verify, by official controls and monitoring activities, that the relevant requirements of food law are fulfilled. In the Netherlands the NVWA is responsible for this.

Although Article 14(1) Regulation (EC) No 178/2002 describes that unsafe food products shall not be placed on the market, it is possible that food safety requirements are not met. This can be due to a wide variety of hazards. Examples include biological hazards (e.g. bacteria, fungi, viruses, parasites, prions), chemical hazards (e.g. unsafe product ingredients, environmental contaminants, process related chemicals, allergens and residues of processing aids, pesticides and veterinary drugs) and physical hazards (e.g. glass, metal). A problem can be recognized by quality tests from the producer. From official controls, carried out by the NVWA or food safety authorities from other countries, it can also be found that products do not meet the relevant food safety requirements. Even consumer complaints can point attention to problems and non-compliance of food products with food safety requirements.

If a product turns out to be unsafe appropriate measures should be taken. The responsibilities of food business operators are described in Article 19 Regulation (EC) No 178/2002.

Article 19 Regulation (EC) No 178/2002 - Responsibilities for food: food business operators

- 1. If a food business operator¹⁷ considers or has reason to believe that a food which it has imported, produced, processed, manufactured or distributed is not in compliance with the food safety requirements, it shall immediately initiate procedures to withdraw the food in question from the market where the food has left the immediate control of that initial food business operator and inform the competent authorities thereof. Where the product may have reached the consumer, the operator shall effectively and accurately inform the consumers of the reason for its withdrawal, and if necessary, recall from consumers products already supplied to them when other measures are not sufficient to achieve a high level of health protection.*
- 2. A food business operator responsible for retail or distribution activities which do not affect the packaging, labelling, safety or integrity of the food shall, within the limits of its respective activities, initiate procedures to withdraw from the market products not in compliance with the food-safety requirements and shall participate in contributing to the safety of the food by passing on relevant information necessary to trace a food, cooperating in the action taken by producers, processors, manufacturers and/or the competent authorities.*
- 3. A food business operator shall immediately inform the competent authorities if it considers or has reason to believe that a food which it has placed on the market may be injurious to human health. Operators shall inform the competent authorities of the action taken to prevent risks to the final consumer and shall not prevent or discourage any person from cooperating, in accordance with national law and legal practice, with the competent authorities, where this may prevent, reduce or eliminate a risk arising from a food.*
- 4. Food business operators shall collaborate with the competent authorities on action taken to avoid or reduce risks posed by a food which they supply or have supplied.”*

If a product is (possibly) not in compliance with food safety requirements the food business operators have to make sure that the product does not reach the consumer. If the product has left the immediate control of the food business operator the food in question has to be withdrawn from the market and the NVWA and supermarkets should be

¹⁷‘Food business operator’ means the natural or legal persons responsible for ensuring that the requirements of food law are met within the food business under their control (Article 3(3) Regulation (EC) No 178/2002), where ‘food business’ means any undertaking, whether for profit or not and whether public or private, carrying out any of the activities related to any stage of production, processing and distribution of food (Article (3(2) Regulation (EC) No 178/2002).

informed about this. In case of private labels the supermarket is seen as the producer and thus they should inform the NVWA. In most cases the product will not have reached the consumer yet, which means that most problems are identified before they reach the consumer. This type of recall is called a *silent recall*. Products are taken from storage and there is no publicity to the public.

However, if a product, that may present a food safety risk, did reach the consumer the producer should recall the product from the consumer and accurately inform the consumer of the reason for withdrawal of the product. Information about the recall should be given in/on e.g. newspapers, internet, shelves, radio and TV, depending on the urgency and distribution of the product.

In order to be able to effectively trace unsafe products producers should have track-trace information (one step back and one step forward) of all products they produce. This is described in Article 18 of Regulation (EC) No. 178/2002.

Article 18 Regulation (EC) No 178/2002 - Traceability

1. The traceability of food, feed, food-producing animals, and any other substance intended to be, or expected to be, incorporated into a food or feed shall be established at all stages of production, processing and distribution.

2. Food and feed business operators shall be able to identify any person from whom they have been supplied with a food, a feed, a food-producing animal, or any substance intended to be, or expected to be, incorporated into a food or feed.

To this end, such operators shall have in place systems and procedures which allow for this information to be made available to the competent authorities on demand.

3. Food and feed business operators shall have in place systems and procedures to identify the other businesses to which their products have been supplied. This information shall be made available to the competent authorities on demand.

4. Food or feed which is placed on the market or is likely to be placed on the market in the Community shall be adequately labelled or identified to facilitate its traceability, through relevant documentation or information in accordance with the relevant requirements of more specific provisions.

5. Provisions for the purpose of applying the requirements of this Article in respect of specific sectors may be adopted in accordance with the procedure laid down in Article 58(2).

The producer is primarily responsible for food safety. If unsafe products are placed on the market those should be recalled and the consumer should be accurately informed of the reason for its withdrawal (Article 19 Regulation (EC) No 178/2002). However, as described in Article 17(2) Regulation (EC) No 178/2002 “*public communication on food and feed safety and risk*” is a responsibility of Member States. More in detail, Article 10 Regulation (EC) No 178/2002 outlines the governments’ obligation in public communication.

Article 10 Regulation (EC) No 178/2002 - Public information

Without prejudice to the applicable provisions of Community and national law on access to documents, where there are reasonable grounds to suspect that a food or feed may present a risk for human or animal health, then, depending on the nature, seriousness and extent of that risk, public authorities shall take appropriate steps to inform the general public of the nature of the risk to health, identifying to the fullest extent possible the food or feed, or type of food or feed, the risk that it may present, and the measures which are taken or about to be taken to prevent, reduce or eliminate that risk.

This Article indicates that public authorities should inform the consumer if there are reasonable grounds to suspect that a food may present a risk for human health. Their information should include information on the nature of the risk, the source and the measures taken or about to be taken. However, the NVWA (personal communication, 21 Feb 2013; 28 Feb 2013) emphasizes that the primary responsibility for public information is with the producer. This means that when results from (official) controls indicate a problem with a product and food safety is at stake the producer should recall the product and, if necessary, inform the public. This is indeed the legal obligation as described in Article 19 Regulation (EC) No 178/2002, but public communication is also an important task of the government itself (Article 10 Regulation (EC) No 178/2002).

In the 'Nota Voedselveiligheid' (LNV & VWS, 2005a) it is described that the responsibility for risk management (e.g. source measures, consumption and cooking advices and regulations) and risk communication (e.g. results of risk assessment and measures taken) lies, in case of (routine) incidents primarily with the NVWA and in case of crises the responsibility shifts to the Minister of VWS or the Minister of EZ (depending on the type of crisis). One can question what type of problems can be defined as a crisis. At departmental level the Secretaris-Generaal (SG; Secretary General) decides about this and it depends on the societal impact of an event (Ministry of EZ, personal communication, 4 Dec 2012; NVWA, personal communication, 28 Feb 2013). In food safety crises the Ministry of VWS is primarily responsible for public communication and they focus on prevention, transparency and action perspective (VWS, personal communication, 14 Dec 2012).

According to the NVWA (personal communication, 21 Feb 2013; 28 Feb 2013) the obligation to inform the public (as described in Article 10 Regulation (EC) No 178/2002) is complied with by forcing producers to accurately inform the public. If producers refuse to recall a product or inform the consumer (where the NVWA thinks that is necessary) or they cannot (due to technical reasons) the NVWA will take action. In the Netherlands this Article is thus implemented by ensuring that producers meet their obligation to inform the consumer. In addition, the NVWA places the message from the producer on their website as well (NVWA, personal communication, 21 Feb 2013). However, Article 10 Regulation (EC) No 178/2002 does not ask to recall a product, but to inform the consumer about the risk, the source and measures taken. This task is given to the public authorities, not to the producer.

A nice example of a recent recall is a pizza recall. In December 2012 two German consumers found metal particles in their pizzas, produced in Germany. The concerned company decided to voluntarily withdraw all variants of two pizza assortments with an use-by date between March and November 2013 from the market. Consumers were advised not to consume the products mentioned and relevant information and examples of product labels were published on the website of the NVWA¹⁸ and Stichting Voedingscentrum Nederland (VCN; Netherlands Nutrition Centre Foundation)¹⁹. For further information consumers are advised to contact the concerned company. Next to the information provided on the websites of the NVWA and VCN also an alert was sent to the RASFF²⁰ by the NVWA.

In case quality tests, official controls or consumer complaints reveal a food safety risk of a specific food product producers and public authorities shall carry out their responsibilities as described in Article 19 and Article 10 Regulation (EC) No 178/2002, respectively. In practice it means that, if a product is placed on the market, it is recalled, an alert is sent to the RASFF and the producer, NVWA and VCN inform the consumer by the publication of product warnings on their websites. Article 10 is thus not complied with by the public authorities.

¹⁸Available from: <http://www.vwa.nl/actueel/waarschuwingen-food/nieuwsbericht/2028361/wagner-pizza-recall> (Last visited: 22 Jan 2013).

¹⁹Available from: <http://www.voedingscentrum.nl/nl/nieuws/wagner-pizza-recall.aspx> (Last visited: 22 Jan 2013).

²⁰Available from: https://webgate.ec.europa.eu/rasff-window/portal/index.cfm?event=notificationDetail&NOTIF_REFERENCE=2012.1721 (Last visited: 22 Jan 2013).

If one knows that a product is not in compliance with the requirements, the producer and the public authorities are responsible for informing the public thereof. However, also consumer illness due to an unknown source can indicate a food safety problem. If an increase in illness is seen and there is a high probability that this is caused by food consumption, but it is not clear which product is contaminated and thus a producer cannot be assigned, what measures are taken and who is (officially) responsible for public communication about this? According to the NVWA (personal communication, 28 Feb 2013) this is the NVWA and they will communicate hygiene measures and consumption advices. However, the Ministry of VWS can take this obligation in case of crises²¹.

In case of a food safety incident many stakeholders play a role. These include: (i) food producers; (ii) retailers; and (iii) the government. The different stakeholders and their approach in case of food safety incidents are described in the following paragraphs. The existing incident- and crisis protocols are a general outline of what should be done in case of incidents, because they should be adaptable to a variety of situations. The nature and extent of the incident or crisis will affect the way these protocols are translated into practice. So, although each incident or crisis is different and thus customized actions are needed for each specific situation, the general organization (responsibilities, tasks, structures and models) during a crisis are outlined in the crisis protocols and will be explained in the following paragraphs. In addition, the 2011 EHEC outbreak will be used as a case the approach taken by the different stakeholders will be assessed.

3.2. Food production

During the 2011 EHEC outbreak an increase in HUS-cases was seen and food was suspected, but it was for a long time it was unknown what the cause of the outbreak exactly was. Therefore no clear responsible producer was present. This would mean that all separate producers of fresh vegetables had the responsibility to inform the public, but in practice there are several sector organizations that took that responsibility: Productschap Tuinbouw (PT; Product Board Horticulture), Land- en Tuinbouw Organisatie Nederland (LTO; Dutch Organisation for Agriculture and Horticulture), Frugi Venta and the Dutch Produce Association (DPA). In the 2011 EHEC outbreak mainly fresh vegetables (not subjected to processing) were suspected and therefore food industry is not included in this review.

The Dutch fruit and vegetables industry is based on cooperation of different organizations with LTO, Frugi Venta and PT as the most important ones. Officially the responsibility to prevent and mitigate incidents is with individual companies, but sector organizations can support them in this. In order to judge if measures need to be taken several aspects play a role: (i) size of the financial damage; (ii) image of the Dutch product; (iii) health problems; (iv) geographical distribution; and (v) export risks (LTO, personal communication, 10 Dec 2012).

The Netherlands count approximately 12,000 growers of which the majority is a member of LTO. LTO is the organization that looks after the interests of farmers and growers, which involve production (e.g. energy, labour and environment); it is divided into different sectors and regions.

Frugi Venta, Vegetables and Fruit trade Association Netherlands, is an organization that looks after the interests of over 400 Dutch businesses in fresh produce trade: traders (whole sale), importers and exporters. Next to the general interests (e.g. with respect to the government and customers) they also provide individual services to increase professionalism of companies and their employees (Frugi Venta, 2012).

²¹In crises one can distinguish several phases: (i) the normal or cold phase (e.g. maintaining protocols, crisis preparation, performing risk assessments and educating employees); (ii) attention phase (potential scaling due to signals of an emerging crisis); (iii) crisis phase (decision making, crisis management and crisis communication); (iv) last phase (e.g. reduction of the crisis organization, evaluation, research, rehabilitation, evaluation and adjustment of protocols) (VWS, 2012b).

PT is an overarching organization that looks after the interests of horticultural businesses in different sectors (e.g. flowers, fruit, greenhouse vegetables and field vegetables). They also coordinate the incident- and crisis management and communication on behalf of the fruit- and vegetable sector. All different segments of the Dutch horticultural business chains are united in the PT and all companies in the horticultural sector pay for joint activities. However, with the new political developments in the Netherlands, it was decided to eliminate the PT and all other Product Boards as from 2014.

The fact that PT, facilitator in crises, will disappear per 1 Jan 2014 will affect the different organizations involved. LTO, Frugi Venta and DPA will receive a more active role in incident- and crisis management and communication and will have to work together, but coordination shall lay with the organization where the effects are largest (LTO, personal communication, 10 Dec 2012). A problem is that PT possessed addresses of all businesses in the Netherlands and thus could easily send a news letter to all of those. However, not all businesses in the Netherlands are connected to one of the sector organizations (e.g. only 70% is connected to LTO) and thus cannot be informed on the development and that can even cause damage (LTO, personal communication, 10 Dec 2012; Frugi Venta, personal communication, 19 Dec 2012). In addition the PT possesses a lot of knowledge on a variety of topics and in the future the individual sector organizations should gain knowledge on those (Frugi Venta, personal communication, 19 Dec 2012). At the moment of writing this thesis no agreements on future approaches are made yet.

Procedure

In case of a food safety incident or crisis in the fruit and vegetables sector, in which multiple companies (or a certain region) and chain links are involved²², the incident- and crisis protocol²³ of the PT (2012b) provides guidance. This should be followed for a uniform approach in measures and communication. If necessary, actions should be carried out in coordination and cooperation with different parties in the horticulture. Sector organizations have an active role in communication and management, but coordination is done by the PT. Measures are aimed at maintaining confidence of customers and consumers, and reducing damage to horticultural entrepreneurs, without losing sight of the general public interest (socially, environmentally and economically). The protocol is based on three principles: (i) active performance: the sector takes initiatives themselves; (ii) openness: this helps the sector to keep control over the flow of information; and (iii) reliability: this gives the sector credibility. The protocol is annually adjusted to incorporate new developments and to update the contacts.

The physical organization of the incident- and crisis management is divided into different segments (namely (i) hotline; (ii) core team; (iii) crisis team; and potentially (iv) expert team) and this is described in more detail below.

The hotline is a single point of contact for externals in case of an incident or crisis and is structurally available for notifications of incidents. The coordinator of the hotline is responsible for: (i) keeping track of information provided to the press; (ii) keeping track of information that appears in the press; (iii) approaching media that publish incorrect information; and (iv) ensuring the execution of PR activities (press releases, press conference). Registration of a notification should include name and contact details of the notifying person and nature, cause, location and (potential) impact of the calamity. The registered notification (and the source thereof) is verified and reported to the core team: information is collected (e.g. PT, sector organizations, NVWA, media), it is assessed whether a notification falls within the scope of the protocol, a factsheet is drafted, facts are analyzed and the (potential) impact of an incident is assessed.

²²The crisis management of the PT (2012b) is limited to the following types of crises in horticulture: (i) plant disease outbreaks; (ii) incidents involving flammable and explosive substances; (iii) incidents involving toxic substances; (iv) incidents involving nuclear energy and radioactivity; (v) risk of infection through contact media and/or food; and (vi) animal disease transmissible to humans via vegetable food.

²³During the 2011 EHEC outbreak another version of the protocol was used. The 2012 version contains the adjustments made after the outbreak as well and gives a better idea of what will be done in case a food safety crisis would occur at this moment.

After verification of a notification a meeting is scheduled to activate the protocol and if the protocol does not apply careful transfer to another party (e.g. sector organization or public authority) is ensured.

The core team (composed of representatives of different chain segments of the (food) horticulture) provides structural assurance of risk- and crisis management. Its tasks include gathering information in the context of incident- and crisis management, forming the crisis team, starting execution of the management in case of an incident or crisis, rounding and evaluation the management and keeping the protocol up to date. In case of a crisis the core team merges in the crisis team and this team is activated. It is judged per situation whether replacement or complementation is needed.

According to LTO (personal communication, 10 Dec 2012) it is important to realize that the first point of action is communication. The (directly) involved persons and organizations should know what actions are taken and which measures are necessary to avoid (more) damage and to place the incident or crisis in a correct context. Moreover, as soon as the press shows interest in the incident a communication message must be there. Therefore a communication strategy is determined, including preparation of message/statement, definition of target groups (e.g. core team, sector organizations, public authorities, reporter of the calamity, entrepreneurs, press and consumers) and monitoring of (social) media). Next to that the core team decides on a strategy for management measures; depending on the scaling level the hotline, core team or crisis team deals with the calamity.

The following step is the execution of management practices and communication actions. This is a continuous process of which the impact should be monitored and if necessary actions should be adjusted or complementary actions should be taken. The crisis team coordinates control measures (collecting information, analyzing facts and initiating measures) and crisis communication (unambiguous, clear and structured communication and information) to entrepreneurs, sector organizations, government, media and consumer. On request of the crisis team an expert team can be activated to support the crisis team by conducting different activities necessary to control a crisis; the exact activities and responsibilities are determined by the crisis team.

Finishing up and aftercare includes communication with duped entrepreneurs based on information requirements (e.g. handling of financial support), fitting ongoing activities in existing structures (e.g. sector organization), and identification, capturing and initiating additional tasks and activities. Finally the crisis management (cause and circumstances of the calamity, receipt of notification, initiation of procedure from the protocol, communications and actions taken) is evaluated, lessons for the future are taken and the crisis protocol is improved.

2011 EHEC outbreak

During the outbreak a crisis team was composed in order to answer the many questions and problems that arose, to consult with various parties on measures to prevent and limit damage, measures for compensation of damage and to coordinate all information to its members (growers and traders) and the press. There was continuous tuning with involved sector organizations and authorities of the strategy, message, approach and activities (PT, 2011a). The EHEC crisis team was composed of members of PT, LTO, Frugi Venta and DPA; PT was responsible for the central coordination. Also, Centraal Bureau Levensmiddelenhandel (CBL; Central Bureau Food Trade) and GroentenFruitBureau (GFB; VegetablesFruitBureau) were directly involved in the crisis approach. Next to this there was also intensive cooperation with the NVWA (Netherlands Food and Consumer Product Safety Authority), the Ministry of Economische Zaken (EZ; Economic Affairs)²⁴ and Ministry of VWS (Health, Welfare, Sport). In addition there was regular coordination with the European Fresh Produce Association, Freshfel Europe (the forum for the fresh fruit and vegetables supply chain in Europe and beyond) (Frugi Venta, 2012).

²⁴The Ministry of EZ was called the Ministry of Economische Zaken, Landbouw en Innovatie (EL&I; Economic Affairs, Agriculture and Innovation) during the 2011 EHEC outbreak. Before that, until October 2010 it was split in two ministries: the Ministry of EZ and the Ministry of Landbouw Natuur en Voedselkwaliteit (LNV; Agriculture, Nature and Food Quality). In this thesis the name used for this Ministry will be the one used at the moment of writing this thesis: the Ministry of EZ.

According to the PT annual report (PT, 2012a) the first crisis meeting was on 26 May 2011, after a link between the EHEC outbreak and vegetables was found; the EHEC crisis team was active for 12 weeks. The activities of this team included general coordination (initiation and fine-tuning of different activities), communication on central message (with members, sector organizations, politics and EU organizations), communication by press releases, construction of an online dossier (to inform members), market monitoring, newsletters, stocktaking of damage, stocktaking of trade barriers, handling of claims. Also the Dutch fruit- and vegetables sector in Germany was promoted by the GFB using campaigns on TV, radio, internet and newspapers to restore consumer trust and improve consumption. The sector was daily informed on the current state of affairs by the dossier on the website (www.tuinbouw.nl), websites of sector organizations, updates with newsletters and updates in e-mails (Frugi Venta, 2012). A compilation of all tasks performed during the outbreak can be found in Table 3.2.1.

Table 3.2.1. Overview of the tasks of the crisis team and the mutual roles of the involved organizations

Task	Organization	Role
Coordination	PT (Product Board Horticulture)	Tuning and initiating activities
Communication	PT	Coordination; Formulating content-tuned central message; Collecting and processing information and knowledge, informing sector organizations through calamities messages and all involved companies through updates; Coordinating and implementing media spokesperson; Organization of crisis consultations and -meetings
	DPA (Dutch Produce Association), Frugi Venta and LTO (Dutch Organisation for Agriculture and Horticulture)	Contact with members (informing and tuning), relevant organizations in the sector and politics; Appear in media as recognizable figurehead for direct duped growers; Tuning with European organizations (Copa-Cogeca, Freshfel)
Food safety	PT	Tuning strategy, message and measures with NVWA (Netherlands Food and Consumer Product Safety Authority) and sector; Setting up sectoral monitoring program (including central collection of sampling results); Financing of the monitoring program
	DPA, Frugi Venta, GFB (VegetablesFruitBureau) and PT	Preparation and distribution of EHEC statements, together with NVWA
Assessment of damage	DPA, Frugi Venta and LTO	Collecting data from sector
	PT	Collecting data from whole sector from market research and market monitor
Trade barriers	Frugi Venta	Stocktaking of trade barriers; Consultation with Ministry of EZ (Economic Affairs), various agricultural councils and Freshfel (European umbrella) to remove barriers (e.g. by issuing EHEC statement)
Claim settlements (GMO intervention and EU emergency fund)	DPA, Frugi Venta and LTO	Contact with members; Consulting the Ministry of EZ and banks; Lobby to ministers and parliamentary parties; Provide alternative destinations for vegetables
	PT	Implementation of EU arrangements and performing checks
Promotion	GFB	Coordinating communication and marketing in Germany and the Netherlands, both press (in Germany) as well as consumer-oriented communication
	PT	Financing (extra) activities

On 26 May 2011 the PT decided to start a sectoral monitoring program (more than 1,000 additional samples) for *E. coli* contamination at growers and traders to support the sectoral EHEC statement²⁵ (PT, 2011a). This was done in collaboration with and complementary to the monitoring by the NVWA and the focus was pointed to salad vegetables (cucumber, tomato, paprika, courgette and lettuces). A negative test result was found for more than 1,000 samples and EHEC (not type O104) was found only twice in the almost 650 samples from the NVWA (Frugi Venta, 2012). The results were communicated to the consumer by means of a press release on 31 May 2011. PT (2011b) stated therein that the test results showed that Dutch vegetables were free of EHEC and thus confidence in the Dutch quality system and safe Dutch vegetables was confirmed. In June the NVWA, being the competent authority, prepared an official statement on request of the crisis team of the Ministry of EZ; companies were advised not to provide an EHEC-free-declaration with their vegetables, because this cannot be guaranteed (PT, 2011a).

