

Risk communication related to animal products derived from biotechnology

D. McCrea

Consultant on food and consumer affairs, The Food Consultancy, 127, Havannah Street, Cardiff Bay, Cardiff CF10 5SF, United Kingdom

Summary

Previous chapters of this review have dealt with the key considerations related to the application of biotechnology in veterinary science and animal production. This article explores the theory and practice of risk communication and sets out the basic principles for good risk communication when dealing with new technologies, uncertainty, and cautious and sceptical consumers. After failure to communicate with consumers and stakeholders about the risk to human health from bovine spongiform encephalopathy (BSE) in the 1990s, Government Agencies in the United Kingdom have made significant improvements in risk communication. The official inquiry that followed the BSE crisis concluded that a policy of openness was the correct approach, and this article emphasises the importance of consultation, consistency and transparency. There are, however, many different factors that affect public perception of risk (religious, political, social, cultural, etc.) and developing effective risk communication strategies must take all of these complex issues into consideration.

Keywords

Biotechnology – Genetic modification – Risk analysis – Risk communication – Uncertainty.

Introduction

During the past ten years much has been debated and written about biotechnology: its benefits and risks (either actual or perceived) and the threat it could pose to humankind, the environment, and, some would argue, the very survival of life on earth! Because of such exaggeration it is now difficult for consumers to distinguish fact from fantasy or to form an objective opinion about biotechnology, against a background of media frenzy on this topic.

Consumer views on biotechnology and genetically modified (GM) foods and organisms have been surveyed extensively in Europe, and for the most part there is considerable resistance to the introduction of GM crops. According to the National Consumer Council (NCC) (9), the introduction of GM crops in the United Kingdom (UK) has been a public relations disaster; causing consumers to lose confidence and trust in the authorities that are expected to inform and protect. Research by the NCC in

2002 (14) revealed 'strong dissatisfaction among most consumers with the way that government and "officialdom" have handled risk and uncertainty issues'.

Consumers, in an era of increased democratisation, openness and transparency, are more demanding of governments in their decision-making and regulatory processes. Where there is a lack of consumer confidence in a technology and/or the decision-making process, consumers are not necessarily willing to accept regulatory decisions and may subject such decisions to considerable challenge. Consumers have, over recent years, been more demanding, particularly regarding food safety and new technologies; reaffirming their rights to be able to make informed choices about individual purchasing decisions. In some cases, at an individual level, consumers are making more precautionary choices. For example, while the European Union (EU) has approved the use of food irradiation and some GM foods and ingredients,

widespread acceptance has not been forthcoming. Consumers have demanded clearer food labelling in order to make their own food choices, i.e. to avoid what they perceive as unacceptable processes or ingredients. This in turn has influenced the adoption of technologies that have been approved by appropriate risk analyses.

Little specific research has been published on consumer views about animal products derived from biotechnology – the emphasis so far has been on their response to the introduction of GM crops. What information there is in the public domain regarding animals has centred on the cloning or genetic modification of ‘Dolly’ the sheep at the Roslin Institute in Scotland. This sparked a public outcry and a fierce debate on the ethical implications of GM technologies came to the forefront. At the present time, it is probably true that consumers are largely unaware of the developments in modern biotechnology or genetic modification that could result in novel animal products.

However, in 1993 a UK retailer introduced a vegetarian cheese. It was made using chymosin, a genetically modified enzyme, instead of rennet from a calf’s stomach, and was voluntarily labelled as ‘produced using gene technology and so free from animal rennet’. This cheese has sold well for over a decade, yet it no longer carries the voluntary labelling declaration. This product, made from a GM enzyme, has been well accepted by consumers, but their reaction could have been different if the milk had been directly derived as a product of biotechnology. Indeed, in the United States of America, cows are treated with the genetically modified hormone recombinant bovine somatotropin (rBST) to increase milk yield. The introduction of the use of rBST was controversial, particularly since the milk did not have to be labelled to explain to consumers that the cows had been treated with this hormone. Despite the controversy, the milk sells, although it has also created a market for milk from cows not treated in this way, because some consumers are not prepared to accept the additional risks that they perceive are associated with this biotechnological intervention. In Europe rBST is not used because of animal health and safety concerns and because consumer reaction has not been judged as favourable.

