**Exploring coverage of the 2008 Irish dioxin crisis in the Irish and UK newsprint media**

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**Abstract**

The 2008 dioxin crisis occurred as a result of contamination of Irish pork. The event had significant implications for Ireland’s economy, the reputation of its agricultural industry, as well as raising concerns for human health. This study describes the results of a content analysis of Irish and UK newspaper coverage of the 2008 Irish dioxin crisis, as this is likely to provide insight into how public perceptions of this issue were shaped. Articles from 16 print publications were systematically sampled for the period December 2008 to February 2009. The resulting data set of 141 articles was examined using a coding protocol developed based on previous research and refined during piloting. Results indicated that the dioxin crisis was primarily portrayed by the media as an industry/economic crisis, dominant in 26.9% of articles in the sample. Within this dominant portrayal, the agricultural industry was frequently cited as being in crisis (42.6%); however, the implications of the crisis on the wider economic environment also received attention (17.7%). Differences between Irish and UK-based media were also examined, revealing that while the Irish media most frequently described the crisis in terms of its impact on the industry and economy, the UK media were more likely to portray the crisis as a risk to health. These dominant media messages and message framings have implications for the public understanding of the issue in each country and potential consequences regarding perception of the adequacy of existing food policy and regulatory oversight.

*Keywords*: food risk; content analysis; dioxin crisis; media analysis; Ireland.

**Introduction**

The Irish dioxin crisis began in November 2008, when contaminated animal feed resulted in the contamination of Irish pork products with dioxins. Dioxins are by-products of chemical production processes. . They can accumulate in the food chain, mainly in the fatty tissue of animals, and a build-up of these toxins can present a risk to human health. According to the World Health Organisation ([WHO], 2010), more than 90% of human exposure to dioxins is through food, particularly meat and dairy products. High levels of exposure to dioxins can cause reproductive and developmental problems, damage the immune system, and can cause cancer (WHO, 2010). The Irish dioxin crisis has been labelled as a media-facilitated crisis (Jacob, Lok, Morley, & Powell, 2001), due to the high level of media attention the crisis received. One reflection on the crisis observed that there was “an unprecedented level of Irish media coverage, for almost a week, on a single food issue” (Kennedy, Delaney, Hudson, McGloin, & Wall, 2010, p. 939). This paper presents an analysis of this coverage, thus providing insight into how the public may have understood the incident during the period immediately following the announcement of the pork recall.

On 6 December 2008, the Irish Government declared the recall of all Irish pork products from pigs that had been slaughtered since September 1st 2008, due to abnormal dioxin levels found during routine testing (Food Safety Authority of Ireland [FSAI], 2008a, 2008b). Due to the inability to accurately trace the pork products that were contaminated, it was deemed necessary to recall all pork products, highlighting significant weaknesses in the traceability regimen. Approximately 100,000 pigs were slaughtered and €125 million worth of pork products were withdrawn from the market and destroyed. Customers were advised to return recently purchased pork products to the point of sale for safe disposal and refund. The animal feed was subsequently also found to have been fed to cattle and thus, higher than normal dioxin levels were also found in beef products. However, it was determined that these levels were not sufficiently high as to warrant a beef recall.

The pork industry is ranked 4th in Ireland’s agriculture sector and according to official figures, in 2008 the Irish agrifood industry had annual exports valued at €8.2 billion, representing 10% of Ireland’s exports and 8.5% of Ireland’s workforce (Department of Agriculture, Fisheries and Food, 2009). Therefore, the dioxin crisis had significant implications for Ireland’s economy, the international reputation of the Irish agricultural sector, as well as presenting concerns for human health. On December 9th 2008 the European Food Safety Agency confirmed results of testing which indicated the contamination presented no significant health risk to the public and on December 11th, five days after the initial recall, pork products returned to the market. In the weeks following, the Irish Government introduced a €200 million compensation package for the Irish pork industry, funded by the Irish taxpayer. Subsequent investigations determined that the food recycling plant at the centre of the crisis had used oil that was not appropriate for the manufacture of animal feed and thus, led to the higher than normal dioxin levels. The dioxin crisis received global media attention and was a matter of considerable debate.

