Government policy on public health, food safety and environmental issues—

lessons from BSE in Europe (emergency management, mad cows, anxious politicians, science and the media!)

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Introduction

Although bovine spongiform encephalopathy (BSE), or 'mad cow disease', is not present in Australia it raises crucial issues for those elements of the Australian scientific and emergency management community that are concerned with public health and environmental issues.

In the developed world, governments seem to be moving away from regulatory responsibility for various industries under the banner of economic rationalism and market deregulation. Consumers, because they are better educated—and because they appreciate their natural and legal rights—expect, for example, a 'no risk' food supply. In western democracies the media, and historically the press, have taken the responsibilities of their investigative reporting role seriously. However, in some areas of the media investigative reporting appears to have developed, in the search for a 'good story', into a role (real or perceived) as leaders in, or at least promulgators of, society's moral well being.

The food producing industry, and the scientific and regulatory community that supports it, has to work within this new framework, in which society appeared to assume before BSE occurred, the following:

- in hindsight, man-made disasters are preventable
- scientific knowledge is complete
- governments should have effective regulatory controls for everything
- industry is able to self-regulate to high levels of competence, for example in food safety
- all of this should be achievable within the government budget
- most important government, and some industry, decisions are made with long-term and altruistic aims
- politicians and bureaucrats generally make rational policy and decisions based on the available scientific information

Since the publicity and public inquiries surrounding the appearance of BSE in the UK, public opinion, as expressed in polls and media coverage, is that the UK government and industry can be venal, uncaring and insensitive, and that self-regulation (or co-regulation) is merely a euphemism for absence of regulation.

As well, scientists, or at least non-government scientists in the UK, are seen as courageous while government scientists are seen as heartless, and they and their political masters, do not care about human life because they twist and selectively interpret scientific information to suit a political-industrial agenda (Jenkins 1996).

These assumptions and the changed public perceptions following the BSE episode were difficult for the UK government and industry to manage. Examination of the BSE story is, therefore, a salutary experience internationally for all government policy experts, regulators and scientists, as it is for food safety experts in industry and potentially for managers of biological (including environmental) emergencies.

Society seems to assume, employing hindsight promoted through the media, that BSE and new variant Creutzfeldt-Jakob Disease (vCJD) could have been predicted, prevented and better managed. This is the underlying theme of the BBC Panorama documentary TV program on BSE, shown on the ABC *Four Corners* program in August 1996 and in much of the subsequent media enquiry and investigations.

A brief early history of BSE

BSE is the latest form of a number of transmissible spongiform encephalopathies (TSEs), or slowly developing neurological diseases that cause microscopic cavities in the brain of animals leading to nervous dysfunction and inevitably to death. TSEs are well described in humans, particularly Creutzfeldt–Jakob Disease (CJD) and kuru. In animals, scrapie in sheep, transmissible mink encephalopathy and chronic wasting disease of mule deer are all also well described.

There is a strong genetic influence in susceptibility to these diseases (Junghans, Teufel, Buschman, Steng and Groschup 1998).

TSEs are transmissible, but the agents causing these diseases do not, as far as is known, contain nucleic acids (the genetic code of life). The TSE agent is thought to be an altered-host encoded protein, or prion, derived from central nervous tissue (Prusiner 1997).

TSE agents are resistant to heat, chemicals, ionising radiation and extremes of pH. The detailed pathogenesis of the disease and the process of infection are not well understood, but ingestion is generally accepted as the natural route of infection (Wilesmith, Wells, Cranwell and Ryan 1988). Diagnosis is on clinical grounds confirmed at necropsy by histopathology. Until recently there was no satisfactory ante mortem method of confirmation of diagnosis of BSE, but monoclonal antibody technology looks promising (O'Rourke, Baszler, Parish and Knowles 1998).

BSE first appeared in the United Kingdom (UK) in April 1985. Farmers observed dairy cows with changed demeanor and incoordination that progressed to recumbency and death within a few weeks. Investigations by the Ministry of Agriculture Fisheries and Food (MAFF) led to diagnosis and classification of the new disease in November 1986 (Wells, Scott, Johnson, Gunning, Hancock, Jeffrey, Dawson and Bradley 1987).