Other crisis measures were aimed at *“maintaining trust of customers and consumers and limiting the damage for producers and trade (domestic wholesalers and exporters)”* (PT, 2012a, p18). From the beginning it was stressed that hygiene was of high priority in the vegetable sector, though reluctance in this message was important, because the cause of the outbreak was unknown for a long time. The stocktaking of damage for cultivation and trade was based on information from the sector and market monitoring and this gave insight in the economic consequences of the crisis and was used to lobby for support of duped companies. Next to intervention arrangements (e.g. EU emergency fund), also alternative destinations for un-saleable vegetables were found: offer to composting and fermentation plants, offer as animal feed, or spreading on the land as diffuse product (after chopping).

A member of LTO and a member of Frugi Venta were given the task of external spokesperson: every day a central message was composed by the PT and in this message there were three main points of attention: (i) show commiseration and understanding with the public health situation in the area of Hamburg; (ii) the message should be based on facts only; and (iii) the problem should not be made larger than it was (LTO, personal communication, 10 Dec 2012). The central message was communicated to all growers, because of the importance of uniformity. LTO (personal communication, 10 Dec 2012) also selected growers as spokesperson to gain public confidence. In the communication no attention was paid to foreign products as the responsibility for communication about Dutch products lies within the sector: the most important task was to restore trust in the Dutch vegetable sector (LTO, personal communication, 10 Dec 2012; Frugi Venta, personal communication, 19 Dec 2012). The press releases during the EHEC outbreak are compiled in Table 3.2.2. In total 18 items were published with Dutch products and consequences for Dutch growers and traders as main topic; the first item was released on 27 May 2011. It is clear that the aim of the communication was to restore trust in the Dutch vegetable sector and to gain attention for the problems of the Dutch growers.

Consumer trust in the Dutch product was not affected more than products from other countries (only Spain incurred more damage); limited decline in consumption was seen in the Netherlands (Frugi Venta, 2012). In Germany a campaign was started, including large advertisements in daily newspapers, but similar activities were not performed in the Netherlands (PT, personal communication, 22 Oct 2012).

An evaluation of the 2011 EHEC outbreak was done (PT, 2011a, p5) and it was concluded that *“the Dutch vegetable sector was not in the position to prevent the EHEC epidemic and the subsequent financial crisis of the summer of 2011”* and that *“the financial losses were caused by factors that lay beyond the control and influence of the sector”*. PT also suggested that the sale of products on the Dutch market (qua volume, not qua price) and the trust of Dutch consumers in Dutch products remained relatively good, because the principles of the crisis protocol were followed (including the strategy of active actions, openness and reliability). Communication to other stakeholders and organizations deserves more attention as the Dutch fruit and vegetable sector was not capable to make clear that, although there was a problem, the Dutch product was safe (Frugi Venta, personal communication, 19 Dec 2012). In addition the European

²⁵Based on the favourable results from the tests (all samples were found negative), a statement (with PT logo) was prepared for international customers (*no EHEC was found in Dutch products, these are thus safe*).

emergency fund was not enough and not divided fairly as only 10% of the damage of Dutch growers was compensated and no compensation was given to traders, while the cause was not to be influenced by them (LTO, personal communication, 10 Dec 2012). It turned out that it is of utmost importance to have good networks in other countries to be able to adequately respond. However, also good cooperation in communication with retail is extremely important to reach the consumer and conserve trust. Based on the evaluation also some recommendations for the fruit- and vegetable sector were given.

First of all it was recommended that the knowledge and experiences from the EHEC crisis should be used to update the protocol and it should be expanded from only communication to risk and crisis management, because a more proactive approach would increase the chance to take preventative measures. During the 2011 EHEC outbreak most measures were aimed at preventing, limiting and compensating damage and to collect, process and distribute knowledge and information to different involved organizations, authorities and the media (Frugi Venta, 2012). Another recommendation was to distil the mistakes made in Germany to prevent the same mistakes in the Netherlands by the existence of adequate protocols. A network of (international) external experts from institutes, authorities and governments, should be established around different identified risks to function as reliable and independent sources of information for the press that are able to apply nuances. It was also recommended that the collaboration with authorities (e.g. NVWA) should be elaborated from personal to structural contact and tuning and this should be specified in work instructions and procedures (e.g. incident- and crisis protocols) to be able to timely respond to new outbreaks associated with fruit and/or vegetables and to tune the information released to the consumer.

Table 3.2.2. Press releases from the sector organizations²⁶ in the Dutch vegetable production during the EHEC outbreak²⁷

Date	Press release
27 May 2011	<i>"Hygiene is a high priority in the Dutch vegetable sector"</i>
28 May 2011	<i>"Press release to German media about EHEC bacteria"</i>
31 May 2011	<i>"Brussels agreement on support is a first step"</i>
31 May 2011	<i>"Test results confirm confidence in safe vegetables"</i>
1 Jun 2011	<i>"The losses of the import ban of European vegetables should not be paid by duped entrepreneurs"</i>
2 Jun 2011	<i>"Import ban of Russia is completely unnecessary"</i>
2 Jun 2011	<i>"LTO and PT: sales crisis vegetables takes dramatic forms"</i>
3 Jun 2011	<i>"Frugi Venta reports that the loss of Dutch trading companies in vegetables is €30 million per week"</i>
6 Jun 2011	<i>"LTO first wants certainty about bean sprouts as source of the outbreak"</i>
6 Jun 2011	<i>"LTO: European emergency fund central in horticulture to survive EHEC crisis"</i>
7 Jun 2011	<i>"Maat strongly urges EU Council to help horticulture"</i>
8 Jun 2011	<i>"LTO: duped growers rely on support from Brussels"</i>
10 Jun 2011	<i>"Lifting of the German ban on salad vegetables is good news"</i>
16 Jun 2011	<i>"Dumping of vegetables continues despite recovery market"</i>
24 Jun 2011	<i>"LTO: growers step into the breach for a fresh, healthy product"</i>
30 Jun 2011	<i>"LTO: horticultural sales crisis is far from over"</i>
15 Jul 2011	<i>"LTO: horticulture calls for help from the House of Representatives"</i>
25 Jul 2011	<i>"Consumption advice sprouts does justice to safe product"</i>

²⁶These include PT (Product Board Horticulture), LTO (Dutch Organisation for Agriculture and Horticulture) and Frugi Venta.

²⁷Available from: <http://www.tuinbouw.nl/artikel/dossier-ehec> (Last visited: 14 Feb 2013).

3.3. Retail

Although retail does not only include supermarkets, but all those involved in handling of food and the storage thereof until delivery to the final consumer (e.g. canteens and restaurants), this study will focus on supermarkets only as these are the main source of food for the majority of the Dutch consumers (EFMI Business School & CBL, 2012). The Netherlands count approximately 4300 supermarkets. CBL (Central Bureau Food Trade) is an association which represents supermarket organizations and food service businesses and looks after those interests in which businesses can collaborate (e.g. alcohol policy, health and food safety). The CBL has 27 members, including Albert Heijn, Aldi, Jumbo Supermarkten and Lidl Nederland.

Procedure

An incident- and crisis protocol was not used during the 2011 EHEC outbreak, because the CBL did not have one. However, a protocol is being developed at the moment of writing this thesis.

2011 EHEC outbreak

During the 2011 EHEC outbreak the CBL informed their members on the recent developments during the outbreak (e.g. results from the NVWA) and gave advices on how to respond to consumer questions in the supermarket. Information was given to the contact persons of the different businesses by mail and intranet was used to spread information within those businesses. The consumer reaction to the outbreak and the impact for the sales in the Netherlands was also monitored by the CBL (PT, personal communication, 22 Oct 2012). The media were not actively approached and the CBL was reactive in their communication to consumers, but information requests were answered. An official crisis team was not established within the CBL (personal communication, 26 Nov 2012), because the connections were quite short and thus everyone was informed very quickly.

From the internal evaluation it became clear that the CBL members were satisfied with the provided information. The CBL (personal communication, 26 Nov 2012) recognized that Germany has a different political organization than the Netherlands, which caused problems in communication as different parties communicated different messages. Another problem mentioned was that, according to the CBL, the NVWA did not cooperate properly with other organizations: everyone should realize that there is only one common goal in such a situation and that is that they should all protect human health and inform the consumer. NVWA should have a coordinating and facilitating role, but during the 2011 EHEC outbreak PT took this role and that presents, according to the CBL, another problem. PT focuses on the Dutch product, rather than products in the Dutch supermarket (which are coming from a variety of different countries). Next to the Dutch production and export of fruit and vegetables, over 3 million ton of fruit and vegetables are imported to the Netherlands each year (Frugi Venta, personal communication, 19 Dec 2012). In 2011 49% of all expenses to food and drinks were spent in supermarkets (EFMI Business School & CBL, 2012) and these supermarkets do not only sell Dutch products, but products from a variety of countries. It was stressed that food safety was affected and thus the consumer had to be informed on the safety of the products they bought, including products from abroad, but there was too much focus on the Dutch product, according to the CBL.

3.4. Government

Also the government plays an important role as they supervise food safety. At governmental level, in close cooperation, the Ministry of VWS (Health, Welfare and Sport) and Ministry of EZ (Economic Affairs) are responsible for food safety²⁸, but also the Rijksinstituut voor Volksgezondheid en Milieu (RIVM; National Institute for Public Health and the

²⁸ Available from: <http://www.rijksoverheid.nl/onderwerpen/voeding/voedselveiligheid> (Last visited: 1 Nov 2012).

Environment) and the NVWA (Netherlands Food and Consumer Product Safety Authority) are working in the field of public health.

Food safety is a joint responsibility of the Ministry of VWS and Ministry EZ: the Minister of VWS is responsible for food products as soon as they are in the market, while the Minister of EZ is responsible for food safety until harvest and slaughter (VWS, 2011e; Helsloot et al., 2012). More in detail the Minister of VWS is responsible for the safety of all food products during preparation and trade (e.g. production, processing, distribution, import and export), while the Minister of EZ is responsible for the primary production phase (e.g. feed safety, slaughter of animals, approving and cutting of meat) and everything associated with feed and economical aspects (LNV & VWS, 2005a; VWS, 2009). During the 2011 EHEC outbreak Mrs. E. Schippers was Minister of VWS and Mrs. M. Veldhuijzen van Zanten-Hyllner was State Secretary. For the Ministry of EZ Maxime Verhagen was Minister and Henk Bleker was State Secretary.

Each department is responsible for incidents and crises within their policy. Based on the nature of an incident or crisis in mutual agreement it is determined which ministry (VWS or EZ) has the lead responsibility in crisis management (LNV, 2005). However, public health always has a higher priority than economical consequences.

Together the Ministry of VWS (industry, microbiology, hospitality and crafts, special food and drinks, alcohol and tobacco, product safety and animal experiments) and the Ministry of EZ (animal welfare, nature, agriculture and food quality) direct the NVWA, which controls compliance with the established regulations in the field of food safety. NVWA is a merger of the Algemene Inspectiedienst (AID; General Inspection Service), Plantenkundige Dienst (PD; Plant Protection Service) and Voedsel- en Warenautoriteit (VWA; Food and Drug Administration) since 1 January 2012. During the 2011 EHEC outbreak the merger was in progress (so-called temporary work organization), but not completed yet²⁹.

The core tasks of the NVWA are: (i) monitoring of compliance of businesses with legislation and regulations; (ii) risk assessment of chemical, biological and physical risks for food- and product safety, animal and plant health and nature; (iii) risk communication; and (iv) advising the ministries of LNV and VWS on the effects, quality and practicability of policy (LNV & VWS, 2005a; LNV & VWS, 2005b). NVWA inspects companies that produce, import, cool or transport food products and monitors the safety of food products (presence of pathogens, contaminants or carcinogenic substances). The NVWA can receive signals of contaminated products through inspections, the RASFF and the central emergency room of the NVWA; the risks of these signals are assessed. The NVWA advises the ministers and provides them with knowledge for decision-making and communication to the politics and media (VWS, 2012a). In case of an incident the NVWA can force producers to take actions (e.g. forbid producers to prepare or market certain food products) (LNV, 2008).

Another advisory organization of the Ministry of VWS is the RIVM (VWS, 2012b). The Centrum Infectieziektenbestrijding (Cib; Centre Infectious Disease Control) of the RIVM carries out the national surveillance of infectious diseases, coordinates in case of threat or control of an outbreak of infectious disease and advises the Minister of VWS and professionals on prevention and control policies. The RIVM (personal communication, 8 Nov 2012) is responsible for coordination of an outbreak, but the actual control is done by Gemeentelijke/ Gemeenschappelijke Gezondheidsdienst (GGD; Municipal/Common Health Service) (local health authorities), doctors and NVWA. The RIVM is the central hotline for human food infections from all GGD departments in the Netherlands, which means that there is, although underestimated because not every infection is or has to be mentioned, a continuous overview of the number of infections (VWS, 2009). Tasks of the RIVM include policy support, national coordination (e.g. infectious disease control), prevention and intervention programs (e.g. vaccinations and life style interventions), information provision to professionals and the public, knowledge development and research, support of inspections and calamities functions (e.g. environment, infectious diseases and food safety) (VWS, 2012a).

²⁹Available from: <http://www.vwa.nl/actueel/nieuws/nieuwsbericht/2005160/aid-pd-en-vwa-bouwen-aan-een-nieuwe-voedsel-en-waren-autoriteit> (Last visited: 4 Mar 2013).

The director of the Cib can decide to organize an Outbreak Management Team (OMT), which advises the Minister of VWS and the State Secretary of EZ (if zoonoses are involved) on policy decisions to be taken. The brochure 'National advising on infectious disease threats and crisis' (RIVM, 2011a) describes the steps taken and mentions that the OMT process can be finished within 24 hours. The starting point of the OMT is to provide transparent and independent advices. An OMT (ten to twenty persons) is composed of multidisciplinary experts and representatives of different organizations, who all assess the risk from different angles in order to draft the 'best possible professional advice'. The chairman of the OMT is the director of the Cib. From each OMT a written advice follows which includes the most important advices from the professionals on the type of risk, the size and the presence and effectiveness of options to reduce this risk. The Bestuurlijk Afstemmings Overleg (BAO; Administrative Coordination Meeting) (composed of officials of the involved ministries and representatives of different organizations) is advised by the OMT and considers the political and administrative feasibility and desirability of the advice. Subsequently the ministries are advised, who will decide on the necessary control measures. Translation of this decision into operational guidelines and recommendations is done by Cib and this is communication to medical professionals so they are able to exercise the same measures and the public.

Next to the NVWA and the RIVM, also the VCN (Netherlands Nutrition Centre Foundation) is an important institution in the Netherlands that provides consumers with clear, scientifically based and objective information about healthy, safe and sustainable food choices and promotes the consumption of healthy and sustainable foods by consumers. VCN is a government foundation that receives institutional and project subsidies from the Ministry of VWS and the Ministry of EZ. It performs numerous activities all based on scientific knowledge and this is made available to consumers in comprehensive and useful guidelines and advices. Also food safety is an important issue and information is given on safety standards, toxins or pathogens in foods and consumer-related topics e.g. hygiene during purchase, preparation and storage of food. VCN is responsible for informing the consumer on the importance of a healthy and varied diet, providing consumption advices (e.g. consumption of nitrate-rich vegetables) and informing the consumer on basic hygiene skills (LNV & VWS, 2005a). Informing the consumer on food safety incidents and crises is not an official task of the VCN (personal communication, 15 Nov 2012), but in case of such an incident they do provide information on measures consumers can take.

Each ministry has powers and responsibilities for crisis management within its own policy and together with the concerned organizations this is called the 'functional chain'. Next to that there is the 'general chain' for crisis management and maintenance of public order; the Minister of Veiligheid & Justitie (V&J; Safety & Justice) is the coordinating minister thereof. An incident or crisis can be handled at national (ministries) and regional/local ('safety regions'³⁰) level, but in case of food safety incidents this is always handled at national level (VWS, personal communication, 14 Dec 2012).

If a crisis occurs in which the Ministry of VWS and Ministry of EZ are involved direct contact between the two ministries is maintained and the settlement will occur by the lead department. It should be noted that a minister is only responsible to the extent to which powers reach: there is no responsibility without powers, but responsibility does reach as long as there are powers (Rob, 2012). This means that if something does not fall within the tasks of one ministry the responsibility shift to another ministry. However, if multiple departments are involved coordination will be done by the Ministry of V&J. The Nationaal Crisis Centrum (NCC; National Crisis Centre) (part of the Ministry of V&J) will perform the function of interdepartmental information centre and will support the leading ministry by organizing interdepartmental meetings and, if the situation requires this, coordination, tools and advice on crisis communication.

The NCC coordinates the reaction on disasters and crises. Crisis communication specialists advice 'safety regions', municipalities and ministries in the field of risk- and crisis communication. The NCC monitors 24 hours a day events

³⁰The Netherlands has 25 'safety regions' that play a role in the approach of major incidents, calamities and crises; in these regions the fire brigade, Geneeskundige Hulpverlening bij Ongevallen en Rampen (GHOR; Medical Assistance in Accidents and Disasters), police and municipalities work together.

(television and internet) that might influence national safety and can have a public impact. Recent examples are the H1N1 influenza pandemic (2009)³¹, and the chemical fire in Moerdijk (2011)³² and the shooting in Alphen aan den Rijn (2011)³³. In case of an incident, the NCC evaluates whether they might play a role and which role would best contribute to the crisis management.

The major part of the work of the NCC is coordination in the preparation on a variety of national events, incidents and calamities. Only if public order is threatened the NCC has powers, because this falls within the scope of the Ministry of V&J. However, generally the NCC does not have any powers and plays merely a facilitating role. They act as a kind of 'information broker' (NCC, personal communication, 19 Dec 2012). They follow the development in case of incidents, but do not offer help unless national impact can be expected, or unless there is a major and imminent threat for people's safety or health. The NCC does not communicate itself to press and general public. Based on the events they contact people involved to see whether their help and advices are needed. Those in charge of managing the specific crisis should decide for themselves if they can use the advice and products of the NCC (personal communication, 19 Dec 2012).

The NCC possesses knowledge, expertise and experience in the field of crisis communication. In addition they have a large network that can be quickly reached. Thus they can quickly bring people together, physically or through conference calls. If desirable the NCC can assist by offering spokespersons and public information, strategic advices and products as the website www.crisis.nl, a telephone number for information to the public etc. (LNV, 2008). Analyses of information in the traditional and social media are also performed by the NCC to find out the public perception and need for information from both media and public. It is important to make the distinction between the needs and interests of media and of the general public or specific public target groups, since those needs do not always coincide and therefore different approaches may be necessary (NCC, personal communication, 19 Dec 2012). It should be noted that communication does not fix everything and that management measures itself are of utmost importance. Communication during the 2011 EHEC outbreak was not a task of the NCC and they were not involved in the approach taken. The RIVM was contacted, but help of the NCC was not required according to them (NCC, personal communication, 19 Dec 2012).

Procedure

Ministry of VWS

In case of an incident or crisis³⁴ the Ministry of VWS works according to their protocol for crisis management (VWS, 2012b) and their protocol for crisis communication (VWS, 2011f). There also is a specific crisis protocol for food safety incidents (VWS, 2011e).

Notifications usually enter through the monitoring station of the Ministry of VWS, the RIVM, another department or the NCC (VWS, 2012b). A Dienstdoend Ambtenaar (DDA; Duty Officer) (available 24x7) records each message, transmits the incident notifications and contacts the reporter for further information. Based on the nature of the crisis the DDA

³¹The virus caused a pandemic (also called "Mexican flu" or "Swine flu") in 2009. It started in Mexico and spreaded to the United States and other countries.

³²On 5 Jan 2011 a fire, in which large quantities of chemicals were involved, started at a company in the port and industrial area Moerdijk.

³³On 9 Apr 2011 a shooting occurred in a mall in Alphen aan de Rijn. The perpetrator fired over a hundred shots in several minutes and committed suicide afterwards. Seven people died.

³⁴Specific crises within the scope of the Ministry of VWS include: human infectious diseases, zoonoses, food and product safety and crises caused in or by institutions (VWS, 2012b).

takes independent actions or contacts the crisis coordinator of the Departementaal Crisis Centrum³⁵ (DCC; Departmental Crisis Centre) of the Ministry VWS to discuss further actions; in case of food safety incidents also the Managing Board Voeding, Gezondheidsbescherming en Preventie (VGP; Nutrition, Health Protection and Prevention) is informed (VWS, 2011e). After receipt of the signal the director of the Managing Board VGP decides whether there is a (emerging) crisis (based on policy, politics and public agitation), what manpower and resources can be deployed for that, what consequences this has for regular and planned activities and whether scaling³⁶ of the crisis organization is necessary. If it is decided that there is not (yet) a crisis, the handling of the incident is transferred to the NVWA, but new information is daily judged and in case of changes presented to the director of the Managing Board VGP (VWS, 2011e).

In that case it can be decided to scale the DCC-VWS and install the Beleidsteam Crisisbeheersing (BTCb; Policy Team Crisis Management) and Operationeel Team Crisisbeheersing (OTCb; Operational Team Crisis Management)³⁷; scaling is tested by the Crisis Toezicht Team (CTT; Crisis Monitoring Team) and in case of the following incidents they consider to scale anyway (VWS, 2012b). The coordination of the crisis management is the major task of the Operationeel Leider (OL; Operational Leader). In food safety incidents this is the director of the Managing Board VGP.

The BTCb directs the executing organizations and gathers information from 'the field'. In addition this team judges the feasibility, ethical, social, legal, financial and economic aspects of advices, decisions and actions that can minimize the consequences of a crisis. However, the minister or crisis manager advices which measures are finally adopted; decisions are implemented by the OTCb (VWS, 2012b). Employees from other departments can also connect to the BTCb and the OTCb.

In case of a food safety crisis the Minister of VWS (2012b) has several powers: (i) suspend or revoke approvals of food businesses; (ii) restrict or ban the marketing of food and drinks; (iii) order monitoring, recall, withdrawal or destruction of food and drinks; (iv) provide authorization to use food and drink for other purposes than originally intended; and (v) temporary, partial or total closure of a company concerned.

Coordination of the information exchange necessary for scaling, communication, decision-making and advices of the minister and crisis manager are the responsibility of the DCC-VWS. They also collect information for reports³⁸ and distribute these within and outside the Ministry of VWS (VWS, 2012b).

³⁵In the normal phase the DCC is composed of a DDA and a crisis coordinator.

³⁶Scaling is considered in the following situations: a crisis, incident, emergency or disaster concerns several safety regions; a region is scaled to the highest level; another department is scaled; the (expected) number of seriously injured is above 10; the (expected) number of deaths is above 5; food safety is at risk; it concerns a terrorist attack; there is (threat of) a nuclear incident; the region calls for assistance from state level; foreign victims are involved; multiple healthcare institutions have to evacuate simultaneously; nationwide coordination is needed; the continuity of care is in danger or likely to become; the Minister of V&J exclaims a national disaster; media or political sensitivity; outbreak of infectious disease A; significant financial consequences; and many concerns and questions about health among Dutch people as a result of a crisis abroad (VWS, 2012b).