Previous research has illustrated that the way the media portray food and nutrition-related issues and events can have implications for consumer behaviour and beliefs (Barry, Brescoll, & Gollust, 2013; Cho & Gower, 2006; Verbeke, Viaene, & Guiot, 1999). Framing theory posits that how an issue or story is communicated by the media can have significant implications for audience understandings (Entman, 1993, 2004). The media may engage in issue framing through increasing the salience of an interpretation of an event/problem or by promoting a certain perspective on an issue (Entman, 2004). Due to the reliance of the public on the media for health and food risk news (Eyck, 2000; Hargreaves, Lewis, & Spears, 2003; Lupton, 1999; *safe*food, 2012), the media offers a valuable research site to provide insight into how an issue or risk has been understood by the public. The Irish dioxin crisis has been considered by both academics (Casey, Lawless, & Wall, 2010; Jacob et al., 2011; Kennedy et al., 2010) and practitioners (European Food Safety Authority and national food safety organisations in Europe, 2012) as a classic case study of risk management and communication in times of a food contamination incident.

Research suggests that previous dioxin food contamination events have had a lasting impact on the public and the risk posed by dioxins are still considered significant by the public (*safe*food, 2012). Despite the widespread impact of the dioxin crisis and its subsequent characterisation as a “media-facilitated” event (Jacob et al., 2001, p. 262), relatively little attention has focused on how the media portrayed and framed this incident to the public (Shan, Regan, De Brún, Barnett, van der Sanden, Wall, & McConnon, 2013). This is a significant research gap, as it is widely held that how an issue is portrayed or ‘framed’ in the media can play a significant role in shaping public perceptions and beliefs (Entman, 1989, 1993; Nelson & Oxley, 1999; Scheufele, 1999). Therefore, this study addresses this gap by conducting a quantitative content analysis to understand and compare how the Irish dioxin crisis was presented and framed by the print media in two countries affected by the crisis; the Republic of Ireland and the United Kingdom (UK). The aim of this analysis was to address two research questions regarding the framing of the dioxin crisis. Firstly, an overview of the coverage of the crisis is of interest.

RQ1: How did newsprint media portray the Irish dioxin crisis?

Shan et al. (2013) found that traditional and social media data sets differed in their analyses and portrayals of the dioxin crisis, as indicated by their respective emphasis and exclusion of certain elements. It may also be expected that further differences in the representation of the event would be observed between different countries, who may hold different concerns and priorities related to the event. For instance, differences were documented in the coverage and framing of obesity in the American and French press (Saguy, 2013) and in biotechnology coverage in the UK and American press (Lundy & Irani, 2004). Given that the UK is the main export market for the Irish pig industry, representing approximately 56% of total exports in 2007, the Irish dioxin crisis was particularly pertinent to UK businesses, consumers, and media outlets. As this sample comprised both Irish and UK newspaper data, an assessment of any variance in the coverage of the issue between the media’s reporting in these countries was of interest.

RQ2: What differences, if any, were there in the coverage of the Irish dioxin crisis between Irish and UK media outlets?

**Methods**

**Sample**

*Lexis-Nexis* and the private news article database of *safe*food[[1]](#footnote-1) were used to collate the article sample. Newspapers were chosen for sampling as the print media are considered more credible than television and online news (Bruhn & Shutz, 1999; Kiousis, 2001). Searches were performed using the term ‘dioxin AND (Irish or Ireland or pig or pork or crisis or contamination)’ for articles published between 1 December 2008 and 28 February 2009, to cover the period just before, during and following the crisis. The search returned 369 articles and systematic sampling of every second article per publication and exclusion of irrelevant articles and articles that appeared twice in the sample ensured a manageable final sample of 141 articles for analysis (Riffe, Lacy, & Fico, 2008).

Newsprint publications were included in the sample based on circulation and readership profiles in the UK and Ireland. In total, 16 publications were sampled, 5 from Ireland and 11 from the UK, though it must be noted that the UK papers are also on sale in Ireland in a small number of retailers[[2]](#footnote-2). Within the media samples from each country, broadsheets and tabloids were both represented. The data set included articles sampled from six daily publications (*Irish Independent* (IE)[[3]](#footnote-3), *The Irish Times* (IE), *The Times* (UK), *Financial Times* (UK), *The Guardian* (UK), *The Telegraph* (UK)), four daily tabloids (*Evening Herald* (IE), *The Sun* (UK), *Daily Mirror* (UK), *Daily Mail* (UK)), two weekly broadsheet publications (*Sunday Independent* (IE), *The Sunday Times* (UK)) and four weekly tabloids (*Irish Mail on Sunday* (IE), *News of the World* (UK), *The Mail on Sunday* (UK), *Sunday Mirror* (UK)). In total, the UK-based publications had a combined UK circulation of 14,657,425 in 2008 (Press Gazette, 2009). The Irish papers in the sample had a pooled circulation of 733,044 in Ireland (National Newspapers of Ireland, 2009) with an estimated readership of 2,363,000 (67% of Irish adult population; Joint National Readership Survey, 2009).