Following the introduction of the first visible GM product on the UK market (the vegetarian cheese containing chymosin) in March 1994, the Consumers’ Association (CA) in the UK questioned consumers to find out what they thought about GM foods (5). At that time only 21% of people had heard of gene technology, and just 17% had some understanding of what it meant. Fifteen percent of respondents said they would be fairly likely to buy food produced using gene technology and 6% said that they would be likely to buy it. In April 1996 the CA carried out further consumer research about GM foods (6). The results showed that 41% of those interviewed said that they would

buy food made from genetically modified plants, but only 24% said that they would buy food made from genetically modified animals. There was generally greater consumer concern at the prospect of modifying animals than there was with plants, e.g. one person interviewed said “It’s not logical, but I think I’d be worried about a slice of beef or chicken from a genetically modified animal, whereas I wouldn’t be so worried about a tin of puree.”

This illustrates the subtleties and contradictions inherent in the biotechnology debate and consumers’ acceptance or rejection of this technology. We are reliably informed by market research that consumers are not willing to accept GM foods, but at the same time foods made with GM enzymes are being consumed extensively. However, the future acceptability of foods or medicinal products made directly from animal products derived from biotechnology remains a matter for speculation.

Research carried out by the CA in May 2002 (8) showed that approximately a third of consumers (32%) found the idea of food produced from a GM plant acceptable, while only 11% found GM animals acceptable (13% for GM fish).

Whatever the future for the introduction of animal products derived from biotechnology, there are basic principles of good communication that must be observed. There is much to learn from previous failures in communicating risk to consumers and from past public relations mistakes, such as those made during the bovine spongiform encephalopathy (BSE) epidemic in the UK during the 1990s.

The CA (8) has warned that “Consumer concerns should be addressed by regulators in the UK, EU and internationally as well as by industry, who dismiss consumer concerns at their peril. To do so, will only exacerbate consumer resistance to the technology.”

The case for good risk communication

Trust in information and the information provider is an essential element in ensuring effective risk communication, but levels of public trust in policy makers and regulators have fallen throughout Europe in the 1980s and the 1990s. The most spectacular food safety incident of this era was the BSE epidemic, when consumer trust in the UK government fell to an all time low.

The EU funded ‘Trust in Food’ Project has demonstrated that the public trusts consumer organisations, experts (academics) and authorities more than supermarkets, industry and politicians (17). The project noted the

emergence of active consumers among members of the public, who wish to influence events and who have concerns for personal, as well as wider political and welfare issues. These aspects need to be acknowledged by policy makers and regulators at the outset, when developing their risk communication strategies.

The European Food Information Council (EUFIC) in its report of an academic workshop held in August 2004 (10) concluded, 'food risk communication is a pressing concern and poses unique challenges'. It went on to state that science is no longer paramount as a form of knowledge but competes with other claims to the 'truth' such as religious, political, post-materialist and emancipatory value orientations. There appears to be a proliferation of values and an emerging gap between risk, in the sense of sound science, and what the public perceives as food hazards. The EUFIC (10) also stated that 'research on public perceptions of GM foods highlighted a number of dangers beyond toxicity and allergenicity, including moral risks (is it right to tamper with nature?), democratic risks (who is regulating GM? and is it possible to regulate such a fast moving technology?) and cultural risks (should science trump all other values?)'. The complexities of risk communication in a cultural and societal setting should not be underestimated. The NCC has also cautioned that 'policy-makers need to understand there is no "one size fits all" solution – consumers' attitudes and behaviour reflect the complex interaction of personal and external factors and the specific nature of the risk and uncertainty situation' (14).