³⁷Different experts will form the basis of these teams and composition and size of the teams depends on the nature, type, extent and severity of the crisis.

³⁸At the end of a meeting, consisting of four steps: (i) process; (ii) image (facts, network analysis, measures taken by others); (iii) approach (own measures); and (iv) decisions (bottlenecks and discussion points), a report with a fixed format is written (VWS, 2011e). The report should describe the current and expected situation (in the Netherlands and surrounding countries) and media attention, but also information regarding measures, actions and decisions taken on operational and administrative level is collected (VWS, 2012b).

The Directie Communicatie (DCo; Managing Board Communication) provides communication to the press and public; communication is tuned with other organizations (e.g. NVWA and Ministry of EZ) (VWS, 2011e). They communicate about e.g. measures taken, expected developments and action perspectives. Next to that also social media and imaging is monitored and, if necessary, actively adjusted.

The communication of the Ministry of VWS follows three principles: (i) limiting material and immaterial damage (e.g. by providing behavioural and action advices to the public and government organizations); (ii) providing information on the facts (what, who, where, why and how) and on the work done by different parties and (iii) contributing to the image of what the crisis means to those affected and the public. From the protocol for crisis communication (VWS, 2011f) it becomes clear that the DCo develops communication messages to inform the public in a clear way and advises the minister on the communication of information and uncertainties. To effectively inform the public maximal input of media is necessary: e.g. TV, radio, newspapers and social media. The public is informed by information on websites (rijksoverheid.nl, RIVM.nl, NVWA.nl, Voedingscentrum.nl), but naturally also the information released by the media play an important role in the imaging of the public. In order to provide clear and uniform information written messages are preferred and also placed on the website www.rijksoverheid.nl (VWS, 2011f).

News sites and social media are monitored to check if factually incorrect imaging consists in the media and if so, directed actions are taken to change this. In addition the DCo receives reports from citizen questions and visitor stats of www.rijksoverheid.nl. Based on this the DCo advises either passive (dossier on www.rijksoverheid.nl, updating FAQ's and tuning communication with other parties (to guarantee uniform information)) or active communication. For every crisis an crisis dossier is placed on www.rijksoverheid.nl with current information on the nature of the crisis and policy background, current questions and answers and reference to useful websites (e.g. RIVM, NVWA and VCN); visitors can also subscribe for a news messages services (VWS, 2011f). Next to internet, consumer can pose there questions by telephone.

To be able to ensure quality of the crisis management the policy, operational and telephone team follow a training annually and VWS cooperates regularly in interdepartmental and international exercises.

Ministry of EZ

In the protocol for crisis decision making (LNV, 2010) the crisis organization of the Ministry of EZ is described. When a crisis³⁹ is about to arise the SG (Secretary general) can decide to establish a Departmental Coordination Centre (DCC-LNV), which houses the departmental crisis organization of the Ministry of EZ. The Departementaal Beleidsteam (DBT; Departmental Policy Team) advises the Minister of EZ on the actions to take and is responsible for lawful and efficient execution of the decisions. The DBT is supported by the Departementaal Beleidsondersteunend Team (DboT; Departmental Policy Support Team), which formulates policy proposals, prepares the decisions, translates decisions from the DBT to the actions to be taken and communicates these internally. Next to these teams also the executive teams (e.g. NVWA) play a role. In addition there are some other teams with a more controlling and facilitating task like setting standards in the field of financial management, personnel, logistics, ICT support and archiving. A special protocol exists for financial management of crisis situations.

The tasks of the Departementaal Communicatie Team (DCT; Departmental Communication Team) are described in a crisis protocol for communication in crises (LNV, 2008) and the objective of crisis communication is to rapidly and unambiguously inform all those directly involved. The main tasks of the DCT are policy preparation and strategy and providing information to the press (e.g. press releases, press conferences, press briefings), the public (e.g. internet, LNV-Loket, house-to-house magazines, advertising, flyers, brochures and teletext), involved organizations (e.g. information service), stakeholders and those affected in the region and within the department. It was described that open and active information on risks, measures and execution thereof are important, but also social and emotional aspects should be taken into account. In addition the DCT should continuously tune their information with other

³⁹Specific crisis within the scope of the Ministry of EZ include: food shortage, food safety, animal diseases and plant diseases (LNV, 2010).

government agencies and organizations involved (e.g. NVWA). For uniformity of information focus is on written information. For all involved organizations there is a central question-answer database. Questions from the different organizations are answered by the crisis organization and the question-answers combinations are recorded in the database and are thus accessible for all connected organizations. In addition news messages are sent based on the information need signaled from the questions posed. Also the public can ask their questions, either telephonically (callcenter), written or by e-mail. In order to make this run smooth an information service directs the information flows (e.g. questions from consumers, organization and own employees are forwarded) and the VAT formulates concept answers to these questions and these are to be approved by the coordinator of the VAT. In addition to this FAQ a crisis dossier is placed on the website www.rijksoverheid.nl to offer current information on the nature of the crisis, the regulations and background of the policy. In the normal phase one prepares for a crisis by exercises and the crisis protocol is actualized. Once in the attention phase the LNV organization should be informed, while in the crisis phase also external communication is needed (e.g. FAQ). In the last phase the communication measures are reduced and the crisis communication and the organization thereof are evaluated. Information management (effective collection and dissemination of relevant information), crisis decisions (taking appropriate decisions to measures based on currently known relevant information), information and media management (efficiently communicate with the press, the public and the private organization), process monitoring (ensuring smooth running of the crisis) and network management (understanding and maintenance of the network of partners and effective cooperation with the network partners during the crisis) are all aspects that are evaluated after a crisis and lessons will be distilled and used for improvements.

Successful performance during a crisis depends on personal capacities of crisis managers, but also functioning in a team and crisis preparedness (e.g. protocols, procedures and well-trained people) and therefore a training program is available to assure well-trained employees. Because of this an education, training and exercise program, composed of several modules, is available.

Valuable lessons can be learned from gained experiences and there an (internal) evaluation of the (potential) crisis can be done and may include: (i) information management (effective collection and distribution of relevant information); (ii) crisis decision making (taking adequate decisions based on currently known relevant information); (iii) communication (efficient communication with the press, the public and within the organization); (iv) network management (maintaining the network of partners during the normal and attention phase and cooperation during a crisis) (LNV, 2010). Lessons learned should be incorporated into the existing protocols and procedures.

NVWA

The NVWA uses the incident- and crisis protocol that was also used by the VWA (2007b) before the merger. During the 2011 EHEC outbreak this protocol was used despite the merger. At the moment of writing this thesis the protocol from 2007 is still used by the NVWA (personal communication, 21 Feb 2013). The protocol also describes the existence of a crisis communication plan, but according to the NVWA (personal communication, 14 Mar 2013) the protocol for crisis communication from the Ministry of EZ is used for this purpose.

Notifications are usually received by the NVWA through a call, email or fax from external organisations, companies, other countries or consumers. A notification can also come from the NVWA itself. An employee of the monitoring station will receive and register the notification. The actions to be taken depend on the classification of the notification. The NVWA differentiates between routine notifications, incidents, severe incidents and crises. A routine notification is a notification of which it is clear that there is no severe risk for human health and no structural quality problem. Consumer complaints usually fall within this category. An example is food poisoning in a limited number of persons. Incidents are notifications with no or only limited societal or political impact (e.g. a local health problem). In contrast a severe incident potentially has a societal or political impact and a crisis is a notification has a severe societal or political impact. Examples of severe incidents include among others fatalities following the incident, new threats (e.g. VTEC) and notifiable animal diseases. When it comes to crises one should think about many fatalities due to the consumption of food, large financial consequences and conflicting interests (e.g. public health vs. financial interests).

An incident- or crisis team can be set up. In this team all different potentially involved departments should be represented. The tasks of this team include (i) judgement of the incident or crisis situation; (ii) judgement of possible measures; (iii) decision making on measures and having these implemented; (iv) judgement of communication strategy; and (v) maintenance of internal and external contacts.

For all types of notifications the structure of actions is quite similar. First of all the notification will be passed on, including the accompanying documents. Activities (e.g. sampling) are started and the findings are analyzed and judged. Finally the notification is closed. The protocol does not describe specific actions to be taken only a very standard outline.

Severe incidents and crises are always evaluated; incidents only incidental. In this evaluation different topics are discussed: (i) effort of employees NVWA; (ii) decision making; (iii) cooperation with other organisations; (iv) information provision; (v) organization of the NVWA; (vi) financial aspects; (vii) facility management; and (viii) various other aspects. Following the evaluation a plan drafted and executed.

The communication department is responsible for the communication by the NVWA, which includes press information, communication about NVWA activities, risk communication and public information. The internal organization is informed by a newsletter and by information on intranet. The consumer can be informed through internet and also questions can be asked and will be answered following fixed Q&A's.

In case of crises the overall coordination is transferred to the Ministry of VWS or the Ministry of EZ. Also the responsibility for communication (communication policy, press information and answering consumer questions) shifts to the Ministry of VWS or the Ministry of EZ. However, the NVWA will still communicate on their activities and will also perform risk communication and internal communication within the NVWA. In addition the NVWA remains responsible for public information according to its own crisis protocol (VWA, 2007b).

RIVM

The RIVM has a general protocol for infectious diseases (RIVM, 2009) and a special protocol for outbreaks of gastroenteritis and food infections (RIVM, 2008).

Diseases can be reported by laboratories, therapists, the NVWA and the public. An outbreak under non-related persons can be noticed if a higher number of contaminations with a certain pathogen are reported than can be expected. For certain infectious diseases doctors and medical microbiological laboratories are obliged (as defined in the Wpg) to notify the GGD about this and on its turn the GGD will judge the contagion risk, determines whether measures should be taken and reports the notifiable disease to the Cib of the RIVM⁴⁰. In total there are 42 notifiable diseases, divided into four groups which determine the measures that should be taken⁴¹. In some GGD-regions it is decided to also report non-notifiable intestinal pathogens (RIVM, 2008). By close surveillance of the number of infections an outbreak can be noted. Communication and coordination among GGD, laboratories and institutions closely related to the rate at which an outbreak is addressed (RIVM, 2008). If an outbreak is noted it should be checked if there is a possible common source of contamination (e.g. participation in an event, common hobby's, visiting the same supermarkets).

Food infection and food poisoning are notifiable diseases and the GGD should inform the Cib of the RIVM if there are two or more patients with the same symptoms or cause and a mutual epidemiological or microbiological relation

⁴⁰Available from:

http://www.rivm.nl/Onderwerpen/Onderwerpen/M/Meldingsplicht_infectieziekten/Wat_betekent_de_meldingsplicht
(Last visited: 16 Mar 2013).

⁴¹Available from:

http://www.rivm.nl/Onderwerpen/Onderwerpen/M/Meldingsplicht_infectieziekten/Welke_infectieziekten_zijn_meldingsplichtig (Last visited: 16 Mar 2013).

pointing to food as the source (RIVM, 2008). The Cib of the RIVM has a coordinating role (signalling and advising) in the management of outbreaks and threats of infectious diseases in the Netherlands; it forms a bridge between science, policy and practice (RIVM, 2011a). They provide support by advice, diagnostics, epidemiology, surveillance, research and guidelines.

The Minister of VWS is responsible for the policy in case of (imminent) national crises in the field of infectious diseases and this is described in the Wet publieke gezondheid (Wpg; Public Health Act); execution takes place by the GGD (RIVM, 2011a). The severity of the symptoms and the likelihood that without taking specific measures new cases will occur determine the urgency and gravity of the measures taken (RIVM, 2008). The GGD is usually fully involved in the management of outbreaks in nursing homes and non-medical institutions (e.g. nurseries), where hospitals usually manage outbreaks themselves and only notify the GGD because of the legal obligation to report this (RIVM, 2008). The GGD can also suspect an outbreak based on notifications of laboratories, the NVWA and the public and in that case will be fully involved.

Usually a new notification is passed on to the GGD by phone and in this conversation some information should be collected, including the number of new patients per day (prepare an epidemiological curve), most common and severe symptoms, a common event or kitchen, diagnostics and measures taken. A simple case definition is prepared which describes when a person is defined as patient. Relevant information is collected in an outbreak dossier, including institution targeted information (e.g. common events, common food supply and contact between different departments) and patient targeted information (e.g. identification of the patient, first day of symptoms, complaints and participation in common events or meals). After this a working hypothesis is defined, based on the epidemiological course of the outbreak. Different types of outbreaks exist: (i) point-source epidemic (a rapidly increasing number of cases with a peak followed by a decrease or possibly new cases by further secondary transmission; transmission can be food or non-food related); (ii) person-to-person epidemic (the epidemic curve starts with a few sporadic cases, followed by an increased number of illnesses); (iii) common-source epidemic (multiple cases occur in a longer period of time).

Additional measures and interventions should be taken next to the general measures (e.g. hygiene measures, monitoring and registration of patients and work ban for medical employees). In case of food related and common source outbreaks extra interventions can include laboratory research of faeces of diseased and non-diseased persons. Also a food survey is conducted with diseased and non-diseased persons, followed by statistical analysis, to find a possible causality between eating certain foods and becoming ill. In addition other organizations should be informed. If a food infection is suspected the NVWA is contacted and patients are tested for viruses (Norovirus and rotavirus) and bacteria (*Salmonella*, *Campylobacter*, *Shigella*); additional (epidemiological) research may also be necessary. This includes determination of the risk population, preparation of multiple case definitions (confirmed, probable and suspected), collection of data, analysis of data from the food survey (cohort research and case-control research) and preparation and interpretation of the epidemic curve. Next to microbiological laboratory research, one can perform research in the food chain (environmental research). This is done by the NVWA and consists of: (i) inspection of the kitchen and process analysis of the food preparation; (ii) identification of the origin of products used and inventory of suppliers; and (iii) sampling of food and drinks.

Management of an outbreak lies with the municipalities (GGD) and they use protocols available through the RIVM which tell them what to do (RIVM, personal communication, 23 Nov 2011). If an infectious disease outbreak is large the GGD can have a capacity problem and help from other departments may be necessary (RIVM, 2009). If after the last patient, the maximum incubation period has passed twice one can conclude that an outbreak is over and it is advised to inform the involved persons as this creates clarity. Appointments on the reduction of measures and after care should be made and a report should be written, which can also be used for the evaluation afterwards.

The RIVM (2009) describes that crisis communication is a joint responsibility of the Ministry of VWS, the RIVM and the municipalities. After tuning of information, the Cib is responsible for informing the professionals during a crisis, while at national level the Ministry of VWS is responsible to inform the public; the press is informed by Cib (content) and the Ministry of VWS (administrative).

VCN

During a food safety crisis VCN works according to a crisis protocol, but this is not made public.

2011 EHEC outbreak

The 2011 EHEC outbreak was not classified as a food safety issue in the Netherlands as most patients fell in Germany and all Dutch patients could be linked to a stay in Germany. It was called a trade problem.

Ministry of VWS

Despite the classification 'trade problem' the Ministry of VWS (personal communication, 14 Dec 2012) was closely involved with the crisis organization of the Ministry of EZ in case the situation would develop into a food safety problem. Also, they scaled preventative to be prepared (e.g. hospitals) for future developments. It was mentioned that, even though the outbreak was not classified as a food safety issue, public information was important, because it was a socially relevant topic. Based on monitoring the Ministry of VWS decided to be passive in their approach and prepared a dossier on internet (www.rijksoverheid.nl) with information and links (www.nvwa.nl, www.rivm.nl) for those actively searching for it. In this communication it was important not to provoke panic and be transparent on what was (not) known. However, a problem that occurred was the information from Germany: facts were released and could only be invalidated if new facts were available (personal communication, 14 Dec 2012). All press releases or news items published on the website of the Ministry of VWS are compiled in table 3.4.1. In total 6 items were published with evidence-based results as main topic; the first item was released on 7 June 2011. News items were only released if new proven information was available.

Table 3.4.1. All press releases/news items published on the website of the Ministry of VWS during the 2011 EHEC outbreak⁴²

Date	Title of press release/news item
7 Jun 2011	<i>"Minister Schippers sends a letter about EHEC to the House of Representatives"</i>
9 Jun 2011	<i>"EHEC investigation at Dutch grower of beetroot sprouts"</i>
10 Jun 2011	<i>"EHEC investigation at second Dutch grower"</i>
17 Jun 2011	<i>"STEC (EHEC) bacteria found on red beetroot sprouts were not found in the Netherlands before"</i>
27 Jun 2011	<i>"It was advised not to consume raw arugula sprouts, mustard sprouts and fenugreek sprouts"</i>
22 Jul 2011	<i>"Raw arugula sprouts and mustard sprouts may be eaten again"</i>

The House of Representatives was informed on the outbreak on 30 May 2011 through a letter (VWS, 2011a). It was mentioned that the RIVM monitored cases and was in close contact with health care and that the NVWA focused on identification of the source; information was released by press releases or by publications on their own websites. In this letter it was also mentioned that hygiene measures during food preparation can prevent an infection with EHEC. On 7 June 2011 another letter (VWS, 2011b) was sent to the House of Representatives with updated information on the outbreak: an OMT (Outbreak Management Team) was convened on 6 June 2011 which emphasized that there was no reason not to consume certain food products in the Netherlands. Patients who visited Germany and developed symptoms of an EHEC infection were advised to contact their GP and normal hygiene measures should be considered when having diarrhoea. Also hygiene measures were repeated and reference was made to websites of the RIVM and the VCN for measures consumers could take. A news item was published on the website of the Ministry of VWS the same day and contained similar information as the letter. On 9 and 10 June 2011 two news items were published with information about EHEC contaminated red beet sprouts from the Netherlands (not EHEC O104:H4). In a news item, published on 27 June 2011, Minister Schippers recommended to temporarily not grow and consume raw arugula sprouts, mustard sprouts and fenugreek sprouts (VWS, 2011c). It was mentioned that consumers that consumed raw sprouts and showed signs of diarrhoea should contact their GP. In addition it was stated that EHEC was not found in the Netherlands and that the NVWA investigated if seeds from arugula, mustard and fenugreek sprouts ended up in the

⁴²Available from: <http://www.rijksoverheid.nl/ministeries/vws/nieuws?keyword=ehec&form-period-from=&form-period-to=> (Last visited: 14 Feb 2013).

Netherlands as well. Almost four weeks later the advice was limited to discommending the consumption of raw fenugreek sprouts.

Ministry of EZ

The Ministry of EZ (personal communication, 21 Nov 2012) was directly involved during the EHEC outbreak, because contacts between the businesses and the government were already operational during the Moerdijk fire in January 2011. The outbreak was judged to be a trade problem in the Netherlands and actions taken by the Ministry of EZ (personal communication, 21 Nov 2012) focussed mainly on trade issues, because that was where powers were and thus measures could be taken. It was a European problem on political level which could not be solved by the businesses alone and thus measures had to be taken at government level and also had to be directed towards non-EU countries (e.g. Russia). From the Ministry of EZ (personal communication, 21 Nov 2012) only limited and ordinary communication (e.g. letter to the House of Representatives) was given; communication occurred through the PT. The news messages released are compiled in Table 3.4.2. In total 7 items were published on their website with emergency measures to support growers and traders as main topic; the first item was published on 30 May 2011.

Table 3.4.2. All press releases/news items published on the website of the Ministry of VWS during the 2011 EHEC outbreak⁴³

Date	Title of press release/news item
30 May 2011	<i>"State Secretary Bleker: European support for horticultural sector because of EHEC bacteria"</i>
31 May 2011	<i>"State Secretary Bleker calls for more European crisis measures horticulture"</i>
1 Jun 2011	<i>"German laboratories found no EHEC bacteria on European vegetables"</i>
2 Jun 2011	<i>"Ministry of EZ (Economic Affairs) works with banks on a guarantee arrangement for affected growers"</i>
6 Jun 2011	<i>"State Secretary Bleker extends guarantee arrangement for horticulture"</i>
9 Jun 2011	<i>"State Secretary Bleker reaches agreement with Russia to end the import ban on European fruit and vegetables"</i>
14 Jun 2011	<i>"An agreement was reached on emergency fund for growers"</i>

In line with the letter of Minister Schippers (which focussed on food safety), also State Secretary Bleker informed the House of Representatives through a letter (EZ, 2011) on 30 May 2011. In this letter information was given on the samples taken and it was concluded that in the Netherlands no EHEC contaminated products were found. As growers were largely affected by the suspicion that salad vegetables were the source and the export of products as cucumbers and tomatoes was extremely reduced support measures were reviewed by State Secretary Bleker. The export situation and potential crisis measures (e.g. compensation) were also discussed in this letter. In addition to this letter several updates were sent to the House of Representatives and these mainly contained information on crisis measures.

One of the ideas State Secretary Bleker promoted was the emergency fund for the sector, but he pleaded for more crisis measures for growers by the EC; other countries, e.g. Spain and Germany, supported him in this issue. Next to compensations he also asked for promotion campaigns in order to improve consumer trust. When Russia decided on 2 June 2011 to close its borders for all European vegetables, because of uncertainty of the source of EHEC, State Secretary Bleker tried to remove this ban. One of his measures was a *"bacteria-free-certificate"*, which meant that Dutch institutes would test Dutch products according to Russian standards; these products could be imported to Russia. On 9 June 2011 an agreement was reached in lifting the import ban on Dutch fruit and vegetables. The Ministry of EZ also worked on guarantee measures in order to assure that banks granted delay of payment for entrepreneurs in the fruit- and vegetable sector. The work continued even after the outbreak was closed, because consequences for growers continued (Ministry of EZ, personal communication, 21 Nov 2012).

⁴³ Available from: <http://www.rijksoverheid.nl/ministeries/ez/nieuws?keyword=ehec&form-period-from=&form-period-to=> (Last visited: 17 Feb 2013).

The Ministry of EZ (personal communication, 21 Nov 2012) evaluated the crisis afterwards. It was concluded that the internal team was strong, but it was questioned whether information was communicated to everyone. Also it was acknowledged that good contacts are essential during a crisis, also with the crisis team of the Ministry of VWS. During the outbreak there was a good link with the businesses, because there was an existing network that was set after the fire in Moerdijk in January 2011. A point of attention was to make sure that a network is present for all different types of crisis, to be able to guarantee the presence of good contacts in case of an incident.

NVWA

During the EHEC outbreak NVWA sampled a lot of products (e.g. cucumbers, tomatoes, lettuce and sprouts) for the presence of EHEC. Next to sampling also certain tracing activities were performed (e.g. did Spanish cucumbers end up in the Netherlands?). On 9 and 10 June 2011 it became clear that Dutch red beetroot sprouts were contaminated with EHEC; this was not the serotype O104, but it was still believed to be a pathogenic serotype. NVWA did extensive inspections in both concerned businesses, published the concerned product labels on their website and advised consumers that bought the product with one of the labels to discard it⁴⁴. The same thing happened on 9 July 2011, when tracing showed that two garden centres received fenugreek seeds from a German company where possibly contaminated fenugreek seeds were sold. NVWA took all suspected packages for investigation and again product labels were shown on their website with the accompanying advice to either bring the product back to the garden centre or to discard them⁴⁶.