**Coding Strategy**

Based on previous research relating the media coverage of food risk events (An & Gower, 2009; Ashlock, Cartmell, & Keleman, 2006; Feindt & Kleinschmit, 2011; Ruth, Eubanks, & Telg, 2005), a coding protocol was developed and refined in order to analyse the data set and to establish the dominant message of each article. Table 1 outlines the final coding protocol and coding/sub-coding structure, with sample text extracts.

[Insert Table 1 here]

Articles were coded for the presence (1) or absence (0) of various article elements. For the purposes of this analysis, each category was only coded once, even if there were multiple article elements that could have been ascribed the same code in one article. Based on previous research (e.g., Boyd, Jardine, & Driedger, 2009; De Brún, McKenzie, McCarthy, & McGloin, 2012) a dominant message code was assigned if clearly suggested by the sub-coding. For instance, if an article was coded as containing one mention of ‘government /regulatory blame’ for the cause of the crisis, one mention related to ‘consequences for the economy’ and one mention of ‘government responsibility for a solution’, the article would be considered as communicating a dominant message relating to ‘Blame/Responsibility’.

Where multiple sub-codes were present and there was uncertainty about the dominant emphasis, the researchers reviewed the article again, re-coding the article to capture multiple mentions of all sub-codes and then relied on the relative frequencies to determine a dominant focus. Where no clear emphasis could be identified, or there was equal presence of two or more elements, articles where coded as illustrating ‘no dominant emphasis/mixed emphasis’.

The first author performed all coding and the second author coded a subset of articles (*n*=21, 15%) in order to ensure the coding scheme was dependable and to evaluate intercoder reliability (Miles & Huberman, 1994). Results indicated that inter-coder reliability was moderate to high, with percentage agreement ranging from 70-100% (average 88.1%) and an average Cohen’s kappa of 0.71, which is considered as ‘substantial’ agreement between coders (Landis & Koch, 1977). The percentage agreement and kappa values for each discrete variable are presented in Table 2. Through discussion, all disagreements between coders were settled and coding was finalised. Data was entered in SPSS20 for analysis.

[Insert Table 2 here]

**Results**

The results are presented in two sections in order of research question. The first section examines overall coverage of the issue (RQ1) and the second compares the UK and Irish media portrayal of the issue (RQ2).

**RQ1: Coverage of the dioxin crisis**

In order to assess the dominant elements of the crisis in news coverage, articles were coded for the presence/absence of certain elements. Table 3 presents the results of this coding, which assisted in determining the overall emphasis of each individual article and hence, the dominant portrayal of the issue. Overall, consequences for the agribusiness industry, feed supplier/processor blame and the reporting of ‘no risk to health’ were the most common depictions of the issue.

[Insert Table 3 here]

Dominant representations of the crisis were determined based on these sub-codes. Results indicate that overall the 2008 Irish dioxin crisis was primarily portrayed by the newsprint media as an Industry and/or Economic crisis, appearing as the dominant focus in 38 (26.9%) of articles in the sample (Figure 1). Within this, the agricultural industry was frequently cited as being in crisis (42.6%) and the implications of the crisis for the wider economic environment also received attention (17.7%). The assignment of blame and responsibility was frequently discussed, appearing as the dominant theme in 37 articles (26.2%). The coding strategy facilitated insight into who was deemed at fault for causing the crisis and who was considered responsible for a solution. The government were most often positioned as responsible (22 articles, 59% of Blame/Responsibility coding) compared to the food processor/feed supplier (15 articles, 41%). This indicates that although the food processor/feed supplier was identified as the source of the contamination in 55% of all articles, this was often framed as having occurred as a result of the failure of government and regulatory oversight. This is likely due to the finding that the food recycling plant at the centre of the crisis had not been subject to inspection by the Department of Agriculture in 2008.

[Insert Figure 1 here]

The ‘Health’ emphasis category was also divided into sub-codes of ‘health risk’ and ‘no health risk’. Similar to previous research (Ruth et al., 2005), there was often interplay between the ‘health risk’ and ‘no health risk’ elements, sometimes making it difficult to ascertain a dominant article position. Thirty articles (21.3% of sample) dominantly portrayed the issue as relevant to health and the majority of these articles emphasised the ‘no health risk’ message compared to the ‘health risk’ message (19 and 11 articles, respectively). There were only a minority of articles in the sample which presented a perspective on how the crisis was affecting consumer confidence and food purchasing behaviour (8% of articles, *n*=11). Clearly, there was minimal discussion about the fall-out of this crisis in terms of consumer impact; that is, there was no significant indication in media reports that consumer confidence had been affected. Finally, 25 articles were coded as presenting a mixed message or had no clear emphasis (17.7% of sample).