Risk communication strategies for biotechnology need to be developed by taking into account the complexities of both the technology and the delivery of the messages, within complex and dynamic cultural settings. This is not an easy task.

Much has already been written on the principles of good risk communication. This article will summarise the main points only and provide the reader with specific details on how to establish good risk communication practices.

Definitions and goals of risk communication

The three aspects of risk analysis – risk assessment, risk management and risk communication, are often mistakenly seen as discrete entities, yet to be effective they must be fully integrated.

'Research has shown that risk communication is too often regarded as a bolt on [an appendage or after-thought] within Government departments and agencies, rather than as an integral part of the regulatory process. Where two-way communication has been recognised as an important

part of the regulatory process, Government practice is generally good and is steadily improving' (13).

Risk communication must not be seen as the last element in a linear process, but as a vital element of the entire risk analysis process; it must include an explanation of risk assessment findings and of the basis of risk management decisions.

Definitions of these principles for risk analysis have been agreed in the Codex Alimentarius (see Appendix 1) (12). These principles are to be applied at both national and international level when drafting food regulations for consumer health protection and for the facilitation of fair practices in the food trade.

The 1998 Joint Food and Agriculture Organization (FAO)/World Health Organization (WHO) Expert Consultation on the Application of Risk Communication to Food Standards and Safety Matters (11) identified the elements and guiding principles for effective risk communication and examined barriers to be overcome, as well as providing detailed practical recommendations to improve communications on food safety. The goals of risk communication were defined as follows:

- to promote awareness and understanding of the specific issues under consideration during the risk analysis process, by all participants
- to promote consistency and transparency in arriving at and implementing risk management decisions
- to provide a sound basis for understanding the risk management decisions proposed or implemented
- to improve the overall effectiveness and efficiency of the risk analysis process
- to contribute to the development and delivery of effective information and education programmes, when they are selected as risk management options
- to foster public trust and confidence in the safety of the food supply
- to strengthen the working relationships and mutual respect among all participants
- to promote the appropriate involvement of all interested parties
- to exchange information on knowledge, attitudes, values, practices and perceptions of interested parties concerning risks associated with food and related topics.

Brunk cites two views of risk communication (1). The first is the expert education of non-experts: the means by which regulators convince the public to accept the risks by encouraging them to accept the reliability of the expert assessment of the risks and the reliability of the risk

management. The second view acknowledges risk communication as an exchange of information between regulators and those who have a direct interest in the process. This exchange of information is the process by which the acceptability of the risk by the lay public is established by negotiation.

These views are echoed in the UK by the CA: 'risk communication is all too often a one-way, top-down process rather than a two-way inclusive process that enables the public to participate in decisions about what risks are acceptable. Judgements about the balance between consumer choice, on the one hand, and safety on the other, and therefore the legitimate role for government regulation, will only be socially acceptable if the public are involved at the outset' (7).

A report to the UK Health and Safety Executive on risk communication by government departments (2) identified key factors that must be considered when developing a successful risk communication strategy, including the following:

- consultation processes, particularly the extent of involvement by interest groups and the public in policy making and the way in which government involves them
- public scepticism about government messages in the light of the history of earlier communication about a risk, compounded by low trust in government generally
- difficulties that non-scientists have in understanding scientific information and methods, compounded by suspicion of science and technology generally
- public preferences about different types of risk, which often lead to very different judgements from those in technical risk assessments
- inadequate or inconsistent articulation or explanation by departments of their assessment of risk, sometimes reflecting more fundamental differences in decision frameworks.

The UK government now recognises that 'the handling of risks to the public has become more challenging in recent years, as information sources multiply and public expectations change' (3). As a result, detailed guidelines on communicating risk have been developed. These guidelines, which can be downloaded from the internet (4), were developed for policy makers, communication experts and risk managers. They explain why communication about risk is important, how to develop a risk communication strategy and how to communicate effectively about risk. A useful source of further advice, which provides further information about recent challenges the UK Government has had to face in communicating about risks, is the 2002 UK Government

Strategy Unit report 'Risk: improving government's capability to handle risk and uncertainty' (3).