A compilation of all news items published on their website can be found in Table 3.4.3. In total 15 items were published with their own activities (sampling and tracing results) as the main topic; the first item was released on 26 May 2011.

Table 3.4.3. All press releases/news items published on the NVWA website during the 2011 EHEC outbreak⁴⁷

Date	Press release/news item
26 May 2011	<i>"Spanish cucumbers are the possible source of EHEC bacteria"</i>
27 May 2011	<i>"Dutch involvement in contaminated cucumbers is still not certain"</i>
31 May 2011	<i>"Bleker: European support for horticultural sector because of the EHEC bacteria"</i>
31 May 2011	<i>"To date all investigated samples are EHEC bacteria free"</i>
3 Jun 2011	<i>"No STEC (EHEC) bacteria on fruit and vegetables"</i>
6 Jun 2011	<i>"NVWA continues to monitor foodstuff"</i>
9 Jun 2011	<i>"EHEC investigation at Dutch grower of beetroot sprouts"</i>
9 Jun 2011	<i>"It is advised to discard contaminated red beetroot sprouts"</i>
10 Jun 2011	<i>"EHEC investigation at second Dutch grower"</i>
17 Jun 2011	<i>"STEC (EHEC) bacteria found on red (pink) beetroot were not found in the Netherlands before"</i>
26 Jun 2011	<i>"It is advised not to consume raw arugula sprouts, mustard sprouts and fenugreek sprouts"</i>
30 Jun 2011	<i>"Fines were given for not withdrawing red beetroot sprouts from the market"</i>
7 Jul 2011	<i>"European import ban on Egyptian seeds"</i>
9 Jul 2011	<i>"Potentially contaminated fenugreek seeds were sold at two garden centres in Limburg"</i>
25 Jul 2011	<i>"Raw arugula sprouts and mustard sprouts may be eaten again"</i>

⁴⁴Available from: <http://www.vwa.nl/actueel/waarschuwingen-food/nieuwsbericht/2013401/productinformatie-rode-bietenspruiten-scheuten-hamu> (Last visited: 22 Jan 2013).

⁴⁵Available from: <http://www.vwa.nl/actueel/waarschuwingen-food/nieuwsbericht/2013421/productinformatie-rode-roze-bietenspruiten-van-der-plas> (Last visited: 22 Jan 2013).

⁴⁶Available from: <http://www.vwa.nl/actueel/waarschuwingen-food/nieuwsbericht/2014360/productinformatie-keimsplassen-asia-mishung-en-keimsplassen-bockhornklee-me> (Last visited: 22 Jan 2013).

⁴⁷Available from: <http://www.vwa.nl/actueel/nieuws?zoekterm=ehec&jaar=alle&maand=alle> (Last visited: 17 Feb 2013).

Because EHEC was not classified as a food safety problem in the Netherlands the NVWA (personal communication, 28 Feb 2013) made sure that the dossier on the website was update-to-date and that questions from the media were answered. However, there was no direct communication to the public.

The NVWA did not carry out an evaluation due to time constraints (NVWA, personal communication, 21 Feb 2013).

RIVM

The RIVM monitored how many patients in the Netherlands became ill from EHEC O104:H4 and, being the contact for infectious diseases nationally and internationally, they were daily updated by Germany and the EU. The information provided by Germany was used to inform the GGD and other medical professionals on the outbreak by inf@ct messages⁴⁸. It was indicated therein when stools of Dutch patients had to be examined on EHEC. In the Netherlands only a few patients were found and that could be managed on regional level and thus the RIVM (personal communication, 23 Nov 2011) was not asked for help.

During the 2011 EHEC outbreak also an OMT (Outbreak Management Team) was composed in order to launch advices about the consequences of the outbreak for the Netherlands. The team consisted of members of the RIVM, NVWA, GGD and others. On 6 June 2011 the OMT launched their advice on the consequences of the outbreak for the Netherlands (RIVM, 2011b). The importance of hygiene measure to prevent further spread of the bacterium was highlighted: patients having intestinal or abdominal discomfort after visiting Germany should be pointed by doctors that they were not allowed to work in food, care of with small children, as long as there were symptoms. It was also stated that human to human transmission was mainly possible within households and attention should be focused on hygiene advices for those patients that recently visited Germany. It was stated that there was *“no reason in the Netherlands to avoid certain foods, even in supermarkets that are part of a German chain”*. Also it was advised to consult the website of the RKI for current dietary advices if visiting Germany.

The public was informed on the outbreak by information on their website (www.rivm.nl); see Table 3.4.4. In total 7 items were published with number of infections as main topic; the first item was released on 26 May 2011. Also FAQ's were published on the website. Those included information on *E. coli* infections, symptoms, prevention and treatment of an infection (RIVM, 2012). Also, it was stated that good hygiene (e.g. in the preparation of food) is very important in order to prevent spread and contamination, that good heating of meat and washing of vegetables helps to reduce the risk of an infection and that all *E. coli* bacteria are killed if food products are heating above 70°C for several minutes.

Table 3.4.4. All press releases/news items published on the RIVM website during the 2011 EHEC outbreak⁴⁹

Date	Press release/news item
26 May 2011	<i>“Agitation in Germany because of the EHEC bacteria”</i>
30 May 2011	<i>“Update on the situation of EHEC in the Netherlands”</i>
1 Jun 2011	<i>“In the Netherlands five people became ill because of the EHEC bacteria”</i>
4 Jun 2011	<i>“WHO: EHEC bacteria was not observed before”</i>
6 Jun 2011	<i>“In the Netherlands a total of six people is ill because of EHEC”</i>
7 Jun 2011	<i>“The advice of Outbreak Management Team about EHEC”</i>
23 Jun 2011	<i>“The EHEC outbreak is on its return”</i>

The RIVM did not evaluate the outbreak, because from their organization there was no need for this (RIVM, personal communication, 8 Nov 2012).

⁴⁸ Inf@ct is a digital message service on infectious diseases and can be used to ensure communication of the LCI with all those directly involved (e.g. doctors and nurses from the GGD).

⁴⁹ Available from: <http://www.rivm.nl/Zoeken/Bibliotheek?query=ehec&contenttype=newsmessag> (Last visited: 17 Feb 2013).

VCN

During the outbreak a crisis team, consisting of several people from different departments, was established according to the crisis protocol. This team had daily contact with the NVWA for the latest state of affairs and fine-tuning of messages (VCN, personal communication, 1 Nov 2012). The primary means of communication was the webpage (the VCN also appeared in search engines (e.g. Google) and adapted their website in order to be found easier). A news archive⁵⁰ was available on their website during the outbreak. The purpose of the communication performed during the 2011 EHEC outbreak was to inform consumers and provide practical advices based on current information (VCN, personal communication, 1 Nov 2012). This means that during the crisis the accent of the advices somewhat changed. Regular updates were published on their website and almost every time information was accompanied by measures consumers could take to prevent an EHEC infection. Visits are monitored by the VCN and a clear increase in visits was seen during the outbreak; the peak was at 31 May 2011 (VCN, personal communication, 1 Nov 2012). Also Twitter (2500 followers at that moment) was used during the outbreak; there were 72 re-tweets. Media were not actively approached, but there was some contact with a radio show, television and newspapers. If consumers had questions they could contact the VCN by mail and telephone. In total 66 questions were answered by telephone and questions were mainly of practical nature: e.g. *"is product X still safe for consumption?"*

In total 21 items were published with practical advices to prevent an infection as main topic. On 26 May 2011 the first news item on the outbreak was published: although the Dutch government did not issue a warning for vegetables for sale in the Netherlands it was stated that an infection with EHEC could be prevented if the standard rules of hygiene were to be applied, which include: (i) peel or thoroughly wash raw vegetables under running water; (ii) do not consume raw meat or raw milk; (iii) fry meat well-done; (iv) wash hands before cooking and after visiting the toilet; and (v) prevent cross-contamination. That same day the BfR (2011) stated that, because of the low infectious dose of EHEC, EHEC was only eliminated in a safe manner if vegetables were heated. Further information on *E. coli* and EHEC infection was to be found in the encyclopaedia. In addition it was explained how one could find the country of origin of vegetables as it was still being investigated whether vegetables from Northern Germany were exported to the Netherlands. Later it was mentioned that heat kills EHEC and therefore cooked vegetables will not cause any problems. It was stressed that also canned and frozen vegetables were safe, because bacteria are always killed. It was advised to be extra alert on the hygiene rules when going to Northern Germany and attention was focused on washing of hands (before cooking, after visiting the toilet, but also after a trip to the petting zoo).

On 6 June 2011 it was reported that Dutch sprouts were safe and that therefore the normal precautions for sprouts applied, these include: (i) washing well under running water; (ii) heating; and (iii) refrigerated storage no longer than the expiration date. The statement of Minister Schippers that there was no reason to avoid certain foods in the Netherlands, even in supermarkets that are part of a German chain was published on their website the next day. When the EHEC bacterium (not O104:H4) was found on red beet sprouts from the Netherlands, they were retrieved from the market and in addition the VCN, as well as the NVWA, published the labels of the concerned products on their website and advised consumers to discard these if they were in their possession. The last item in the news archive dates from 16 June 2011 and it mentioned that, opposed to Germany, in the Netherlands it was not discouraged to cultivate sprouts at home, but it was recommended not to store these in the refrigerator longer than one or two days.

Within the VCN there was an evaluation of their approach of the 2011 EHEC outbreak. Strong points identified were the practical advices given towards the consumer and the extensive dossier which was available due to their daily updates. However, weak points were the fact that the information on the website was on *E. coli*, not on EHEC (this is adjusted later, but could have been done earlier). Also the crisis banner on their website was not used during the outbreak and the use of this banner was discussed. Another weak point was that the VCN was not quoted a lot in the media. Based on the evaluation the crisis protocol was updated and the website was modified.

⁵⁰Available from: <http://www.voedingscentrum.nl/nl/nieuws/uitbraak-e-coli-bacterie-ehec-in-duitsland.aspx> (Last visited: 2 Nov 2012).

3.5. Discussion

This paragraph aims to answer the first research question: “How is public food safety incident communication and management officially organized in the Netherlands?” Also the second research question will be answered: “Which measures are to be taken in case of food safety incidents, which measures were taken during the 2011 EHEC outbreak by the different responsible authorities and to which extent are discrepancies found?” In the previous paragraphs an extensive description was given on the role of the different stakeholders in food safety incidents. Also the specific actions taken during the 2011 EHEC outbreak were outlined. In this paragraph a summary is given and some identified problems are discussed.

In the previous paragraphs management and communication activities of different stakeholders in case of food safety issues were discussed. Figure 3.5.1. provides a clear overview of the organization in the Netherlands.

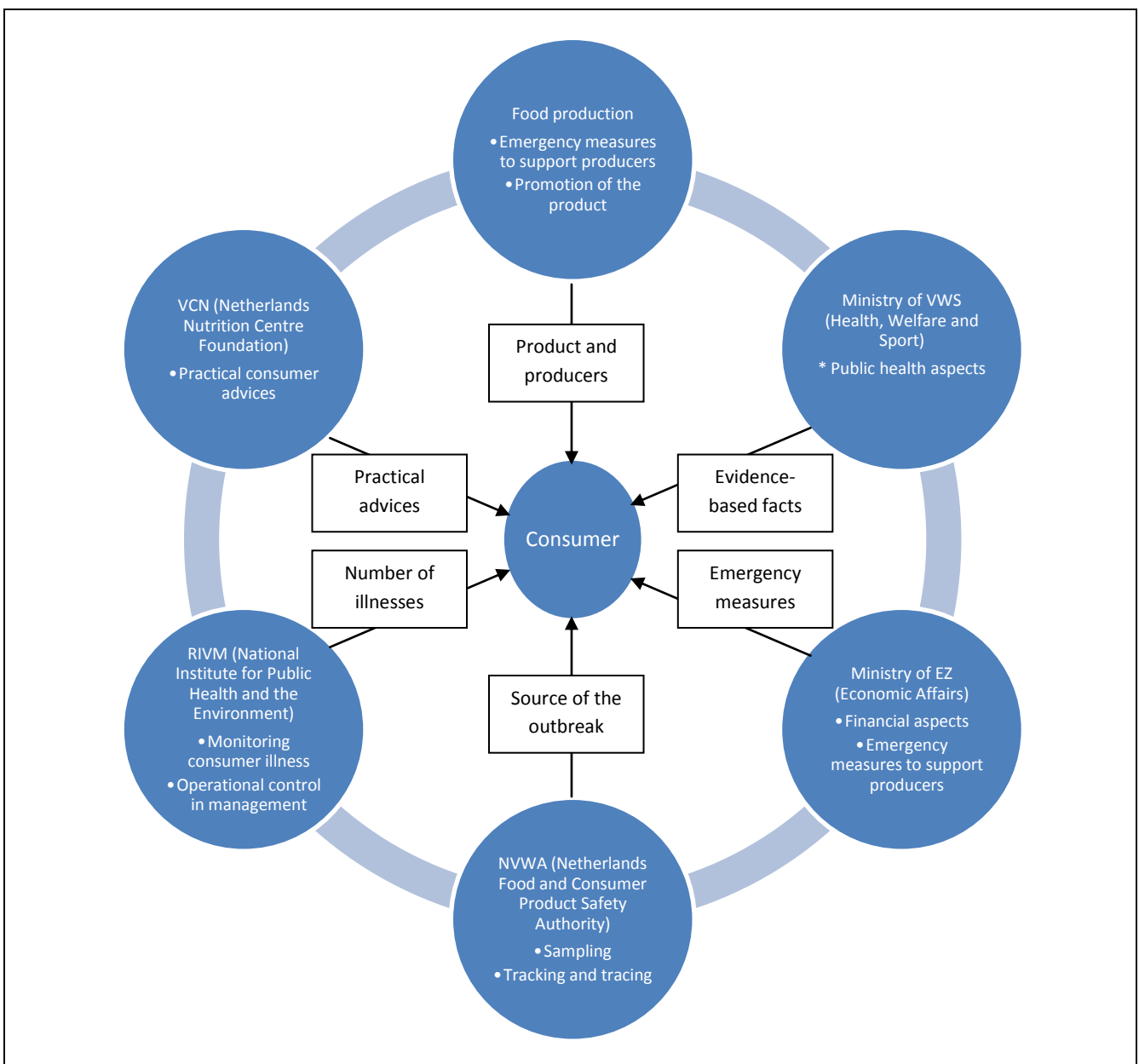


Figure 3.5.1. Management and communication practices of different stakeholders during a food safety incident

It was found that all different organizations have their own incident- and crisis protocol which is followed in case a food safety problems. These protocols explain the organization of the management and communication, but actions to be taken depend on the specific situations. A note that should be made is that the NVWA (personal communication, 14 Mar 2013) does not have their own protocol for communication in case of incidents; they use the protocol from the Ministry of EZ. Appropriateness of this should be questioned.

From the results it was found that all organizations have their own tasks in the management of and communication about food safety issues: e.g. consequences for Dutch producers, source of the outbreak, sampling and tracing results and number of infections (see Figure 3.5.1.). A problem that arises from these different protocols is that different stakeholders may focus too much on their own task, which means that an overview is missing. Different tasks are executed if protocols are followed, but coordination seems to be missing.

When it comes to communication first of all it is important to determine where the responsibility for public food safety incident communication lays. The interviewed representatives were asked where the responsibility for public information lies based on Article 10 Regulation (EC) No 178/2002.

According to Frugi Venta (personal communication, 19 Dec 2012) cooperation is very important in public communication and the responsibility is with all those involved (e.g. food industry, Ministry of VWS, Ministry of EZ and the NVWA), but according to Frugi Venta VCN is probably the most credible source of information. Another member of the Dutch food industry mentioned that NVWA is responsible for communication at governmental level and has the responsibility to inform the consumer (LTO, personal communication, 10 Dec 2012). According to the CBL (personal communication, 26 Nov 2012) the NVWA should have a leading role in public communication if an unknown product presents a risk to human health and also the RIVM (personal communication, 26 Oct 2012; 23 Nov 2012) says that the NVWA is responsible for communication about unsafe food to consumers. However, the Ministry of VWS (personal communication, 14 Dec 2012) stated that they are responsible based on Article 10 Regulation (EC) No 178/2002. The NVWA points to producers as those primarily responsible.

In reality (LNV & VWS, 2005a), as also mentioned by the Ministry of EZ (personal communication, 4 Dec 2012), responsibility lies with the NVWA in case of (routine) incidents and shift to the Ministry of VWS in case of crisis; on departmental level the SG decides when a calamity is defined as a crisis, depending on the social impact. However, the incident- and crisis protocol of the NVWA describes that in any case (even if overall coordination is transferred to the Ministry of VWS or the Ministry of EZ) the responsibility for public information remains with the NVWA. This is not described in any other (official) documents reviewed. Therefore it is assumed that the responsibility for public communication lies with the NVWA or the Ministry of VWS, depending on the social impact of such an incident. It is quite shocking that the representatives of the different stakeholders are not aware of this. Even more shocking is the fact different stakeholders seemed quite surprised by the existence of Article 10 Regulation (EC) No 178/2002 and did not seem aware of this obligation. Moreover, the NVWA, who is responsible for public information in most cases, does not comply with Article 10 Regulation (EC) No 178/2002 by passing on this responsibility to the producers. By law (Article 19 Regulation (EC) No 178/2002) they are only obliged to inform the consumer on reasons for recalling a product. Because of the fact that awareness about the legal obligation for public communication is missing and not complied to it should be questioned if the Dutch government is adequately prepared on food safety incidents.

In practice, during the 2011 EHEC outbreak, communication was very fragmented (see Table 3.5.1.). The communication during the 2011 EHEC outbreak was mainly published online on the websites of the different organizations, because it was not classified as a food safety incident and no active approach seemed necessary according to the responsible organizations. Table 3.5.1. gives an overview of the information described in the previous paragraphs.

The food production sector was in lead of the communication during the outbreak (Ministry of EZ, personal communication, 21 Nov 2012), while they focus on Dutch products rather than products in the Dutch supermarkets (CBL, personal communication, 26 Nov 2012). Furthermore, different organizations communicated different things.

Table 3.5.1. Communication (news items/press releases) during the 2011 EHEC outbreak

Stakeholders	Number of items	First items	Main topic of the items
PT (Product Board Horticulture)/LTO (Dutch Organisation for Agriculture and Horticulture)/Frugi Venta	18	27 May 2011	Dutch product and consequences for Dutch growers and traders
Ministry of VWS (Health, Welfare and Sport)	6	7 Jun 2011	Evidence-based results
Ministry of EZ (Economic Affairs)	7	30 May 2011	Emergency measures to support growers and traders
NVWA (Netherlands Food and Consumer Product Safety Authority)	15	26 May 2011	Source of the outbreak (sampling and tracing results)
RIVM (National Institute for Public Health and the Environment)	7	26 May 2011	Number of infections and advice of OMT
VCN (Netherlands Nutrition Centre Foundation)	21	26 May 2011	Practical advices to prevent an infection

What was missing in the public information during the 2011 EHEC outbreak is a targeted message: what does an incident mean for the Dutch consumer and what is done to prevent, reduce or eliminate that risk? Article 10 Regulation (EC) No 178/2002 also describes the need to communicate these aspects. However, this was not clearly communicated during the outbreak, while the NVWA should have done this as the outbreak was not classified as a crisis.

The Dutch consumer was informed on the 2011 EHEC outbreak by some news items on the websites of the different organizations. The consumer was expected to actively search for this information. For instance members from the Dutch food industry expected that Minister Schippers and NVWA would have given more information to the consumer: according to the LTO (personal communication, 10 Dec 2012) communication was too late and therefore the financial damage unnecessary large. It can be questioned whether a news item on internet is a proper implementation of the legal obligation of public information. Results from this study indicate that it is important to realize that communication to the consumer is important and also a legal task. It may even help to prevent an incident from developing into a crisis.

Another problem identified is that the Dutch government focuses too much on the word 'crisis'. If a situation does not fit within the criteria no or only limited actions are taken. According to Ashcroft (1997) the perceptions of consumers are reality in crisis situations and thus one should act accordingly. The perception may be much more important than whether something falls within the set definitions. However, the 2011 EHEC outbreak was classified as a trade issue, rather than a safety issue for the Netherlands. Despite the fact that at the start of the outbreak there was a lot of panic about food safety (companies and borders closed) the approach by for instance the Ministry of VWS and the NVWA was rather passive. This is remarkable as Article 10 Regulation (EC) No 178/2002 obliges the government to inform the public if a food safety problem is suspected. A crisis is thus not a prerequisite for communication to the consumer, but awareness at this point seems to be missing completely.

In summary, it was found that coordination in communication about food safety issues is missing in the Netherlands. Moreover, preparation on food safety incidents was found to be inadequate. During the 2011 EHEC outbreak the approach taken in public information was passive and communication was fragmented. A more targeted approach is needed at that point. Finally, the Dutch government seems to think that only in crises proper public information is necessary. Overall it was found that awareness on Article 10 Regulation (EC) No 178/2002, which has a central position in food law, is missing in the Netherlands. Also, the Dutch government does not comply with the legal obligation despite the importance to inform the consumer properly on food safety issues.

4. Consumers' perspective

Food is a requirement for life and survival. Eating is, however, not without risks. Examples of food risks are for instance acrylamide, aflatoxin, *Campylobacter* and *Salmonella*. Interestingly, consumers perceive risks differently than experts such as food risk assessors (Frewer, 2004). Almost three out of ten Dutch shoppers think that products they buy in their supermarket or speciality stores are 100% safe and only 17% thinks that is not true (EFMI Business School & CBL, 2012). However, a 100% safety cannot be guaranteed (e.g. RIVM, 2004). If a food safety incident occurs and a food product turns out to be hazardous this may result in negative reactions and fear, particularly when the consequences are severe. The perception of a risk is not only influenced by personal (e.g. knowledge, trust, attitude, mood and awareness) and demographic characteristics (e.g. sex, age, socioeconomic status and family composition), but also by risk characteristics. Although, risk and demographic characteristics cannot be influenced they should be taken into account when communicating risks to consumers.

An important characteristic of the 2011 EHEC outbreak was that the consequences of an EHEC infection were severe (HUS syndrome in one-fifth of the cases) and in some cases even fatal. Even though the epicentre of the outbreak was in Northern Germany and not in the Netherlands, Dutch consumers were worried about getting infected by the EHEC bacterium according to the Risk and Crisis Barometer⁵¹ (NCC, 2011) as mentioned before.

Effective management and communication practices are likely to improve consumer confidence in the safety of food products (de Jonge et al., 2004). Understanding consumer responses to food safety incidents is of crucial importance if improved food safety policy and communication need to be developed and implemented. Hence, to investigate Dutch consumers' perception of the Dutch management and communication quality during the 2011 EHEC outbreak, a survey was conducted. The terms *food crisis management quality* and *food crisis communication quality* were used for this purpose.