**RQ2: Differences between Irish and UK media portrayal of the crisis**

Research Question 2 investigated if differences existed between the UK and Irish media in their portrayal of the Irish dioxin crisis. As the UK is the main destination for Ireland’s agrifood and drink exports (Houses of the Oireachtas, 2009), the crisis also had significant implications for UK-based businesses and consumers. Figure 2 illustrates the differences between the dominant media portrayals of the issue. The Irish media most frequently emphasised the impact on the industry and economy, likely due to the size of the agriculture industry in Ireland and the considerable impact the crisis could have on the wider economy. Emphasis on blame and responsibility for the crisis was second most common, while articles with mixed or no clear emphasis were also frequently observed. In contrast, the UK media were more likely to portray the issue as relevant to public health. Specifically, the UK media were significantly more likely than the Irish media to report the crisis as a ‘health risk’ to the consumer, *χ*2(1) = 12.35, *p*=0.001 (odds ratio 4.5 : 1). It is important to note that there was no significant difference observed between countries in their presentation of the issue as ‘no health risk’ to the public.

While the industry/economic emphasis was dominant in Irish media reports of the crisis, the UK media were less concerned with the impact of the crisis on the Irish agribusiness sector and economy. As indicated by the results presented in Table 4, the UK media were less likely to discuss the impact on consumers, with the Irish media 7.9 times more likely to portray the issue as relevant to consumer trust and food purchasing behaviour. The assignment of blame/responsibility was the second most likely element to be invoked by the UK media and they were more likely to implicate the Irish government (*n*=11) than feed supplies/processors (*n*=4).

[Insert Figure 2 here]

[Insert Table 4 here]

**Discussion**

This study examined coverage of the 2008 Irish dioxin crisis in UK and Irish media. Overall, the emphasis on the impact of the incident on the industry and economy and the assignment of blame and responsibility were dominant concerns in the coverage of the crisis. According to Entman (1993), dominant media messages will likely be congruent with audience understandings and beliefs about an issue. Based on the tenets of framing theory (Entman, 1993), one would expect that news audiences would primarily understand the incident in terms of its impact on the agribusiness industry and the wider economy. The almost equal dominance of discussion of blame and responsibility for the crisis also suggests that the public may hold particular views regarding who was responsible for the dioxin contamination. In emphasising the issue as a fault of a processors or feed suppliers, the media are highlighting a potentially vulnerable link in the food chain. This may foster distrust in products identified as related to the source of contamination but could also have a related ‘knock on’ impact on sales of meat products generally. By comparison, portraying the issue as a fault of government and as due to a comparative lack of regulatory oversight may result in calls for legislation and further action to increase monitoring and the frequency of safety inspections at this stage of the food production process.

In both scenarios, it is feasible that these framings of the issue could impact on consumer perceptions of the adequacy of oversight of the food chain. The dominant proportioning of blame on the Irish Government stemmed from the fact that the food recycling plant at the centre of the contamination was not subject to official inspection in 2008. However, the oil was inappropriate for use in this circumstance and a criminal investigation followed the crisis due to concerns that illegal and unlicensed oil was used by the processing plant; this too received considerable attention.

The second research question examined potential differences between Irish and UK media coverage of the crisis. Comparing countries may reveal different media concerns and political motivations and could therefore indicate different understandings of the same issue. Analysis revealed divergences in the coverage of the issue; Irish media emphasised the impact of the crisis on Irish agribusiness and the wider economy, whereas UK media were more likely to portray the issue as relevant to public health. Given the size and contribution of the agribusiness sector to the Irish economy, it is perhaps not surprising that the issue was predominantly portrayed this way in Ireland. The agribusiness industry represented 8.5% Ireland’s workforce in 2008, with annual exports exceeding €8 billion, and therefore the crisis constituted a significant threat to the Irish economy. In contrast, the UK media were more concerned with the potential health implications of this food risk event. Despite the finding that UK media were significantly more likely to report the dioxin contamination as a risk to human health, there were no significant differences between countries in their reporting of the crisis as having no health risk to the consumer. This indicates that the UK media tended to report the potential health risk of contamination, before also reporting the communications of the Irish and UK food safety authorities and other health experts who reassured the public regarding the negligible health risk of the meat contamination.