The UK learned valuable lessons from its failure to communicate with consumers and stakeholders about the risk of BSE; it now understands the importance of risk communication and has been able to develop best practice procedures. This appears to have had a positive effect, since the Trust in Food Project (17) noted that in the UK there has been a reduction in the lack of consumer trust in the safety of food, mainly through institutional and operational reforms.

Regarding the communication of risks related to animal products derived from biotechnology, there is considerable uncertainty about these risks. Consumers are for the most part confused about risks and benefits of biotechnology related to crops; animal products are beyond their current experience. Nevertheless technological developments and applications in this field are advanced: communication strategies for the public do not appear to be!

The 2001 Joint WHO/FAO/OIE Technical Consultation on BSE (15) addressed the issue of uncertainty in risk communication and concluded that there were four contexts for typical risk communication messages:

- issues where we think we know the answers (high certainty contexts), recognising that new data can change the conclusions, even those in which you have the highest confidence
- issues where the answers are not known (high uncertainty contexts)
- issues where there is debate or controversy (moderate uncertainty)
- new emerging issues of potential risk.

Risk communicators should identify the context and adopt appropriate strategies for explaining these contexts to the public, who believe there is a large degree of uncertainty about biotechnology.

The Joint Technical Consultation in BSE (15) also identified principles to adopt in attempting to overcome some of the major problems that have occurred in risk communication. Regarding uncertainty, it was considered important to analyse the full range of concerns about the risk, ensuring that the response is full and complete. It was also considered important to translate and summarise the analysis for different audiences.

When faced with scientific uncertainty, good risk communication should explain:

- what measures are being taken to reduce the risks, and why

- what is known
- what is unknown and why this is, being open and honest
- what is being done to fill the knowledge gap
- what precautionary measures are being taken in the interim.

Regular updates are necessary even when there is no new information. Risk communicators need to take the initiative to communicate new information about risks, even though it may be unsettling to the public, explaining what is being done to address these risks. A proactive, open policy should be adopted for all aspects of risk communication.

The BSE Inquiry in the UK, chaired by Lord Phillips (16), concluded that their experiences had led them to the firm conclusion that a policy of openness is the correct approach. ‘When responding to public or media demand for advice, the Government must resist the temptation of attempting to appear to have all the answers in a situation of uncertainty’. They were of the firm opinion that food scares thrive on a belief that the Government is withholding information. The evidence from consumer research supports this view. Withholding, or being perceived to be withholding information can do more harm than good, fostering a climate of uncertainty and fear.

When considering the introduction of animal products derived through biotechnology, be they for foods or for medical/therapeutic uses, consumers must be kept informed of developments and involved as full partners in the risk communication process, from the outset.

Conclusion

Much has been written about the problems of risk communication; our understanding on this issue has greatly improved and we now have the tools to employ exemplary risk communication strategies. In the past there has been much to criticise about the way in which risks have been communicated. We must not make the same mistakes again. Lessons must be learned and the principles of good risk communication fully and emphatically deployed by all those seeking to introduce new technologies to consumers.

However, while best practice must be adopted throughout the entire risk analysis process, consumers are the ultimate decision makers. They accept or reject new technologies on a wide range of individual, social, cultural, religious and/or political factors that are beyond the remit of the regulatory process.



Appendix 1

Codex Alimentarius – definitions and goals of risk communication

Codex Alimentarius, the international standards setting organisation for food safety, defines risk analysis as a process with three components: risk assessment, risk management and risk communication (12). These are further defined below.

Risk assessment

A scientifically based process consisting of the following steps:

- a) hazard identification
- b) hazard characterisation
- c) exposure assessment
- d) risk characterisation.