This survey was founded on previous research that identified key factors influencing consumers' evaluation of food risk management practices and risks. In addition, the literature review in this chapter focused on communication quality from a consumer perspective (paragraph 4.1). The key factors influencing consumers' perception of food crisis management and communication quality were identified. Based on these identified factors a survey instrument was designed. This instrument and the methodology behind the survey (procedure, recruitment) are outlined in paragraph 4.2. Results of the survey are described in paragraph 4.3. Finally, the discussion, limitations and implications of the survey can be found in paragraph 4.4 and 4.5, respectively.

4.1. Literature review of key factors

Consumer perception of food crisis management and communication quality is influenced by various factors. Insight in the perception of these factors may give ideas for improvement of public food safety incident communication processes by different stakeholders. In this study, focus will be on the following key factors influencing consumer perceptions of the quality of food crisis management and the quality of food crisis communication by responsible stakeholders: (i) consistency in communication; (ii) communication of uncertainty; (iii) consumer trust in responsible authorities; (iv) communication of risk management practices; and (v) information quantity (see figure 4.1.1).

⁵¹The 'Risk and Crisis Barometer' is a tool (public telephone survey) used to adjust to the information need of the public. Every six months (June and November) the survey is performed with the same questions and also an additional survey can be carried out in case of a (potential) crisis. Results of the standard survey can be used as comparison.

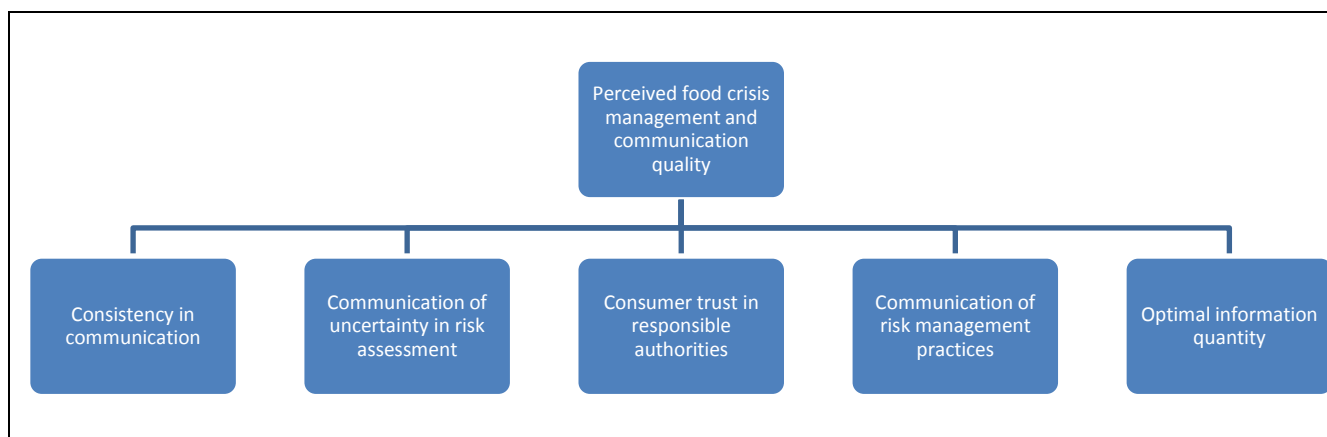


Figure 4.1.1. Factors influencing the perceived food crisis management and communication quality during the 2011 EHEC outbreak

Overall, it was expected that all factors would positively contribute to perceptions of quality. In the next paragraph, each of the factors will be discussed in more detail.

Consistency in communication

Consistency in messages communicated by different actors in the field has been shown to be important to consumers. It refers not only to informational content, but also to the tone of the message (Glik, 2007). In practice, however, providing consistent messages turns out to be quite complicated. For example, during the Bovine Spongiform Encephalopathy (BSE⁵²) crisis the British government announced that there was a possible link between BSE and *variant Creutzfeldt-Jakob Disease* (vCJD⁵³), while another department stated that beef and milk from British cows was safe “*once certain additional regulatory mechanisms had been implemented*”; the contradiction in these statements caused large public distrust and an immediate drop in sales of beef (Jacob & Hellström, 2000, p305). Not only consistency between stakeholders, but also consistency within messages is important as is shown by the dioxin crisis⁵⁴. The Belgian government made the mistake to take the hasty decision to declare that food was safe, while later information proved the opposite and that caused speculations in the media (Lok & Powell, 2000).

According to Wagenberg & Mihaylov (2012) the development of a crisis from a small risk can be prevented if different parties work together in the communication; the specific tasks and activities depend on the risk itself. Cooperation, coordination and consistent messages will prevent confusion and create public clearness, were opposing point of views and changes therein will receive a larger amount of media coverage and speculation will be fed. This may lead to rumours, public anxiety, fear, a damaged image, a decreased public confidence and distrust in risk management (Lok & Powell, 2000; Van Kleef, 2009). Also Van Velsen et al. (2012) reported that consumers want one consistent message, instead of contradictory information from different parties.

This clearly shows the need to provide consistent information (speak with one voice for all different stakeholders), because it may limit media coverage and prevent speculation and public distrust. In order to reach this extensive

⁵²BSE or ‘mad cow disease’ is a disease in cows caused by prions. The disease is transmitted through consumption of infected material. In Great-Brittan cows were fed with feed containing residual material of deceased cattle and where thus infected if those were contaminated with BSE.

⁵³vCJD is a brain disease in humans caused by prions. Between 1990 and 2000 a relation between this disease and BSE was found.

⁵⁴The Belgian dioxin crisis of 1999 was caused by contaminated feed. Dioxin ended up in the human food chain. Although the concentration was low and not a danger to public health the responses led to the destruction of an enormous amount of animals and products.

cooperation between stakeholders is necessary. In summary, a consistent message increases the probability that people will take precautions. It also makes information more understandable and trustworthy.

Communication of uncertainty

Uncertainty is a very important factor in risk assessment and communication. At the beginning of a food safety incident, concrete information is often simply not available and therefore initial media reports are often mostly based on allegations. These allegations may consequently lead to confusion, contradiction and misinformation (Lok & Powell, 2000). Even at a later point in a crisis, uncertainty may exist, for example because of for instance weaknesses in available data and assumptions that are being made. Van Wagenberg & Mihaylov (2012) report that hardly any information was released during the BSE crisis, because one expected panic if information on uncertainties was released. However, it was this approach that caused a strong decrease in consumer trust in the government and food experts once it became clear that information was withheld. At least it is clear that not communicating at all gives consumers the feeling that information is being hidden from the public and will thus decrease the chance of a proper public response.

Nowadays, it is often stressed that acknowledging uncertainty is a best practice in crisis communication (e.g. Seeger, 2006). In other words, uncertainty should be accepted, acknowledged and one should clearly explain what information is available, what is missing and what is still being researched (Van Wagenberg & Mihaylov, 2012). Moreover, Frewer et al. (2002) reported that people prefer presentation of all relevant information including uncertainty (in comprehensible language), because that allows them to make fully informed choices. In contrast, Jacob & Hellström (2000, p308) reported that one should not do anything until there is *“a reasonable degree of scientific consensus”*. However, they do not define what degree of certainty and precaution is reasonable in a certain case and report that this depends on the situation.

Summarizing, one should inform the public, even if not all facts and details are confirmed yet. It should be clear to the consumer which uncertainties exist and which precautions and actions are being taken to reduce this uncertainty. As soon as more information is available more accurate information can be provided.

Consumer trust in responsible authorities

A key concept that has been extensively studied in relation to consumer perceptions of food safety is the concept of trust. The food production system is complex and difficult to understand for consumers. As a result, consumers have to depend on actors in the food chain to deliver safe foods (De Jonge et al., 2008).

Lofstedt (2006) argued that failure of risk communication is usually caused by public distrust in the communicators due to credibility problems, past history or social alienation. According to Seeger (2006) effective crisis communicators are honest (not lying), tell the entire truth and are open in their communication to the public: in short they should be trusted by the public.

Trust in regulators gives consumers the feeling that they are competent to control risks (Van Kleef et al., 2009). According to Frewer (2000) trust is determined by two factors: (i) competence (expertise and the ability of clear communication) and (ii) honesty (truthfulness, trustworthiness). Trust is also linked to perceptions of independency (unbiased information) and concern with prioritization of public health (instead of economic and political interests) (Frewer, 2000; Van Kleef et al., 2006; Houghton et al., 2008; Van Dijk et al., 2008), but these are components of honesty as well. Lok & Powell (2000) reported that one should realize that all information, good and bad, has to come out, because if certain facts are withheld they will be found and reported (mainly in a less preferable way) by someone else. This will damage public trust in a certain party and it will decrease the credibility of this party (Van Wagenberg & Mihaylov, 2012). So, also if a certain company is to blame, this should be the first to admit this, because cover-up will make a company look even worse and moreover a crisis will only remain in the spotlights for a longer period of time when there is continuous public speculation about who was to blame. Openness (whether information is withheld or not) should also be regarded as a component of honesty.

Frewer et al. (1996) reported that trust is clearly complex and multidimensional and cannot be predicted by single items: different information sources are associated with different characteristics which determine the extent to which they are trusted. The results of this study can be found in Figure 4.1.2. As can be seen governmental sources are least trusted, but proactive interaction with the media and trusted sources (e.g. consumer organizations) can increase this. Industry was found to be moderately trusted, because they were believed to protect their own interests and therefore do not provide misleading information as this may cause negative public reactions and thus a decrease in sales.

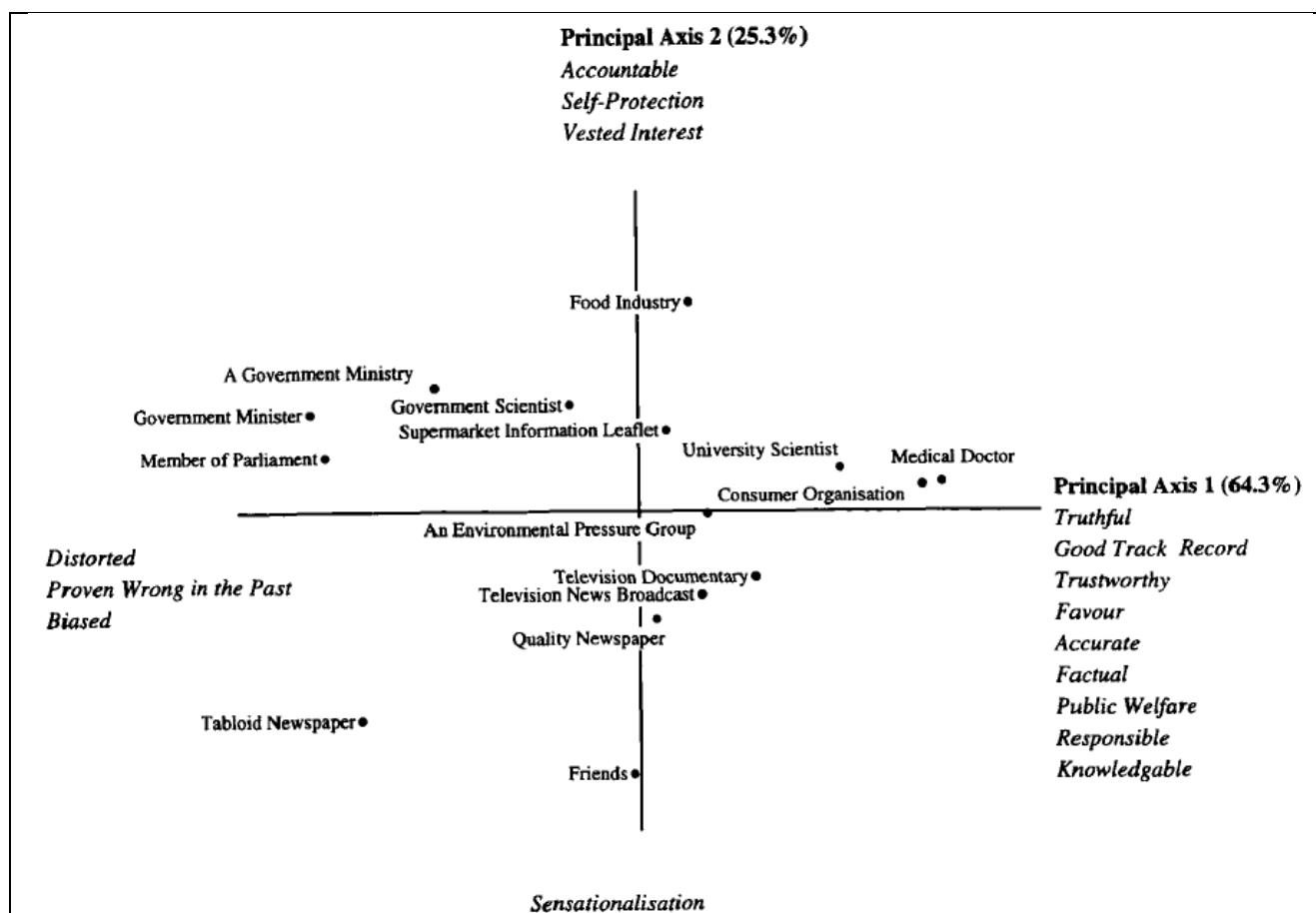


Figure 4.1.2. Location of different information sources within a two-component space (Frewer et al., 1996).

Lok & Powell (2000, p16) reported that, during the dioxin crisis, the Belgian authorities did not communicate test results for a month, because “they did not want to alarm the public until they were sure dioxin had gotten into the human food supply”. It made the Belgian government look guilty and the media reported the governments’ cover-up, resulting in enemies (e.g. consumers, farmers and industry) and a loss of trust and credibility. Also, Van Kleef et al. (2009) reported criticism on responsible authorities when occurrence of a hazard was not communicated as soon as it was identified. On the other hand transparency also provides opportunities for increased public scrutiny and it may increase distrust when earlier released information turns out to be not true.

Trust in the information sources is important as people are more likely to change their behaviour if information comes from a trusted source. Trust in the stakeholders also influences public trust in food safety in general (De Jonge et al., 2004). Credibility of a crisis communicator can be enhanced if one communicates with compassion, concern and empathy as this positively influences public perception (Seeger, 2006). It should be noted that improving trust is not easy as it is influenced by so many factors and it remains very stable over the years (VWA, 2007a).

Communication of risk management practices

A very important point stressed by several authors (e.g. Van Dijk et al., 2008) is that information used in risk communication should include information on food safety issues, but also information of risk management practices.

In other words, it should explain what is being done to handle an incident or crisis. This information may include actions taken to manage the risk, actions that individuals may take to reduce personal risks, effectiveness of options and risks that remain after risk management options are implemented (FAO/WHO, 1998). Perceptions of food risk management are related to efforts made by authorities, including preventative measures, control measures, strict enforcement of laws and regulations and actions to improve future preparedness; consumers like to know what measures are taken to mitigate risks and they tend to rely on risk management if control measures are clear to them (Van Kleef et al., 2006; Van Dijk et al., 2008, Van Kleef et al., 2009; Cope et al., 2010).

The importance of self-efficacy messages is also emphasised in literature. Seeger (2006) and Van Velzen et al. (2012) reported that consumers also want information on how to protect themselves. These measures may include information on food handling, preparation and storage. It will give consumers the chance to make an informed choice and it can help to create a feeling of controllability of the risk and thereby positively influence consumer perception (Houghton et al., 2006). Whether consumers actually comply with the advice being given, remains the question. A study among German consumers showed that only 50% changed their behaviour during the 2011 EHEC outbreak (e.g. more thoroughly washing of foods, more often washing hands and changing shopping habits) (BfR, 2011). Not following these recommendations can be explained by the “optimistic bias”, the idea of “*it won’t happen to me*” (Powell, 2000). Nevertheless, it remains important that consumers are informed properly, so they can make decisions themselves.

The importance of the communication of risk mitigation strategies was also shown by the Belgian dioxin crisis. The government took appropriate actions, but failed to communicate these, which resulted in criticism. In particular, the Belgian government was accused of protecting political and economic interests over public health (Lok & Powell, 2000). In order to regain trust extreme measures were taken (e.g. import bans and minister resignations) and all of this was extensively described in the media. In the end farmers, food industry, and of course the government were victims in this case. Ashcroft (1997) described the mistake of the British government to announce the possible link between BSE and CJD, while no plan of actions was in place. So trust can be generated by the implementation of control measures by authorities and by communication of these mitigation strategies and measures that can be taken by the consumer.

Optimal information quantity

Media are an important source of information on food safety issues and play a critical role in risk communication as they not only distribute, but also interpret or create messages. During crises they offer a constant stream of fresh news. In case of food safety incidents information must be available continuously and response must be rapid in case a risk emerges (Cope et al., 2010). One should realize that media and the public prefer straight facts: a clear and simple message is usually not misinterpreted and also not perceived to hide the truth (Lok & Powell, 2000). Speed of media coverage should not be underestimated (Ashcroft, 1997), especially with all technological developments (e.g. internet connections through mobile phones, social media). According to Van Kleef et al. (2006; 2007) media significantly influence consumer perception of risks and risk management quality as they focus mainly on negative news, controversy within expert opinions and other opposing positions of players in an incident or crisis.

Consumers think of media as the primary and useful source of information in case of food safety issues, while experts see this merely a notification-tool and it appears to them that media sensationalize and exaggerate risks and are responsible for creating public anxiety, food scares and crises (FAO/WHO, 1998; Van Kleef et al., 2006; Krystallis et al., 2007; Van Kleef et al., 2007; Cope et al., 2010). One should, of course, realize that media operate under different agendas than responsible authorities and therefore favour newsworthy stories (McCarthy & Brennan, 2009). Houghton et al. (2008) described a food safety issue as newsworthy from a media perspective if it has human health implications, if there is conflict of interest and if there is failure in the management by the government. The amount of media attention largely influences the perception of the extent of seriousness of a certain hazard, but it can even cause a minor incident to develop into a large crisis when there is constant and intense public scrutiny via the media (Lok & Powell, 2000; Van Wagenberg & Mihaylov, 2012). On the other hand media attention quickly diminishes as soon as no new information appears or the risk seems to be well managed which means that the end of an outbreak is often not

announced, while consumers want to know when an outbreak is considered to be over (Van Kleef et al., 2009; Van Velsen et al., 2012).

Lok & Powell (2000) reported that there was a certain degree of information vacuum at the time of the Belgian dioxin crisis, because information was slowly discovered and released. The crisis remained in the media for a prolonged amount of time and this allowed speculation, which resulted in public confusion and loss of control by the government. So, one would say that all available information must be released. However, Cope et al. (2010) reported that risk communication messages should contain customized and targeted information on food risk and food risk management and should be based on consumer concerns and priorities. Many consumers say to receive an overload of information and that must be avoided, so it is better to focus on quality rather than quantity (Van Kleef et al., 2009). It can be concluded that it is important to find a balance: speculation must be prevented, but also an information overload. Therefore media should be used as a network to spread information, rather than allowing the media to start speculations.

4.2. Methodology

In this survey two dependent variables, overall *food crisis management quality* and overall *food crisis communication quality*, were measured. In the literature review (paragraph 4.1) five key themes related to the dependent variables were identified: (i) *consistency in communication*; (ii) *communication of uncertainty*; (iii) *consumer trust in responsible authorities*; (iv) *communication of risk management practices*; and (v) *optimal information quantity*.

Measure development

Based on these themes several scales were developed. All scales were initially developed, using results from previous studies (Miles & Frewer, 2003; Poortinga & Pidgeon, 2003; Kuttschreuter et al., 2006; Van Kleef et al., 2007; Van Dijk et al., 2008). During the data collection 29 items were used. The initial items used to measure the different constructs can be found in Appendix II.

The first version of the survey was tested on clearness and understandability by conducting a small-scale informal pre-test (n=4). Based on the results of the pre-test the survey was slightly changed and the modified survey was tested once more (n=1) before final data collection.

In social sciences Cronbach's alpha is used as a measure of reliability or internal consistency of scales (Rattray & Jones, 2007). In literature a lot of variation on acceptable values has been published and an agreed cut-off value for Cronbach's alpha is not available, but a value below 0.5 is traditionally seen as unreliable. The internal consistency of scales with a value between 0.5 and 0.7 is considered modest, while a value above 0.7 indicates a high level of reliability (Boermans & Kattenberg, 2011; Yusoff, 2012). In addition one should realize that this coefficient is related to the number of items: a greater number of items causes an increased value. Therefore Kuttschreuter et al. (2006) used a lower acceptable value of alpha for 2-item scales. In this study, scales were considered of acceptable consistency if a Cronbach's alpha >0.6 was found.

After all data were collected a correlation (Pearson correlation) and reliability assessment (Cronbach's alpha) was performed on the data (n=182), showing insufficient reliability (Cronbach's alpha < 0.6) for five out of the seven constructs: *perceived food crisis management quality*, *consistency in communication*, *communication of uncertainty*, *communication of risk management practices* and *optimal information quantity* (Appendix II).

Based on these results the scales were refined, leading to the elimination of the construct *optimal information quantity* and several items. The initially proposed constructs were assessed and there were 15 remaining items. The final items used to measure the six remaining constructs are presented in Table 4.2.1. and the ten items used as additional information are presented in Table 4.2.2

Table 4.2.1. Items to measure different constructs

Food crisis management quality (Cronbach's alpha = 0.641)

1. The risks of EHEC were very well handled in the Netherlands (ITEM 1)
2. I trusted that legislation would protect me against an infection (ITEM 2)

Consistency in communication (Cronbach's alpha = 0.661)

1. There was much consistency between the various messages that were released (ITEM 4)
2. Responsible organizations were unanimous during the outbreak (ITEM 7)
3. Responsible organizations were well informed about EHEC (ITEM 16)

Communication of uncertainty (Cronbach's alpha = 0.617)

1. Responsible organizations were certain that Dutch products were safe (ITEM 10)
2. According to the responsible organizations further research was not necessary (ITEM 11)

Consumer trust in responsible authorities (Cronbach's alpha = 0.663)

1. Responsible organizations protected themselves and their own interests rather than the consumer* (ITEM 12#)
2. Responsible organizations withheld information from consumers* (ITEM 14#)
3. Responsible organizations were unreliable* (ITEM 17#)

Perceived quality of measures taken (Cronbach's alpha = 0.651)

1. Responsible organizations did good work (ITEM 13)
2. Responsible organizations took no good measures* (ITEM 18#)

Food crisis communication quality (Cronbach's alpha = 0.646)

1. I found the transfer of information about the risks of food products sufficient (ITEM 25)
2. I was not well informed about the EHEC outbreak* (ITEM 26#)
3. Responsible organizations should advice the consumer better* (ITEM 27#)

* Approximately half of the items were reversed in polarity, so that participants had to read each item carefully and make an item-by-item decision (respondent response bias); unfavourable statements were noted before and recoded after all results were received.