Further investigations incriminated ruminant-derived meatmeal fed to cattle

as a nutritional supplement as the likely cause.

Changes in carcass rendering practice were a likely cause of BSE amplification and transmission (Wilesmith, Ryan and Atkinson 1991).

The UK MAFF conducted a rapid and logical investigation of the precipitating cause (a change in rendering process). This led to a detailed epidemiologically based response and a management plan that was considered to be adequate at the time.

Then in April 1996...

In April 1996, the announcement of a suspected link between BSE and 10 (now 47[1]) human cases of vCJD was made (Will, Ironside, Zeidler, Cousens, Estibeiro, Alperovitch, Poser, Pocchiari, Hofman and Smith 1996).

The communications revolution and the explosion of information—available to the media—led to a short term and unresolved public debate with massive political, economic and social consequences.

Modern communications, particularly on the Internet, have influenced media activity, which has in turn influenced international politics and community concerns in a synergistic and seemingly unpredictable fashion. This occurred following the linking of the 10 initial cases of a 'new variant' form of CJD with BSE.

The UK beef industry has been severely affected by the BSE episode. This is illustrated by a steady decline in cattle numbers. Domestic sales of British beef fell and beef exports have been interrupted culminating in a formal ban of UK beef in the EU. This has recently been lifted. Indirect effects were seen when beef consumption in countries as such Japan and Korea decreased in response to extensive and adverse international publicity on BSE.

Numerous national industry and government groups and working parties were formed to review the situation, and to enhance diagnosis and surveillance for CJD, vCJD and BSE around the world. Scientists have publicly displayed their hypotheses in an effort to attract fame and/or funding, enticed by an eager media.

Special interest groups opposed to animal use or meat consumption have also used the situation to their advantage. Each new scientific publication has been scrutinised by the media for a story or news angle.

Discussion

Understanding all this activity is important for a country, such as Australia, that is a major exporter of primary produce. A number of questions can be asked.

Is there any identifiable pattern in the sequence of events in emerging diseases that could be of value to government and industry for the better management of potential public heath, environmental (and biological emergencies in general)?

The key factors to identify and predict before they happen in the sequence of events that leads to any public debate on emerging issues are the potential for:

- media involvement
- involvement of human health, particularly deaths
- economic loss

If these last two factors are not brought to the attention of politicians, bureaucrats or industry leaders as community concerns by the media, then the development of policy and regulatory and/or quality management programs is likely to be slow. Public health and environmental issues are not generally seen as high priorities by decision-makers.

Can emerging situations with potential public health and trade importance be subjected to a meaningful science based risk analysis (Nunn 1997) in the face of a media-led adverse community reaction?

The human tragedy story line, particularly if child death is involved, gives the media leverage to raise the level of community awareness and concern to the point where industry and government have to take action.

Bad news is often all the news that is carried by the media (Lowe 1998). Rigorous science based risk analysis is not usually an option in these conditions. Direct economic factors such as loss of domestic and export markets due to consumer apprehension are also of major concern to government and industry, but usually secondary to human health issues.

The views of the scientific community, particularly government scientists, may be distrusted by the general community and media and may be largely irrelevant in the heat of a major media event. However, these views could be used in the risk communication aspect of risk analysis to inform the public and influence public opinion before a major media event occurs.

Can risk analysis address public perception and apprehension about an issue?

Government and industry interest in potential public health disasters in western democracies appears to be minimal unless human life is actually lost. However, it may be reasonable from the cost–benefit perspective not to attempt to prevent disasters, but to repair the damage after a disaster occurs. This approach may have merit if there are many competing potential disasters, funding constraints, political and management inertia, and limited expertise associated with incomplete scientific and technical knowledge. However, excellent and flexible emergency management programs would be needed.

Are there key events, analogous to hazard analysis critical control points, that could be used to accelerate or improve the management of these events either by the scientific and regulatory communities or by government and industry?

Undertaking a systematic risk analysis may uncover such points, indicating that more development of preventive measures, public education to influence opinion, or the preparation of specific emergency plans might be indicated. If modern plagues such as AIDS, BSE and enterohaemorrhagic *Escherishia coli* are viewed from this broad perspective, then a pattern of failure to respond (unless it is politically necessary) to emerging human and animal disease problems can be discerned. Promotion of foresight and anticipatory risk analysis is a difficult task.