Risk management

The process, distinct from risk assessment, of weighing policy alternatives, in consultation with all interested parties, considering risk assessment and other factors for the health protection of consumers and for the promotion of fair trade practices, and, if needed, selecting appropriate prevention and control options.

Risk communication

The interactive exchange of information and options throughout the risk analysis process concerning hazards and risks, risk related factors and perceptions, among risk assessors, risk managers, consumers, industry, the academic community and other interested parties, including the explanation of risk assessment findings and the basis of risk management decisions.

Appendix 2

Guidelines to regulators on good media communications

The 2001 Joint WHO/FAO/OIE Technical Consultation on BSE (15) made the following recommendations in its 'Guidelines to regulators on good media communications':

- simplify the scientific message but maintain accuracy
 - use the media as partners to achieve your goal of communication: develop a dialogue and an ongoing relationship
 - respond quickly, be candid and understand how the media work; if you decide not to discuss an issue during an interview, explain why
 - the media want 'news', so know how to frame the message without allowing the process to distort the message
 - be consistent, but be prepared to revise your message in the light of new data
 - prepare a written statement to ensure the media get the message and be able to respond to questions
 - try to get journalists to repeat back the message to see that they have understood and that you have communicated your points clearly.
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Communication sur les risques liés aux produits d'origine animale issus de la biotechnologie

D. McCrea

Résumé

Les précédents chapitres de cette revue ont examiné les principales questions liées à l'application de la biotechnologie à la science vétérinaire et à la production animale. Le présent article explore la théorie et la pratique en matière de communication sur les risques et énonce les principes fondamentaux d'une bonne communication sur les risques face aux nouvelles technologies, aux incertitudes, ainsi qu'à la prudence et au scepticisme des consommateurs. Après avoir échoué, dans les années 90, à communiquer auprès des consommateurs et des parties intéressées sur le risque d'encéphalopathie spongiforme bovine (ESB) pour la santé humaine, les agences du gouvernement du Royaume-Uni ont considérablement amélioré leurs stratégies de

communication sur les risques. L'enquête officielle qui a fait suite à la crise de l'ESB a conclu qu'une politique d'ouverture était la bonne approche. Le présent article met l'accent sur l'importance de la consultation, de la cohérence et de la transparence. Toutefois, les facteurs qui influent sur la perception du risque par la population sont nombreux et variés (religieux, politiques, sociaux, culturels, etc.) et l'élaboration des stratégies de communication sur les risques doit prendre en considération toutes ces questions complexes.

Mots-clés

Analyse des risques – Biotechnologie – Communication sur les risques – Incertitude – Modification génétique.



Proceso de comunicación sobre el riesgo ligado a los productos animales obtenidos por biotecnología

D. McCrea

Resumen

En otros artículos de este volumen se examinan una serie de aspectos fundamentales de la aplicación de la biotecnología a la ciencia veterinaria y la producción animal. Tras exponer la teoría y la práctica de una buena comunicación sobre el riesgo, el autor detalla los principios básicos que deben seguirse para lidiar con las nuevas tecnologías, la incertidumbre y un cuerpo de consumidores prudentes y escépticos. Tras el fracaso a la hora de explicar a los consumidores y otros colectivos interesados el riesgo de encefalopatía espongiforme bovina a la salud humana en los años noventa, las agencias del Gobierno del Reino Unido han perfeccionado sensiblemente sus estrategias en la materia. La investigación oficial realizada tras esa crisis arrojó la conclusión de que el planteamiento correcto se cifraba en una política de apertura, y en este sentido el autor subraya la importancia de la consulta, la coherencia y la transparencia. Existen, sin embargo, muchos y complejos factores (de tipo religioso, político, social, cultural, etc.) que influyen en la percepción pública del riesgo, todos los cuales deben tenerse en cuenta para elaborar estrategias eficaces de comunicación sobre el riesgo.

Palabras clave

Análisis del riesgo – Biotecnología – Incertidumbre – Modificación genética – Proceso de comunicación sobre el riesgo.



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