Table 4.2.2. Additional items used for background information

Additional items

1. In the media there was much speculation about the source of the outbreak (ITEM 6)
2. It was unclear how the risks of EHEC could be reduced (ITEM 8)
3. It was not safe to eat cucumbers and sprouts (e.g. bean sprouts) (ITEM 9)
4. I could not take measures myself to prevent becoming ill (ITEM 19)
5. I do not know what responsible organizations did to solve the outbreak (ITEM 20)
6. At the start of the outbreak I was immediately informed (ITEM 21)
7. Finding the source of the outbreak took too long (ITEM 22)
8. There was too much information provided during the outbreak (ITEM 23)
9. It is completely clear to me how the outbreak was finally gotten under control (ITEM 24)
10. Responsible organizations had to protect me from the risks of EHEC (ITEM 29)

Procedure

Participants for the survey were recruited through a social network in the Western part of the Netherlands. They received a flyer or e-mail with the link to the survey. In addition the link was sent to a panel⁵⁵ by email. It was mentioned that the survey was completely anonymous and that completion would take about 10 minutes. As a reward a cinema voucher worth €15,- was raffled. Data were collected over three weeks in November 2012 with the online survey software Qualtrics®.

After providing informed consent, the first question was to write down where the participants thought about first when reading the word "*EHEC crisis*". After that, in order to refresh the participants' memories, a short description of the

⁵⁵This panel is managed by the Marketing and Consumer Behaviour Group at Wageningen University and has approximately 600 members.

2011 EHEC outbreak was provided (including a picture of some food products that received attention during the outbreak: lettuce, tomatoes, cucumbers, Brussels sprouts, bean sprouts and fenugreek seeds):

"In the spring of 2011 a rare EHEC bacterium was responsible for a major outbreak of food infection. The outbreak started in May of that year in Germany. EHEC is a bacterium that can cause bloody diarrhoea. An infection with this bacterium may also cause a life-threatening illness, called the HUS syndrome. In addition to Germany, cases were also reported in 15 other countries, including the Netherlands. In Europe, nearly 4,000 people became ill, of which 53 died. The Netherlands counted 11 EHEC patients, of which 4 with the HUS syndrome. In the Netherlands no deaths were reported. The exact cause has never been established, but the EHEC outbreak can possibly be traced back to eating certain sprouts."

After this information participants were asked what they remembered from the 2011 EHEC outbreak.

Next the items were presented to the participants in the same order as in Appendix II. Participants were asked to indicate to what extent they agreed or disagreed with the items, rated on a five-point scale (the Likert scale), anchored by *disagree* and *agree* (*disagree*, *disagree somewhat*, *neutral*, *agree somewhat* and *agree*). The Likert scale is previously used in a variety of studies, for instance by Van Kleef et al. (2007; 2009). Because of the time gap between the outbreak and the survey and the possibility that participants did not exactly remember everything, it was stated that one had to fill in a first impression or feeling when in doubt. Also it was mentioned that all statements had to be judged in the context of the EHEC outbreak in 2011.

At the end of the survey demographic data (gender, highest completed education and age) were collected. In order to be able to win the cinema voucher participants were asked to enter their email address and it was clearly stated that this was not linked to their answers and thus they remained completely anonymous. The final question was if participants had any comments or suggestions that may be of interest for the researchers. Participants were thanked for their participation in the study.

The complete survey (in Dutch) as presented to the participants can be found in Appendix III.

Sample

In total 225 respondents started the questionnaire and 80.9% of them (182 respondents) completed it; 2 respondents did not fill in their demographic data. The sample was composed of a significantly higher proportion of women (78.0%) and the majority (56.6%) of the participants was highly educated (BSc or MSc level). The age of the respondents varied between 17 and 76 years with a mean of 40.6 years (SD = 17.0).

Data analysis

As described earlier the first question was an open question in which participants had to write down their first thoughts when reading the word EHEC crisis. Based on the answers eight categories were composed in order to analyze these answers: (i) microorganisms; (ii) nothing; (iii) cucumber; (iv) food (safety); (v) (bean) sprouts; (vi) human health; (vii) Germany; (viii) Egypt. Also for the second open question eight categories of answers were composed: (i) growers; (ii) fear/fuss; (iii) doubts/uncertainty; (iv) publicity/media; (v) advices; (vi) Egypt; (vii) seeds; (viii) fenugreek. If a respondent mentioned something that fitted within one of more of these themes this was rated.

For the constructs and additional items the mean and standard deviation were calculated. In addition it was calculated whether the mean significantly differed from the midpoint (=3) of the 5-point scale.

A standard regression model was estimated to assess the relation between the dependent variable *food crisis management quality* and the independent constructs (i.e. *consistency in communication*, *communication of uncertainty*, *consumer trust in responsible authorities*, *communication of risk management practices* and *optimal information quantity*). A separate regression model was assessed with the same independent constructs but with *food crisis management communication* as dependent variable.

Data analysis was carried out using statistical software: Statistical Package for Social Sciences version 20 (IBM SPSS Statistics 20).

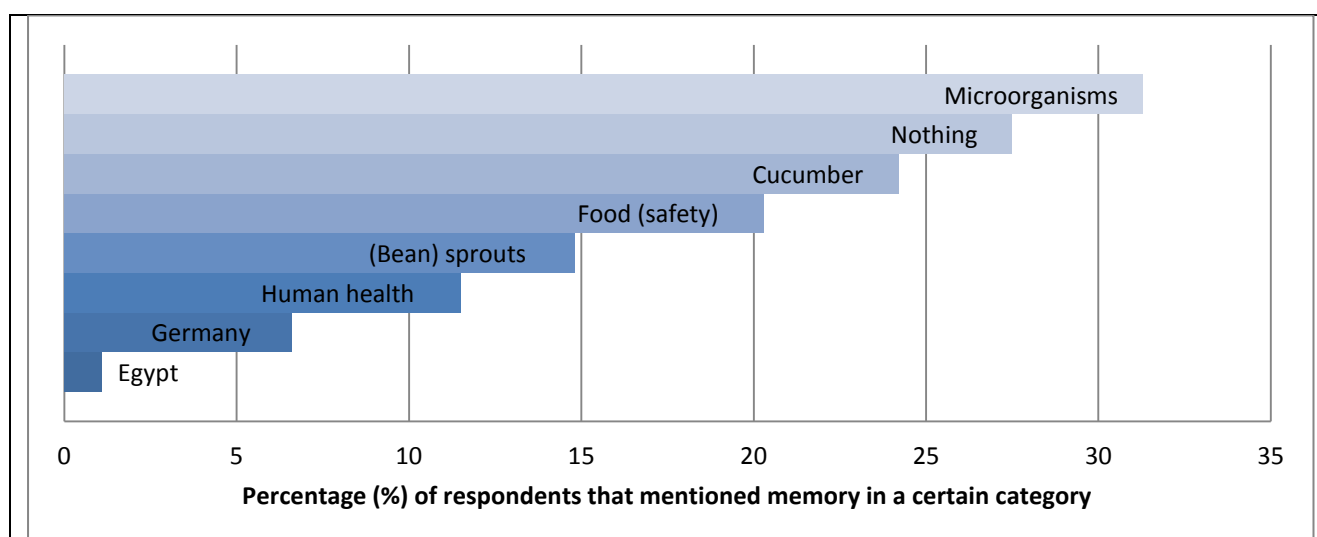
4.3. Results

Memories without awareness

The first question was what participants remembered when reading the word 'EHEC crisis'. Some respondents filled in only one word, but also multiple sentences were written. Overall most answers were quite brief and to-the-point. The results are compiled in Table 4.3.1.

More than a quarter of the respondents had no idea what EHEC crisis was when this word was presented to them, but almost one-third mentioned that it had something to do with microorganisms. As for specific food products cucumber was mentioned by 24.2% of the respondents and 14.8% mentioned (bean) sprouts. It is interesting to note that only 6.6% of the respondents mentioned Germany and fenugreek or seeds were not described at all; Egypt was noted by two participants. A surprising finding from this question is that cucumbers and sprouts are still linked to the word EHEC, while no one mentioned the 'real' cause of the outbreak.

Figure 4.3.1. Memories without awareness (divided in themes) about the 2011 EHEC outbreak as mentioned by the participants



Memories with awareness

After the first question a short description of the outbreak was presented to the participants before answering the second question to refresh their memory. As for the first question the answers were divided over different categories. The results are compiled in Table 4.3.2.

Even after reading the short description of the outbreak only 1.6% recalled Egypt to be related to the outbreak. Fenugreek was recalled by one participant and seeds were mentioned twice. This might be explained by a quote from a respondent: *"it was an impending panic, which soon did not receive attention anymore"*. Finding the source of the outbreak took quite long, so (media) attention also faded away and consumers were never informed about the final source and measures.

After the case description about 35% of the participants mentioned the consequences of the outbreak for growers: e.g. export ban, lowering prices, destruction of product. One respondent said: *"it would be present on cucumbers, but it turned out not to be so and therefore cucumber growers lost much money."* And: *"at first it was thought to be caused by cucumber. I think it took quite long before the real cause (sprouts) was found. As a result many cucumber growers became the victim."* Others mentioned: *"there was a lot of media attention, especially for the number of victims and the*

lowering demand for suspected vegetables” and “the consequences for the cucumber growers were often a topic in the news”.

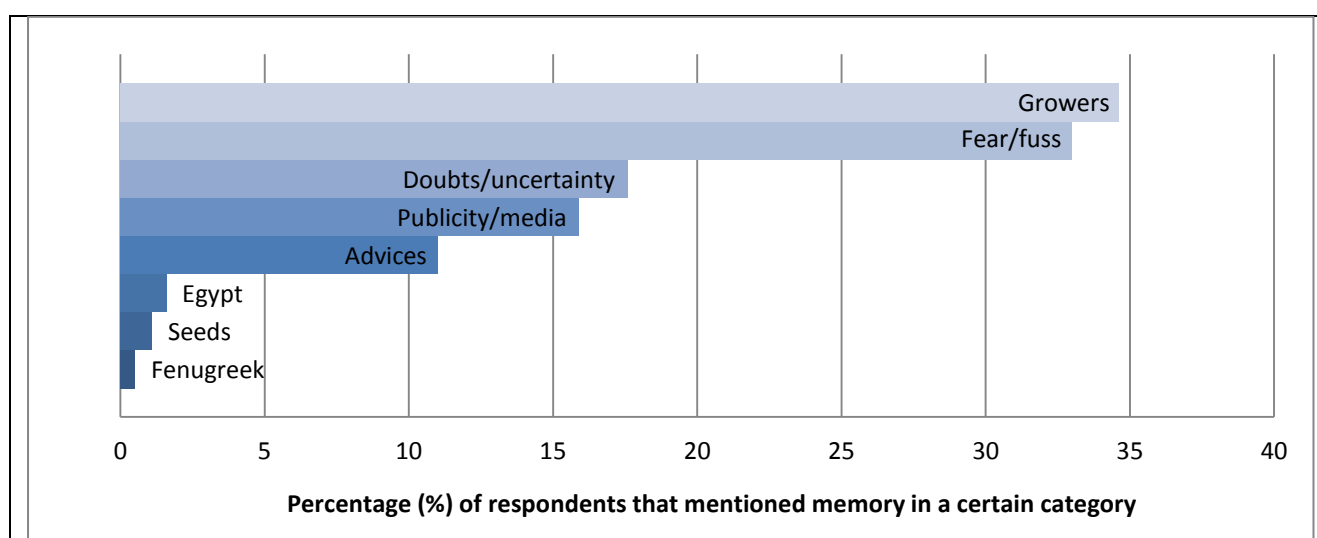
Next to that also fear and anxiety were mentioned by more than one-third of the respondents: *“I remember a lot of fuss, stress and fear for contaminated vegetables and many news messages”*. One of the respondents developed diarrhoea and feared an EHEC infection. It was said that *“the fear was extreme”* and *“one big chaos, that is what it was.”* One respondent remembered *“that many people did not dare to eat cucumbers anymore”*, while another one said: *“I just ate cucumbers, because they were cheap.”*

One-sixth of the respondents mentioned the uncertainty during the outbreak: *“the public reacted in panic, there was little concrete information from the media and the government and they were vague about the source of EHEC and its consequences.”* Another participant said the following: *“it was especially unclear what type of food caused people to become ill. Every day another kind of vegetable seemed to be the cause. There was a lot of fuss about it, and I thought lots of people in the Netherlands became ill. I am surprised about the 11 cases.”* The uncertainty or indistinctness around the source of the outbreak was mentioned and according to one respondent this caused that consumers didn’t know where they stood. One of the respondents said: *“the information back then was not structured: the media announced a lot of different things”*.

Almost 16% of the participants mentioned the publicity during the outbreak: *“it occurred in the news more and more. At first I thought it will not be so bad, but you heard more and more about it.”* The media reported a lot about the outbreak, *“there was a lot of panic in the media”* and one of the participants thought that they were *“quite exaggerating”*. A remark made by a respondent was that the suspicion of cucumbers caused huge problems for the growers and that State Secretary Bleker only paid attention to that. One of the respondents mentioned: *“in general, we are well informed during certain food safety problems, but the media (TV) is reporting about this through various sources and by doing so the consumer receives varying information and therefore does not have a clear picture of the situation.”*

Also consumption advices were mentioned: *“there were products that you better could not eat, but there was never clearness about that”*. Other respondents mentioned that specific vegetables e.g. cucumbers and sprouts were not allowed to be eaten or sold anymore: *“I couldn’t buy cucumbers and sprouts because these were contaminated”*. A remark by one of the respondents was: *“for me information from a newspaper about such statements is not reliable and too speculating. If I would have received a letter/brochure from one of the responsible organizations about EHEC, I would have felt better informed and I would have followed the advice more strictly.”*

Figure 4.3.2. Memories with awareness (divided in themes) about the 2011 EHEC outbreak as mentioned by the participants



The main findings from this question are that participants remembered that there was a lot of publicity during the outbreak, especially with regard to the consequences for growers and the number of victims. There was, however, lack of concrete information and clearness on what EHEC meant for the Dutch consumer.

Regression analysis

The dependent variable *food crisis management quality* was found to be predicted⁵⁶ by the variables *consistency in communication* and *perceived quality of measures taken*. This means that the higher the scores on *consistency in communication* or *perceived quality of measures taken*, the higher the perceived quality of *food crisis management quality*. *Consistency in communication* has the biggest impact on how the consumers perceive the *food crisis management quality*. However, *communication of uncertainty* and *consumer trust in responsible authorities* have no significant impact. The variables in this model were found to explain 21% of the variance in food crisis management quality ($r^2 = 0.21$). The results are presented in Table 4.3.1.

Table 4.3.1. Linear regression between the dependent variable *food crisis management quality* and the independent constructs

Construct	Standardized β -coefficient ⁵⁷	t
Consistency in communication	.28	3.66*
Perceived quality of measures taken	.20	2.11*
Communication of uncertainty	.10	1.44
Consumer trust in responsible authorities	.02	.22

*Significant at the 0.05 level (2-tailed)

The constructs *consistency in communication*, *consumer trust in responsible authorities* and *perceived quality of measures taken* predicted the dependent construct *food crisis communication quality*. *Food crisis communication quality* is mostly influenced by *consumer trust in responsible authorities*, followed by *perceived quality of measures taken* and *consistency in communication*. *Communication of uncertainty* was not related to *food crisis communication quality*. Together the four variables were found to explain 44% of the variance in food crisis communication quality ($r^2 = 0.44$). The results are presented in Table 4.3.2.

Table 4.3.2. Linear regression between the dependent variable *food crisis communication quality* and the independent constructs

Construct	Standardized β -coefficient	t
Consumer trust in responsible authorities	.31	4.19*
Perceived quality of measures taken	.28	3.58*
Consistency in communication	.17	2.55*
Communication of uncertainty	.10	1.75

*Significant at the 0.05 level (2-tailed)

In addition a significant correlation was found between the two dependent constructs ($r = 0.22$; $p = 0.003$).

Descriptive statistics

From the results it is clear that, on average, *food crisis management quality* was perceived as slightly positive, while *food crisis communication quality* and *consistency in communication* were judged slightly negative on average. The other constructs (*communication of uncertainty*, *consumer trust in responsible authorities* and *perceived quality of*

⁵⁶When someone scores high on one construct he or she is likely to also score high on the other construct.

⁵⁷The β -coefficient gives an idea about the relative size of the impact of the different independent variables on the dependent variable.

measures taken) did not significantly differ from the midpoint of the scale, which seems to imply a neutral standpoint. Results are presented in Table 4.3.3. and Table 4.3.4.

Table 4.3.3. Descriptive statistics (mean and standard deviation) for all constructs, including t-values and their associated p-values to test if means differ significantly from the midpoint (3 = neutral) of the scale, which was anchored by 1=disagree and 5=agree

Variable	Mean	Standard deviation	t
Dependent variables			
Food crisis management quality	3.4	1.0	5.40*
Food crisis communication quality	2.6	0.8	-5.87*
Independent variables			
Consistency in communication	2.7	0.8	-5.81*
Perceived quality of measures taken	3.0	0.8	-.42
Communication of uncertainty	2.9	0.8	-1.54
Consumer trust in responsible authorities	2.9	0.7	-1.95

*Significant at the 0.05 level (2-tailed)

From the additional items it became clear that participants thought it was not safe to eat cucumbers and sprouts (e.g. bean sprouts). Although participants believed they could take measures themselves to prevent becoming ill, they also believed that responsible organizations had to protect them from the risks of EHEC.

It was also found that participants felt not immediately informed on the outbreak and they also thought that finding the source of the outbreak took too long. Next to that there was thought to be a lot of speculation about the source of the outbreak in the media.

For the participants it was unclear how the risks of EHEC could be reduced, they did not know what responsible organizations did to solve the outbreak and also it was not completely clear to them how the outbreak was finally gotten under control. In general it was believed that too much information was provided during the outbreak.

Table 4.3.4. Descriptive statistics (mean and standard deviation) for several additional items, including t-values and their associated p-values to test if means differ significantly from the midpoint (3 = neutral) of the scale, which was anchored by 1=disagree and 5=agree

Item	Mean**	Standard deviation	t
In the media there was much speculation about the source of the outbreak	4.4	0.9	22.80*
Finding the source of the outbreak took too long	3.8	1.1	10.09*
It was unclear how the risks of EHEC could be reduced	3.7	1.0	9.61*
I do not know what responsible organizations did to solve the outbreak	3.7	1.2	7.62*
Responsible organizations had to protect me from the risks of EHEC	3.6	1.1	7.44*
There was too much information provided during the outbreak	3.3	1.2	3.89*
It was not safe to eat cucumbers and sprouts (e.g. bean sprouts)	3.3	1.2	2.94*
At the start of the outbreak I was immediately informed	2.7	1.1	-3.52*
I could not take measures myself to prevent becoming ill	2.2	1.1	-10.37*
It is completely clear to me how the outbreak was finally gotten under control	1.9	1.0	-13.74*

*Significant at the 0.05 level (2-tailed)

4.4. Discussion

This survey was conducted to find an answer to the third research question: *“How was management and communication quality of the 2011 EHEC outbreak perceived by Dutch consumers and which factors influenced this perception?”* It was assessed whether the identified key factors (*consistency in communication, communication of uncertainty, consumer trust in responsible authorities, communication of risk management practices and optimal information quantity*) predicted the two dependent constructs: *overall food crisis management quality* and *overall food crisis communication quality*.

Discussion

The *food crisis management quality* of the 2011 EHEC outbreak was perceived moderately positive. Although correlated, the *perceived food crisis communication quality* of the outbreak was found to be negative. Results show that some factors particularly drive perceptions of *food crisis management and communication quality* of the EHEC outbreak in 2011.

First of all it was found that *consistency in communication* predicted the *food crisis management quality*. That suggests that the more inconsistent the communication the more negatively the management quality is perceived. Also *the perceived quality of measures taken* was found to be of influence on this. A positive perception of mitigation strategies will thus lead to a positive perception on management quality.

While *consumer trust in responsible authorities* did not predict consumer perceptions of *crisis management quality*, it was an important determinant of perceptions of *food crisis communication quality*. This suggests that the source of communication is of large influence on how this is perceived and implemented by the consumer and thus improvement the *perceived crisis communication quality* can be achieved by public crisis communication from a trusted source. The *quality of communication* was furthermore driven by *perceived quality of measures taken* and *consistency in communication*.

As was found from this survey *consistency in communication* is very important in both effective crisis communication and management. According to the results the *consistency in communication* was perceived as negative during the 2011 EHEC outbreak. One should realize that this consistency is actually composed of two components: consistency between stakeholders (e.g. *“A says X”* and *“B says Y”*) and consistency between messages (e.g. *“Spanish cucumbers are source of the outbreak”* and *“serotype on Spanish cucumbers differs from the outbreak serotype”*). A division was not made in this survey and therefore it is not possible to say which aspect was considered least positive. However, an important lesson that can be learned for the future is that communication with other stakeholders and coordinating messages is extremely important. A network is very important during crises and thus this should be arranged in advance. The importance of a pre-crisis network was also argued by Seeger (2006) and defined as an *“effective way of coordinating and collaborating with other credible sources”*. Moreover, during the crisis extensive coordination between the different stakeholders is necessary to assure consistency in the communication to the consumer.

Communication of uncertainty did not predict perceptions of quality of management and communication. This may be because the scale measuring uncertainty was not sufficiently valid as the items particularly captured consumer beliefs about the safety of food and responsible authorities' view on whether research was needed. As a result, important other aspects of uncertainty communications may have been overlooked. For example if uncertainty was thought to be communicated during the outbreak.

Consumers believed there was too much information provided during the outbreak. This may be related to the different consumption advices and inconsistent messages released. Results indicated that consumers clearly thought that there was a lot of speculation in the media about the source of the outbreak. The fact that finding the source took so long (two months) probably also fed speculation in the media. In case of absence of immediate or consistent

information room is left for speculation by the media and they will carry out *“their own debate”*, as also happened during the BSE crisis (Ashcroft, 1997, p326). From the first two questions it is clear that the media were of large influence on the consumer perception of the 2011 EHEC outbreak. The media always tries to publish information that gets much attention: e.g. the uncertainty around the source of the outbreak. Therefore the responsible authorities should be active in their communication to the consumer in order to provide them with useful and reliable information. Also they should actively approach media with information that is useful for the consumer. It seems that this was not done properly.

Much information and in Germany also several consumption recommendations were released during the outbreak, which implies concern with public health, openness and honesty. However, consumers may have questioned the competence of the responsible authorities, because it took quite long to find the source of the outbreak and safety warnings were withdrawn in the meantime. Public distrust may have economic implications for food industry, it can harm the image of the food industry and reduce consumer confidence in food policy, both at national and international level (De Jonge et al., 2004). Moreover, from the survey it was found that *consumer trust in responsible authorities* had a large impact on how the *food crisis communication quality* was perceived. This means that the higher the trust in an information source the higher the quality of the communication is perceived. Therefore, in order to improve *food crisis communication quality*, it is important that consumers trust their source of information.

Memories from the consumer were especially related to two implicated sources (cucumbers and sprouts), fear and fuss and the publicity about the number of victims and the problem growers had to deal with. The information in the media was thus of large influence on what was remembered as these topics got a lot of publicity. Concrete information and clearness seemed to be missing. Also only a few participants mentioned Germany and thus consumers may have perceived the outbreak to be a problem in the Netherlands as well and not just limited to Northern Germany. It was even mentioned that consumer thought the Netherlands counted many victims as well.