Do modern democratic governments, with their short time horizons and policy decisions influenced by economic factors and policies of increasing industry self-regulation, have the ability to manage emerging public health and environmental issues?

In the late 1990s the UK government politicians, bureaucracy and industry all wanted the emerging BSE problem to disappear from the public consciousness. This too, on reflection, would be expected in the political and economic environment in the UK at the time with its policies of industry self-regulation and 'small' government. It is also possible, conversely, that excessive or heavy handed action taken in the early stages of the BSE

Notes

1. Department of Health UK, 1999/0646 Monthly Creutzfeldt-Jakob Disease Figures posted on FSNET November 4 1999.

outbreak from 1985 to 1995 could have invited criticism of over-reaction and misuse of scarce resources.

Governments and government bureaucrats need a structured approach to present arguments to the public justifying preventative action, or at least the establishment of emergency management protocols for the identified hazard.

Are media influences and consumer attitudes a positive or negative influence in the management of emerging issues?

In the April 1996 BSE/vCJD episode the Internet ran hot with both informed and ill-informed debate and the public opinion of government and industry, including public sector scientists, plummeted. There is no doubt that the media can make the logical management of biological emergencies extremely difficult. Conversely, good use of the media to communicate knowledge and information can reduce misinformation and speculative hyperbole that can be distracting to emergency management of the issue.

Options

The transfer of regulatory responsibilities to industry further compounds this dilemma and complicates the management of biological emergencies. However, the scientific and regulatory agencies serving industry and government can develop a framework for managing emerging issues if they understand the sequence of events and influences that make emerging public health and environmental issues become significant public policy issues. Such an understanding could lead to a more systematic and collaborative policy and management approach, including emergency management, through risk analysis.

1. Government and industry can continue with existing practice, which is to let emerging issues take their natural course. This usually involves no or minimal action until pressure makes reaction necessary. In economic terms, with competition for funds for a number of emerging issues and with a limited ability to predict relative importance and/or potential catastrophes, this may be a viable option if the costs of repairing the disaster are less than prevention. However, this approach may also result in poorly directed, short-term decisions and inappropriate funding if the issue becomes the subject of media-led public debate. It may also lead to deliberate obfuscation, or indeed misleading statements by government as happened in the UK. That is, this approach has the potential to become derailed by media and political reaction.
2. An alternative approach is for government and industry to undertake risk analyses, including cost-benefit studies, on emerging diseases or public health issues and environmental issues. Even if government or industry does not take preventive action then at least informed decisions could be made if the issue is targeted by the media and becomes the focus of attention. It also allows other groups, possibly the scientific community, to influence policy decisions with sound scientific information before media attention escalates. It might also lead to better planning and preparation for the emergency management of biological disasters.

Conclusions

Governments are in a difficult situation, caught between competing interests. On the one hand there is a policy-driven need to reduce costs, while on the other there is a demand for open-ended expenditure. This can lead to a systemic paralysis in the government or bureaucracy, so nothing or little is done.

The only other approach, already beginning to emerge in Australia, the US and the EC, is to attempt to undertake public health and environmental issue risk analysis (including cost-benefit studies and risk communication strategies). While this is the most logical course of action, and it may be the most cost effective, it is often not possible for the reasons given above.

In trying to implement change the first major challenge becomes obtaining the funds and an effective bureaucratic/legislative infrastructure to collect, coordinate and analyse information on the emerging issue. This is necessary to undertake subsequent cost-benefit studies to mount an economically rational argument as well as to be aware of public perceptions—and then effectively drawing it to the attention of government and industry for the implementation of effective and efficient action.

The second major challenge is to obtain the secure ongoing funds and infrastructure support to prepare for biological emergency management, including food safety, public health and environmental issues.

An understanding of the process that promotes emerging public health and environmental issues to issues of real political and economic concern is essential if scientists and emergency management professionals are going to influence government and industry expenditure decisions and outcomes. If these issues are not resolved we will continue to follow the present evolutionary and crisis-driven pathway.

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