Results show furthermore that people believed that they could take measures themselves to prevent becoming ill. These messages should be consistent and clearly indicate the reason for action in order to be meaningful to the receivers. During the outbreak these types of messages were given and apparently they also reached the consumer. However, it was also found that the Dutch consumer felt that responsible authorities had to protect them from the risks of EHEC. From the additional items it becomes clear that the consumer did not know what was done. The respondents thought it was unclear how the risks of EHEC could be reduced, they didn't know what responsible organizations did to solve the outbreak and it was not clear how the outbreak was finally gotten under control. It is clear that the consumer was not accurately informed on the risk management practices. The fact that the Dutch consumer was not aware of the mitigation practices during the outbreak means that this negatively influenced the perceived food crisis management and communication quality. From the survey it was found that, in order to let the consumer know he is indeed protected, it is important to communicate the mitigation strategies that are taken to minimize the risks. Improvement is clearly needed at this point as this was not properly done during the outbreak.

Limitations and implications

It should be noted that the survey was launched in November 2012 (almost 1.5 years after the start of the outbreak) and thus it may have been difficult for respondents to remember this and to recall their exact thoughts about the outbreak back then. One of the respondents said: *“I was surprised about how quickly I forgot the agitation about the EHEC problems”*. This may have influenced the results. Other remarks were: *“the EHEC outbreak has been more than a year ago, so I do not remember exactly how I felt about the news”* and *“unfortunately the outbreak has been a while ago, which makes it difficult to make hard statements”*. According to Levine & Safer (2002) information is partially reconstructed on the basis of post event information and research has indicated that people remember their emotions fairly accurate, but they are also subjected to systematic biases: current feeling can influence the memory for both positive and negative emotions.

One of the participants mentioned to miss the option “*I don’t know*”. If people did not know an answer they probably voted 3: “*neither agree, nor disagree*”. This would mean that for difficult items, for which respondents were not able to judge, a neutral answer was given. If the option “*I don’t know*” was included results might have been more strong.

The sample was not representative for the Dutch population as the sample was self-selective. In 2011 only approximately one third of the Dutch population between 25 and 65 years was highly educated⁵⁸, instead of the 56.6% in the survey. As for gender in 2011 approximately half of the Dutch population was male⁵⁹, while only a quarter of the respondents were male.

Because of the time gap and differences in demographics, results should be interpreted with care and only some general conclusions can be made.

Despite the limitations results point out that the public communication during the 2011 EHEC outbreak was too passive and concrete information was missing. In order to improve public food safety incident communication and management in the future it is important that risk mitigation strategies are communicated to the consumer, because they want to know what is done to protect them. Also consistency between messages and stakeholders should be improved and therefore a good network should be established in which communication is coordinated. Uncertainty should be acknowledged to prevent inconsistency in messages. Room for speculation may be avoided this way.

From the consumer memories it was clear that the information that occurs in the media is very important to the consumer. Therefore, the media should be actively approached with correct and consistent information on the incident or crisis and the implications thereof for the consumer. Also the responsible authorities should correct inaccurate information that occurs in the media.

Furthermore, information must be provided by a trusted source. However, trust is complex and cannot be changed in a day and therefore public food safety incident communication should be done by a source that is trusted by the public.

Overall, management quality of the 2011 EHEC outbreak was perceived moderately positive, while the communication quality was perceived slightly negative. Factors that influenced this perception were found to be consumer trust in responsible authorities, consistency in communication and perceived quality of measures taken. Furthermore, results indicated that media largely influenced the perception of management and communication quality of the 2011 EHEC outbreak.

⁵⁸Available from: http://www.trendsinbeeld.minocw.nl/grafieken/3_1_2_31.php (Last visited: 17 Dec 2012).

⁵⁹Available from: <http://statline.cbs.nl/StatWeb/publication/?VW=T&DM=SLnl&PA=37713&LA=n> (Last visited: 17 Dec 2012).

5. Suggestions for improvements

This chapter aims to answer the fourth research question: *“Which lessons are to be learned from the 2011 EHEC outbreak and how can we use these insights to improve Dutch public food safety incident communication in future food scares?”* In the previous chapters it became clear that improvement is needed when it comes to public food safety incident communication. There is a long way to go before the Dutch stakeholders are prepared for an incident such as the 2011 EHEC outbreak. Based on findings and literature ideas for improvements are described in this chapter.

The need for compliance with law is described in paragraph 5.1. Furthermore, a distinction is made between who is responsible for public food safety incident communication, what should be communicated, when one should communicate and how the public should be informed. This is described in paragraph 5.2, 5.3, 5.4 and 5.5, respectively.

5.1. Compliance with law

The first recommendation is actually a very simple one: the Dutch government should comply with law. Shocking results from this study indicate that Article 10 Regulation (EC) No 178/2002, which has a central position in food law, is not complied with by the Dutch government. This Article describes the obligation for public information, but seems to have a very marginal role in the Netherlands. Because of the importance of proper public information, the Dutch government should take its responsibility and properly inform the consumer about food safety issues.

Even though food scares are relatively rare events, it is important that the stakeholders are prepared. A critical step in this preparation is planning and coordination with other stakeholders (Seeger, 2006). Results indicated that this is missing, because of the fragmented approach in management and communication. This shows the importance of an incident- and crisis protocol for the entire chain, which is also a wish from the CBL (personal communication, 26 Nov 2012). The existence of such a protocol may clarify the responsibilities of different parties and may help for a more coordinated approach in management and communication during food safety issues. Regulation (EC) No 882/2004 even describes that Member States should draw up operational crisis management plans:

Article 13 - Contingency plans for feed and food (Regulation (EC) No 882/2004)

1. *For the implementation of the general plan for crisis management referred to in Article 55 of Regulation (EC) No 178/2002, Member States shall draw up operational contingency plans setting out measures to be implemented without delay when feed or food is found to pose a serious risk to humans or animals either directly or through the environment.*
2. *These contingency plans shall specify:*
 - (a) *the administrative authorities to be engaged;*
 - (b) *their powers and responsibilities;**and*
 - (c) *channels and procedures for sharing information between the relevant parties.*
3. *Member States shall review these contingency plans as appropriate, particularly in the light of changes in the organisation of the competent authority and of experience, including experience gained from simulation exercises.*
4. *Where necessary, implementing measures may be adopted in accordance with the procedure referred to in Article 62(3). Such measures shall establish harmonised rules for contingency plans to the extent necessary to ensure that such plans are compatible with the general plan for crisis management referred to in Article 55 of Regulation (EC) No 178/2002. They shall also indicate the role of stakeholders in the establishment and operation of contingency plans.*

Individual stakeholders have their own protocols (although sometimes dated), but apparently such a plan is not available at national level in the Netherlands. Again the Dutch government fails to comply with law. Because of the need for a coordinated approach in management and communication of food safety issues an overall incident- and crisis protocol should be developed for the entire chain. Moreover, from the survey it was found that consistency positively influences the perception of management and communication quality. The existence of an overall protocol will probably influence this perception as well.

In summary, the first recommendation that is given following the results of this study is that the Dutch government should comply with law, specifically Article 10 Regulation (EC) No 178/2002 and Article 13 Regulation (EC) No 882/2004.

5.2. Who should communicate?

When it comes to the responsibility for public information as arises from Article 10 Regulation (EC) No 178/2002 it was found that Ministry of VWS is responsible in “real” food safety crisis (VWS, 2011e), which means that the NVWA handles regular complaints and (serious) incidents themselves. The question that remains is in what specific situations the responsibility shifts to the Ministry of VWS. In any case the government is obliged to inform the consumer if food is suspected to be unsafe as described in Article 10 Regulation (EC) No 178/2002.

In literature it was found that the government is usually not believed by the consumer to be a reliable source of food-related information, e.g. Frewer (1996)⁶⁰ concluded that food industry and government often lack public trust, while consumer organisations, quality media and medical doctors are highly trusted. However, from the survey it was found that consumer trust in their source of food-related information was the most important determinant of communication quality. In the survey conducted in this study it was not asked which organizations were more trusted, but the NVWA (VWA, 2007a) conducted a study and looked at trust of the Dutch consumer in information on the safety of food products. Results indicated that information provided by the NVWA, VCN and the Consumentenbond⁶¹ was significantly more trusted than information provided by farmers, manufacturers, retailers and the government.

The EC (2010) conducted an European-wide survey and asked the following question: *“Suppose a serious food risk was found in a food you eat regularly such as fish, chicken or salad. How much confidence would you have in the following sources to give you accurate information about this risk?”* Results showed that, from the main stakeholders (farmers, food manufacturers, retailers, government and food safety authorities) the Dutch consumer has most confidence in consumer national and European food safety agencies when it comes to information on food safety. An even higher level of trust was found for consumer organizations. An online survey among the Dutch primary shopper population (relatively higher proportion of women) (EFMI Business School & CBL, 2012) demonstrated that the government/politics were least trusted by the Dutch shoppers, while again the NVWA scored relatively high as it comes to trust. From the results, as presented in Figure 5.2.1., one can even see that the NVWA was only distrusted by 8% of the respondents. In addition from a survey from the NVWA (VWA, 2007a) it was found that if consumers search for information VCN is the most consulted source, followed by the Consumentenbond and the NVWA.

It is remarkable that, in those three studies, the NVWA was presented as a separate organization and not as part of the government, while it actually is an executive governmental body. Perhaps only ministries were meant with the term government, rather than the actual government which also includes the NVWA. Nevertheless, confidence in the NVWA was expressed by participants of those studies.

⁶⁰Specific names of organisations were not mentioned in this study: participants were asked to what extent they trusted information from for instance a government minister or a consumer organisation.

⁶¹The Consumentenbond is a Dutch consumer organisation.

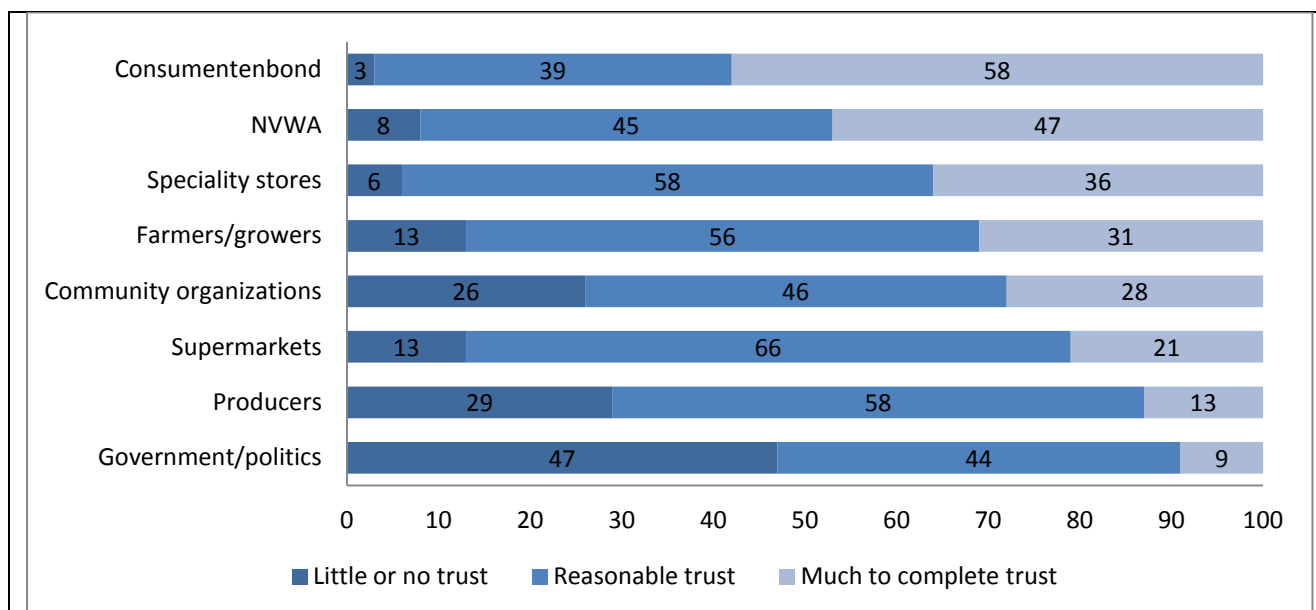


Figure 5.2.1. Trust of shoppers in different organizations (EFMI Business School & CBL, 2012, p62)

Trust in organizations was found to be an important factor in the perception of communication quality and therefore food safety information should be given by a trusted source. Based on literature it is recommended to give the lead in public food safety incident communication to the NVWA in any case. That way there will be no difficulties in the determination of those responsible and the consumer also knows by which organization information is provided.

One last problem identified is the fact that the NVWA points to producers as those primarily responsible for public communication. FAO/WHO (1998) describes that the public expects the government to play a leading role in managing public health risks: the government has a fundamental responsibility. Moreover, the NVWA also has a legal task in this (Article 10 Regulation (EC) No 178/2002), while producers only have the official task to inform the consumer on reasons of a recall (Article 19 Regulation (EC) No 178/2002). The NVWA can provide an overview of the effects to the consumer and should realize the importance of this task.

In summary, the NVWA is trusted by the public and trust was found to be an important determinant of management and communication quality. Therefore, it is recommended that public information should be a task of the NVWA in any case, despite the nature and extent of an incident or crisis. Also, they should not point to producers, but perform their legal task as described in Article 10 Regulation (EC) No 178/2002 properly.

5.3. What should be communicated?

Incident- and crisis communication is supposed to close the gap between experts, policy makers and stakeholders by explaining risk assessment findings and management practices. The goal is to reduce or contain harm; for businesses the primary goal is to limit damage, while the public wants to be protected and informed.

During the 2011 EHEC outbreak public health in the Netherlands was not threatened and thus measures were taken to help the sector (Helsloot et al., 2012). The food industry communicated this actively during the outbreak and they were very visible to the consumer, as was also found from the consumer survey. However, they missed concrete information on where they stood, what was done and what they should do themselves.

From chapter 3 it became clear that public communication in the Netherlands is very fragmented: each organization communicates about a certain aspect of a food safety incident, but there is no targeted communication about what the consequences for the consumer are. Results from the survey indicated that a more active approach in incident- and

crisis communication is needed. Interestingly, Article 10 Regulation (EC) No 178/2002 on public information already describes what information should be included in such messages: *“public authorities shall take appropriate steps to inform the general public of the nature of the risk to health, identifying to the fullest extent possible the food or feed, or type of food or feed, the risk that it may present, and the measures which are taken or about to be taken to prevent, reduce or eliminate that risk.”*

Information on the nature of the risk may include: the characteristics and importance of the hazard of concern, the magnitude and severity of the risk, the urgency of the situation, the probability of exposure to the hazard, the distribution of exposure, the amount of exposure that constitutes a significant risk, the nature and size of the population at risk and who is at the greatest risk (FAO/WHO, 1998). When it comes to risk management options information may include: the action(s) taken to control or manage the risk, the action individuals may take to reduce personal risk, the justification for choosing a specific risk management option, the effectiveness of a specific option, the benefits of a specific option, the risks that remain after a risk management option is implemented (FAO/WHO, 1998). Another important aspect mentioned by FAO/WHO (1998) is that the public should be told that *“it is over”*, when the situation is resolved. Results indicate that this was not properly done during the 2011 EHEC outbreak.

From the survey it became clear that the quality of the communication in the 2011 EHEC outbreak was perceived as negative. Moreover, it was found that consumers were not aware of what was done to manage the outbreak, while Article 10 Regulation (EC) No 178/2002 states this as one of the main points of public communication. Even if it is decided to take no action the *“communication is still essential to provide reasons why taking no action is the best option”* (FAO/WHO, 1998, p10). In the end consumers decide themselves what information on risks they want and what is done with the information. However, in order to be able to make this choice reliable information must be available (VWS, 2011f). The Dutch government should provide more targeted messages on the consequences of an incident for the consumer. In addition, in accordance with law proper information about mitigation strategies is needed.

Consumption advices

The dilemma of giving consumption advices is difficult, but giving an advice, guideline or framework can give the consumer a better feeling. If there is evidence that suggests involvement of a certain product should or shouldn't this be communicated to the consumer? At what point is there enough certainty to give consumption advices? This is an important dilemma in public communication and this was also acknowledged by Minister Schippers in the TV show 'Knevel & Van den Brink' on 7 June 2011⁶². If you have reason to believe a product is involved you would like to inform people about this, especially during the 2011 EHEC outbreak as the consequences were severe or even fatal. However, if your advice is incorrect the consumer will lose trust and new consumption advices will not be complied to. One should also realize that the withdrawal of consumption advices may have lead to confused consumers, speculation about the real source and more importantly consumers not taking seriously warnings when these are truly given on hazardous products. This is inconsistent information and will influence the public perception of the management and communication quality, as found from the survey.

According to the EC (2010) the most common reaction to food safety information of specific products is to temporarily or even permanently change eating habits. This was done by 35% and 11% of the respondents, respectively. A quarter ignored the information and did not do anything and 26% worried about the problem without taking actions. The BfR (2011b) analyzed the risk perception by the general public in Germany (representative sample) and found that half of the respondents changed their behaviour during the outbreak. It should be noted that, from the persons that felt threatened by EHEC, nine of out ten persons changed their behaviour. It was also asked what the participants did to protect themselves against EHEC; results can be found in Figure 5.3.1. As can be seen avoidance of certain foods (raw) was mentioned most often, followed by washing foods and hands. One can thus imagine that, if it is communicated that a certain product is involved, financial consequences for producers may be enormous and thus a certain degree of certainty is needed before consumption advices are released.

⁶² Available from: <http://nos.nl/artikel/246660-schippers-duitse-ehecaanpak-warrig.html> (Last visited: 2 Feb 2013).

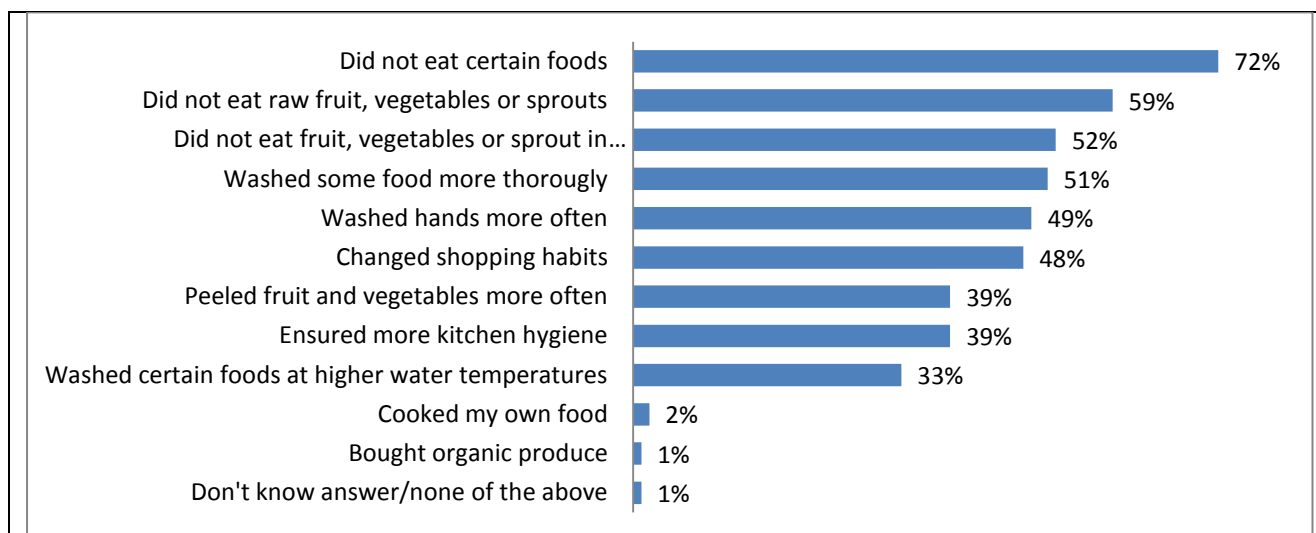


Figure 5.3.1. Measures taken by German citizens to protect themselves against EHEC (BfR, 2011b, p128)

Giving consumption advices is highly related to uncertainty and uncertainty is inherent to the risk analysis process, but to what extent should this be communicated to the public? In literature there is discussion about this. Some say that communicating uncertainty may lead to public distrust and confusion, while others argue that it would increase public trust and gives the consumer the possibility to make informed choices (Lofstedt, 2006). At least it is clear that when uncertainty is recognized this gives the consumer a feeling of openness and that is associated with credibility and trust.

It is clear that if enough evidence is available consumption advices should be given to protect the consumer. It is not possible to define guidelines about when to give or not give these advices, because it largely depends on the specific situation. However, one thing that should be kept in mind is that if one chooses to release a consumption advice and if new evidence suggests differently this should clearly be communicated to the consumer as well. As also acknowledged by LTO (personal communication, 10 Dec 2012): if 'reasonable suspicion' exists this should also be communicated to the public, but as soon as new evidence is available trust should be restored and further advices should be given. The market will have to recover and that can only happen if the consumer knows that products are safe to consume.

Powell (2000) reported that the potential for stigmatisation of food is enormous if there is no effective risk communication. An example given was the outbreak of the parasite *Cyclospora cayetanensis* in 1996 in America. California strawberries were linked to the outbreak, but later Guatemalan raspberries were believed to be the source. However, as most citizens did not hear about the correction the losses for Californian strawberries were enormous. During the 2011 EHEC outbreak the same happened: the insinuation of salad vegetables took too long (LTO, personal communication, 10 Dec 2012). In Germany several consumption advices were given, which had financial consequences for the involved producers. At first it was advised not to consume salad vegetables, but in June this was withdrawn because then sprouts became suspected; a quarter of the German consumers did not understand that the first advice was revoked in the light of new information (BfR, 2011b). Clear communication about new information is thus very important.

Food safety incidents are usually followed by a typical pattern of consumer response. In general there is a decrease in demand and after reassuring communication the consumption levels will recover slowly (and sometimes incompletely) (Böcker & Hanf, 2000). This can be explained by media coverage of the incidents and the biases and exaggerations therein (Böcker & Hanf, 2000).

Summarizing, public food safety incident communication must consist at least of three components: (i) nature of the risk; (ii) (uncertainty about) the source; and also (iii) mitigation strategies. Targeted messages on the consequences of an incident for the consumer are needed. In addition, if there are strong indications that a certain product causes consumer illness this should be communicated to the public. However, if new evidence suggests differently this should also be clearly communicated.

5.4. When should be communicated?

Next to the question how and what should be communicated it is also important to know when should be communicated. The problem identified in this study is the fact that the focus in public food safety incident communication lays on 'actual' crises. Moreover, if an incident does not meet the guidelines as described in protocols actions are not taken. For instance, during the 2011 EHEC outbreak there were only a few illness reported in the Netherlands and these could all be traced back to a visit in Germany. Therefore it was thought that active communication was not needed, despite the fact that at a certain point also Dutch cucumbers were suspected. There was no active communication about risks towards the consumer as it was judged to be a trade problem. In contrast, there was extensive communication on trade issues. However, results from the survey indicated that a more active approach was preferred in food safety information by the Dutch consumer. A concrete and targeted message about the consequences of the 2011 EHEC outbreak in terms of food safety was found to be missing.

According to the Ministry of VWS (personal communication, 19 Dec 2012) as long as there are no or only a few diseases in the Netherlands no action is taken by them. The NVWA is convinced of the fact that the producer is responsible for public communication. They will, however, not be able to give an overview of the consequences of an incident for the consumer. This means that in the Netherlands the consumer is only properly informed if a 'reasonable' number of illnesses identified.

This is shocking as Article 10 Regulation (EC) No 178/2002 on public information describes that *"where there are reasonable grounds to suspect that a food or feed may present a risk for human or animal health, then, depending on the nature, seriousness and extent of that risk, public authorities shall take appropriate steps to inform the general public"*. This means that as soon a risk is suspected the general public should be informed. The existence of a 'crisis' is thus not a prerequisite for public information. The Dutch government even has the legal obligation to communicate to the public if a risk is only suspected. Again it is emphasised that not only producers but also the Dutch government should comply with their legal obligations. Moreover, the government should also realize that even if a real problem does not exist, the consumer or media may perceive it as such. Communication is not only needed when people fall ill. If people die in a neighbouring country or Dutch products or companies are suspected to be involved (as happened during the 2011 EHEC outbreak) this may lead to consumer anxiety. In that case public information is also necessary.

If a situation is perceived as a food safety issue public communication can also be useful to prevent development of a crisis. This is also described in the crisis protocol of the Ministry of EZ (LNV, 2010, p5): *"more important than the question of whether an arisen situation deserves the predicate crisis, is the question of which organization and approach the arisen situation demands"*. Even if food safety is not at stake, the consumer may perceive that it is and these concerns should be accepted as legitimate: consumers have the right to know what risks it faces (Seeger, 2006). So, even if there is no problem it may help to explain this to the consumer.

Summarizing, in law no distinction is made between public communication during an incident and in a crisis. Moreover, the government has the obligation to inform the consumer if a risk is suspected. The Dutch government does not comply with this obligation. Therefore the recommendation is to comply with law: the Dutch government should only communicate in people fall ill or die, but also when a risk is suspected or may be perceived as a food safety problem by the consumer or the media.

5.5. How should be communicated?

Communication during the 2011 EHEC outbreak was found to be passive when it comes to food safety information. Barometers and monitoring of discussions on internet indicated a passive approach and thus some information on

EHEC was placed on internet, while the media actively discussed the outbreak. Results from the survey indicated that consumers missed concrete food safety information.

Using a website as a medium to inform the consumer implies that the consumer is actively searching for information instead of listening to the media. This assumption seems incorrect as in a survey from the NVWA (VWA, 2007a) only 8-11% of the participants indicated to have searched for information on food safety. Also, the BfR (2011b), which has the legal task for risk communication in Germany, saw only a five times increase in website visits during the 2011 EHEC outbreak. From those results it can be concluded that consumers generally do not actively search for information and get their information from for instance the media.

Powell (2000) even reported that the media are, by far, the most important source of food-related information. Results from the survey conducted in the light of this study also indicated that publicity played an important role on the consumer perception during the 2011 EHEC outbreak. Moreover, from a study of the BfR (2011b) it was found that the majority of the consumers used traditional information sources (TV, newspapers/magazines, radio) to gather information on the 2011 EHEC outbreak (see Figure 5.5.1.). These sources of information were regarded as trustworthy by the majority of the respondents. Also 46% of the participants indicated to have used internet to find out about EHEC. This can, however, also be information from news sites. Moreover, only one out of twelve persons used public institutions, authorities and the government as information source. This shows that food safety incident information on websites of public institutions, authorities and the government is not a proper method to inform the public.

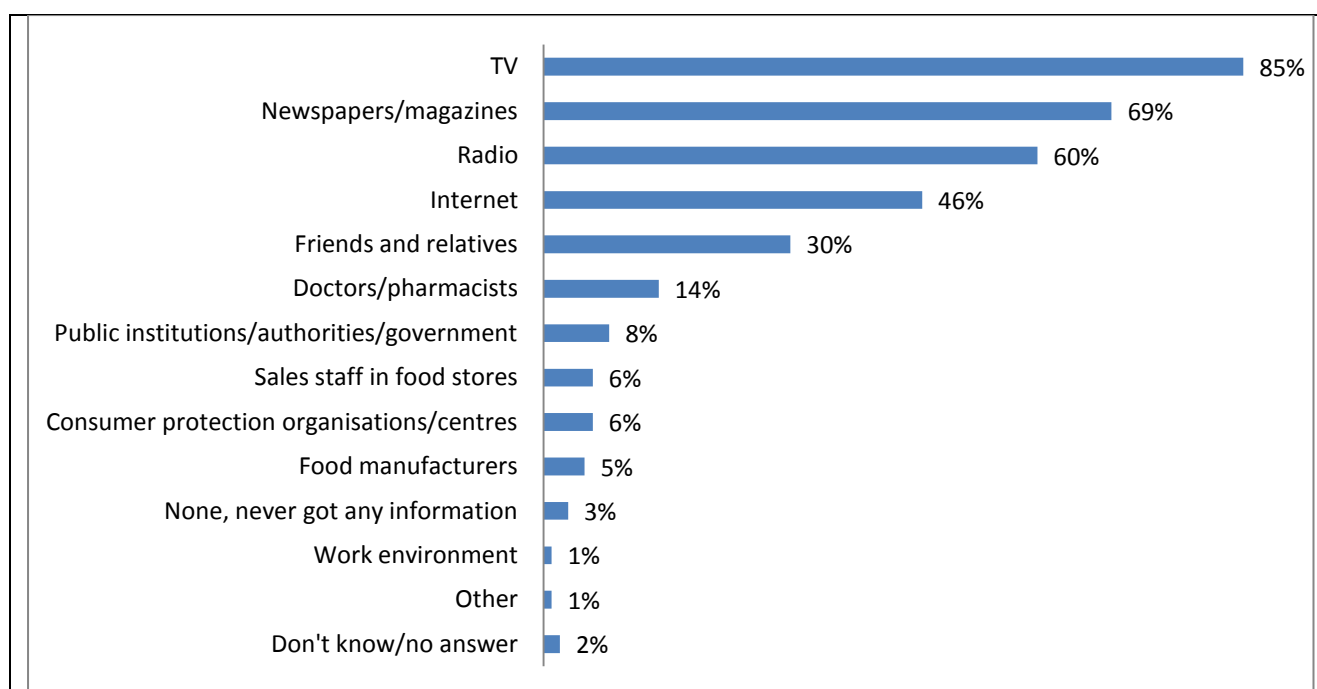


Figure 5.5.1. Sources of information used by German citizen to find information about the 2011 EHEC outbreak (BfR, 2011b, p134)

The media have a critical role in risk communication, but they also have their own agenda: their information must be newsworthy (FAO/WHO, 1998). Seeger (2006) reported that it is important that crisis communicators should effectively communicate (open and honest) with the media as they are an important source of information for the public and can help to manage a crisis. From the survey it was also found that the media influence consumer perception and thus active communication with the media is important in public food safety incident communication. In addition, information is reproduced and enhanced by the media, so it is important to be very careful in what you say and not say to the press. Even little words (e.g. *to date*) and commas can make a world of difference, because they can either prevent or provoke public panic (Ministry of EZ, personal communication, 21 Nov 2012). Next to the importance of careful word choice collaboration between different stakeholders and inter-organizational communication is important, especially because media are very good at distorting information (CBL, personal communication, 26 Nov 2012), as also

shown by the H1N1 pandemic. During the H1N1 pandemic the media mainly followed the sources of information as it comes to judgement of the risk of H1N1, but the media paid too little attention to statements that nuance or put the risk in perspective (Nederlandse Nieuwsmonitor, 2011). Usually in case of a crisis negative, incorrect and oversimplified messages dominate over the slightly positive messages. It is, thus, of great importance that accurate information is available in the media and thus active communication from the responsible organizations is preferred in order to make sure that an incident will not escalate.

The public has always access to information through television, radio and internet and thus has the latest news every moment of the day. In order to keep up with the media coverage quick responses are necessary. Those responsible for public communication should therefore use the media as a network and make sure that information reaches the consumer. In the protocol for crisis communication of the Ministry of VWS (2011f) it was also emphasised that maximal deployment of media (TV, radio, (online) newspapers, social media) is needed to effectively reach the public.

Organizations could contact for instance the General Dutch News Agency (ANP; Algemeen Nederlands Persbureau) to assure that messages reach the attention of journalists of leading and local media and to spread the message online (e.g. www.nu.nl)⁶³. Next to the reach of such an agency the messages are increasingly being placed literally, especially on internet⁶⁴. However, the government has its own system for this: RSS-feed⁶⁵: a service to which you may subscribe (as a journalist, but also as a citizen) to keep up-to-date of the latest development on a particular subject. The NVWA has a separate RSS-feed⁶⁶. It is possible to subscribe for different subjects and visiting the website is not necessary, because you are automatically updated on the latest news. With an RSS-feed you are informed when news (e.g. a news message, warning or inspection results) is placed on the website. According to the NVWA (personal communication, 28 Feb 2013) the reach of their RSS-feed is extensive, but it not a guarantee that the information is published by the media as well.

According to the NVWA (personal communication, 28 Feb 2013) direct communication to the consumer becomes increasingly important and therefore also social media (e.g. Twitter, Facebook) can be an important tool to inform the consumer, because in most families at least one member of the family has an account. A pop-up, presenting the latest news on the outbreak, can be presented to the members as soon as the account is opened; the media will probably adopt this information as well (CBL, personal communication, 26 Nov 2012).

In summary, results from this study indicated that a more active approach in public food safety incident communication is needed; information on internet is not sufficient to inform the consumer. Media are the primary source of information for the consumer and should also be used for this purpose. However, as media have their own agenda accurate information should be made available to limit distortion of information. Also, the use of social media should be considered as that is quick method to directly reach the consumer.

⁶³ Available from: <http://www.perssupport.nl/apssite/content/nederland> (Last visited: 25 Jan 2013).

⁶⁴ Available from: <http://www.anp.nl/producten/nieuwsdienst/> (Last visited: 25 Jan 2013).

⁶⁵ Available from: <http://abonneren.rijksoverheid.nl/rss> (Last visited: 2 Mar 2013).

⁶⁶ Available from: <http://www.vwa.nl/feed> (Last visited: 2 Mar 2013).

6. Conclusions

The aim of this study was *“to determine which organizations or public authorities can be considered responsible for public communication on food safety issues in the Netherlands, how tasks are divided in case of an incident, to what extent discrepancies exist between official responsibilities and what was really done during the 2011 EHEC outbreak and how the communication and management of the 2011 EHEC outbreak was perceived by the Dutch consumer.”* Based on the findings also recommendations were given on the Dutch public food safety incident communication. Conclusions are described below.

The starting point of this study was Article 10 Regulation (EC) No 178/2002 on public information. The first shocking finding is that, in the Netherlands, this Article has a very marginal role despite the fact that it is an essential part of food law. The Dutch government was even found not to fulfil its obligations. Therefore the first recommendation was that the Dutch government should comply with this Article.

Moreover, awareness about Article 10 Regulation (EC) No 178/2002, just as preparation on food safety issues, seems to be missing in the Netherlands. In order to be better prepared an incident- and crisis protocol should be developed for the entire chain. This is also a legal obligation, as described in Article 13 Regulation (EC) No 882/2004, which has to be complied with.

Results indicated confusion about the responsibility for public information and it was also found that consumer trust in their source of information is an important determinant of how communication quality is perceived. Because of the fact that the NVWA was identified as a trusted source it was recommended that public information should be a task of the NVWA in any case, despite the nature and extent of an incident or crisis. The NVWA should also realize that this is not a task of the producers.

The information provided during the 2011 EHEC outbreak was found to be very limited. More concrete and targeted messages are needed. As also described in Article 10 Regulation (EC) No 178/2002 public food safety incident communication must contain information about the nature of the risk, (uncertainty about) the source and the measures that are or can be taken to reduce or eliminate the risk.

In the Netherlands it was found that a distinction is made between incidents and crises. It was found that the government finds public information only necessary if people become ill. However, as also described in Article 10 Regulation (EC) No 178/2002, the public should be informed when a risk is suspected or may be perceived as a food safety problem by the consumer or the media. Even if food safety is not at stake an active approach in public information may be needed.

Finally, results indicated that the approach during the 2011 EHEC outbreak (publishing information on internet) was too passive. As media are the most important source of food-related information for the consumer maximal deployment is needed to effectively reach the consumer. Media have their own agenda and thus information should be given with care to make sure that the consumer is informed correctly.

Overall, this study has identified weaknesses in the Dutch public communication on food safety issues. Results indicated that the Netherlands are not prepared on a food safety incident such as the 2011 EHEC outbreak. Awareness on the need for public information should be created. Moreover, proper implementation of the recommendations given in this study will help to improve the public food safety incident communication in the Netherlands.

Appendix I. Contact persons

PT

Spokesperson

LTO

Chairman LTO Glaskracht Nederland

Frugi Venta

Policy employee

CBL

Policy employee

Ministry of VWS

Senior communication adviser

Policy employee

Ministry of EZ

Policy employee

Policy employee

Senior policy employee

NVWA

Employee legal department

Team leader

Spokesperson

RIVM

Senior communication adviser

Policy employee

Senior adviser/lawyer

VCN

Specialist

NCC

Coordinating adviser

MarketResponse

Research consultant

Appendix II. Initial items and constructs

Perceived food crisis management quality (Cronbach's alpha = 0.511)

1. The risks of EHEC were very well handled in the Netherlands
2. I trusted that legislation would protect me against an infection
3. During the outbreak, I was not sure that the food I bought was safe to eat*

Consistency in communication (Cronbach's alpha = 0.595)

4. There was much consistency between the various messages that were released
5. I was confused, because I received conflicting information*
6. In the media there was much speculation about the source of the outbreak*
7. Responsible organizations were unanimous during the outbreak

Communication of uncertainty (Cronbach's alpha = 0.313)

8. It was unclear how the risks of EHEC could be reduced
9. It was not safe to eat cucumbers and sprouts (e.g. bean sprouts)*
10. Responsible organizations were certain that Dutch products were safe
11. According to the responsible organizations further research was not necessary*

Consumer trust in responsible authorities (Cronbach's alpha = 0.745)

12. Responsible organizations protected themselves and their own interests rather than the consumer*
13. Responsible organizations did good work
14. Responsible organizations withheld information from consumers*
15. Responsible organizations were experts in getting the outbreak under control
16. Responsible organizations were well informed about EHEC
17. Responsible organizations were unreliable*

Communication of risk management practices (Cronbach's alpha = 0.372)

18. Responsible organizations took no good measures*
19. I could not take measures myself to prevent becoming ill
20. I do not know what responsible organizations did to solve the outbreak*

Optimal information quantity (Cronbach's alpha = 0.258)

21. At the start of the outbreak I was immediately informed
22. Finding the source of the outbreak took too long*
23. There was too much information provided during the outbreak*
24. It is completely clear to me how the outbreak was finally gotten under control

Perceived food crisis communication quality (Cronbach's alpha = 0.646)

25. I found the transfer of information about the risks of food products sufficient
26. I was not well informed about the EHEC outbreak*
27. Responsible organizations should advice the consumer better*

Background information

28. It was my responsibility to protect myself against an infection
29. Responsible organizations had to protect me from the risks of EHEC

* Approximately half of the items were reversed in polarity, so that participants had to read each item carefully and make an item-by-item decision (respondent response bias); unfavourable statements were noted before and recoded after all results were received.

Appendix III. Complete survey

Fijn dat u mee wilt doen aan dit onderzoek! Deze vragenlijst maakt deel uit van een onderzoek naar voedselveiligheid van Wageningen Universiteit.

Het invullen van de vragenlijst zal ongeveer 10 minuten duren. Er zijn geen goede of foute antwoorden, maar het is belangrijk dat u invult wat als eerste bij u opkomt. Als deelnemer aan dit onderzoek blijft u geheel anoniem.

Onder de deelnemers wordt een bioscoopbon ter waarde van €15,- verloot. Om winnaars hierover te berichten, wordt u gevraagd uw e-mailadres in te vullen aan het eind van de vragenlijst. Uw e-mailadres wordt niet gekoppeld aan uw antwoorden.

Er zijn geen risico's verbonden aan het invullen van deze vragenlijst. U kunt op ieder moment beslissen om te stoppen met invullen. Voor eventuele vragen kunt u contact opnemen met Nicky de Wildt (Nicky.deWildt@wur.nl).

Door op 'Ja' te klikken geeft u aan dat u het bovenstaande heeft gelezen en ermee instemt:

- Ja, ik doe mee aan dit onderzoek

EHEC-crisis

Wat komt het eerste bij u op als u het bovenstaande woord leest?

Deze enquête gaat over de EHEC-uitbraak in 2011. Om uw geheugen op te frissen, volgt hieronder een korte beschrijving van deze uitbraak.

In het voorjaar van 2011 was een zeldzame EHEC-bacterie verantwoordelijk voor een grote uitbraak van voedselinfectie. De uitbraak begon in mei van dat jaar in Duitsland.

EHEC is een bacterie die bloederige diarree kan veroorzaken. Een infectie met deze bacterie kan ook leiden tot een levensbedreigende ziekte, het zogenaamde HUS-syndroom.

Naast Duitsland, werden ook gevallen gemeld in 15 andere landen waaronder Nederland. In heel Europa werden bijna 4000 mensen ziek van deze bacterie, waarvan er 53 zijn overleden. Nederland telde 11 EHEC-patiënten, waarvan 4 met het HUS-syndroom. In Nederland waren, voor zover bekend, geen sterfgevallen.

De precieze oorzaak is nooit vastgesteld, maar mogelijk is de EHEC-uitbraak terug te voeren op het eten van bepaalde kiemgroenten.

Wat kunt u zich herinneren van de EHEC-uitbraak in 2011?

Hieronder vindt u een aantal stellingen. Het gaat erom dat u aangeeft in hoeverre u het hiermee eens of oneens bent. Als u twijfelt, vul dan gewoon uw eerste indruk of gevoel in. Het is belangrijk dat u alle stellingen bekijkt in het kader van de EHEC-uitbraak in 2011.

Geef aan in hoeverre u het eens bent met de volgende beweringen.

	Mee oneens	Een beetje mee oneens	Neutraal	Een beetje mee eens	Mee eens
In Nederland werd zeer goed omgegaan met de risico's van EHEC					
Ik vertrouwde erop dat de regelgeving me zou beschermen tegen een infectie					
Tijdens de uitbraak was ik er niet zeker van dat het voedsel dat ik kocht veilig was om te eten					
Er was veel samenhang tussen de verschillende berichten die werden vrijgegeven					
Ik was in de war, omdat ik tegenstrijdige informatie kreeg					
In de media werd veel gespeculeerd over de bron van de uitbraak					
Verantwoordelijke organisaties waren eensgezind tijdens de uitbraak					

Hieronder vindt u een aantal stellingen. Het gaat erom dat u aangeeft in hoeverre u het hiermee eens of oneens bent. Als u twijfelt, vul dan gewoon uw eerste indruk of gevoel in. Het is belangrijk dat u alle stellingen bekijkt in het kader van de EHEC-uitbraak in 2011.

Geef aan in hoeverre u het eens bent met de volgende beweringen.

	Mee oneens	Een beetje mee oneens	Neutraal	Een beetje mee eens	Mee eens
Het was onduidelijk hoe de risico's van EHEC verminderd konden worden					
Het was niet veilig om komkommers en kiemgroenten (bv. taugé) te eten					
Verantwoordelijke organisaties waren er zeker van dat Nederlandse producten veilig waren					
Verder onderzoek was volgens verantwoordelijke organisaties niet nodig					
Verantwoordelijke organisaties beschermden zichzelf en hun eigen belangen in plaats van de consument					
Verantwoordelijke organisaties deden hun werk goed					
Verantwoordelijke organisaties hielden informatie achter voor de consument					

Hieronder vindt u een aantal stellingen. Het gaat erom dat u aangeeft in hoeverre u het hiermee eens of oneens bent. Als u twijfelt, vul dan gewoon uw eerste indruk of gevoel in. Het is belangrijk dat u alle stellingen bekijkt in het kader van de EHEC-uitbraak in 2011.

Geef aan in hoeverre u het eens bent met de volgende beweringen.

	Mee oneens	Een beetje mee oneens	Neutraal	Een beetje mee eens	Mee eens
Verantwoordelijke organisaties waren experts in het onder controle krijgen van de uitbraak					
Verantwoordelijke organisaties waren goed geïnformeerd over EHEC					
Verantwoordelijke organisaties waren onbetrouwbaar					
Verantwoordelijke organisaties namen geen goede maatregelen					
Ik kon zelf geen maatregelen nemen om te voorkomen dat ik ziek werd					
Ik weet niet wat de verantwoordelijke organisaties hebben gedaan om de uitbraak op te lossen					
Bij de start van de uitbraak werd ik direct geïnformeerd					

Hieronder vindt u een aantal stellingen. Het gaat erom dat u aangeeft in hoeverre u het hiermee eens of oneens bent. Als u twijfelt, vul dan gewoon uw eerste indruk of gevoel in. Het is belangrijk dat u alle stellingen bekijkt in het kader van de EHEC-uitbraak in 2011.

Geef aan in hoeverre u het eens bent met de volgende beweringen.

	Mee oneens	Een beetje mee oneens	Neutraal	Een beetje mee eens	Mee eens
Het achterhalen van de oorzaak van de uitbraak duurde te lang					
Er werd te veel informatie verstrekt gedurende de uitbraak					
Het is mij helemaal duidelijk hoe de uitbraak uiteindelijk onder controle is gekomen					
Ik vond de informatieoverdracht over de risico's van voedingsmiddelen voldoende					
Ik werd niet goed geïnformeerd over de EHEC-uitbraak					
Verantwoordelijke organisaties moeten de consument beter adviseren					
Het was mijn eigen verantwoordelijkheid om mezelf te beschermen tegen een infectie					
Verantwoordelijke organisaties moesten mij beschermen tegen de risico's van EHEC					

Graag zouden we de volgende gegevens van u willen weten.

Wat is uw geslacht?

- Man
- Vrouw

Wat is uw hoogst voltooide opleiding?

- Basisonderwijs
- Voortgezet onderwijs (LBO / VBO / VMBO / MAVO / HAVO / VWO)
- MBO
- HBO / WO Bachelor
- WO Doctoraal / Master

Wat is uw leeftijd?

Als u kans wilt maken op de bioscoopbon, dan kunt u hieronder uw e-mailadres invullen. Dit e-mailadres wordt niet gekoppeld aan uw antwoorden, uw antwoorden blijven geheel anoniem.

De leerstoelgroep Marktkunde en Consumentengedrag van Wageningen Universiteit verricht vaker studies waarvoor zij op zoek zijn naar deelnemers. Mogen wij u hiervoor af en toe (maximaal 1 keer per maand) benaderen per e-mail?

Zo ja, schrijf hieronder uw e-mailadres (als u al op de lijst staat, dan hoeft u hier niets in te vullen):

U bent bijna aan het einde gekomen van de vragenlijst. Heeft u nog opmerkingen of suggesties die van belang kunnen zijn voor de onderzoekers?

Hartelijk dank voor uw deelname aan het onderzoek!

Klik op het pijltje naar rechts om de vragenlijst in te sturen.

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