Day (1997) reminds us that even specialist journalists in the areas of health or science are journalists first. Thus, the UK reporting of the issue may represent a manifestation of the different goals of science and the media. Eyck (2000) posits that the news media are attracted to sensationalist stories that can affect a wide number of people and have high news value, thus, food risk crises are exemplars of an ‘ideal’ media story. These media-facilitated issues then can become politicised, developing into power struggles between various stakeholders and interest groups, as they compete to define the problem and search for culprits to blame and hold responsible. Feindt and Kleinschmit (2011) describe food crises as contested events, as they create an opportunity to legitimise policy change. Thus, the portrayal of the issue could also have significant implications for future food policy. In the current analysis, it was clear that the discussion of blame and responsibility featured strongly, with the government implicated as primarily at fault. Although the dioxin contamination has since been investigated as revealed to be caused by the supply of illegal fuel to the recycling plant producing animal feed and contamination from oil fumes, there was a strong focus on the alleged failure of government and regulatory oversight to have controls in place that would prevent this kind of contamination.

It is asserted that during crises, responsibilities are negotiated in urgency and therefore media communications and the dominance of one depiction or message can have implications for public understanding and beliefs regarding blame (Feindt & Kleinschmit, 2011). In this way, the media operate as site of social construction, where meanings and responsibilities are negotiated and understanding dominant media messages can help to understand dominant public opinion (Entman, 1993, 2004). This is a key strength of the current research and underlines the value of this study as a proxy of public opinion. Previous work has found that the media portrayal of the Belgian dioxin crisis had a significant negative impact on consumer confidence and behaviour (Verbeke et al., 1999). Yet, given the differences between the Belgian and Irish governments’ handling of the respective dioxin crises (Jacob et al., 2011) and the relative lack of negative and alarming reporting by the Irish media (particularly regarding health risks), it appears that these factors may have contributed to differences in the impact of the incidents on the Belgian and Irish public (Kennedy et al., 2010; Verbeke et al., 1999). The Irish dioxin crisis is widely regarded as an example of a successfully managed food safety event (Casey et al., 2010; Jacob et al., 2001), with minimal damage to consumer trust in authorities. The management of the incident was broadly in line with consumer perceptions of best practice in risk communication (Cope, Frewer, Houghton, Rowe, Fischer, & de Jonge, 2010) and research has found that the majority of consumers surveyed felt that the incident had been handled in an adequate or efficient manner (Kennedy et al., 2010).

In sum, this study found that the 2008 Irish dioxin crisis was primarily portrayed as significantly impacting on the Irish agribusiness industry and economy, though discussion of blame and responsibility for the event was also common. Differences emerged between Irish and UK newspaper coverage of the incident, with the UK media more likely to invoke an emphasis on health and Irish media more likely to describe the impact of the crisis on the consumer. This study adapted an existing coding framework, used previously in the analysis of other food risk events, and subsequent adjustment of the coding frame where appropriate helped to ensure it was relevant for the examination of the dioxin contamination incident. Future research should examine if the typology employed here may be extended to other food risk events, such as the recent adulteration of beef products with horsemeat, to assess its value in other kinds of food risks.

**References**

An, S.-K., & Gower, K. K. (2009). How do the news media frame crises? A content analysis of crisis news coverage. *Public Relations Review, 35*, 107-112. doi: <http://dx.doi.org/10.1016/j.pubrev.2009.01.010>

Ashlock, M. A., Cartmell, D. D., & Keleman, D. B. (2006). The cow that stole Christmas: Framing the first US Mad Cow crisis. *Journal of Applied Communications, 90*, 29- 46.

Boyd, A. D., Jardine, C. G., & Driedger, S. M. (2009). Canadian media representations of Mad Cow Disease. *Journal of Toxicology and Environmental Health, Part A, 72*, 1096-1105. doi: 10.1080/15287390903084629

Bruhn, C. M., & Schutz, H. G. (1999). Consumer food safety knowledge and practices. *Journal of Food Safety, 19*, 73-87. doi: 10.1111/j.1745-4565.1999.tb00235.x

Casey, D. K., Lawless, J. S., & Wall, P. G. (2010). A tale of two crises: The Belgian and Irish dioxin contamination incidents. *British Food Journal*, 112, 1077-1091.

Cho, S. H., & Gower, K. K. (2006). Framing effect on the public's response to crisis: Human interest frame and crisis type influencing responsibility and blame. *Public Relations Review, 32*, 420-422. doi: <http://dx.doi.org/10.1016/j.pubrev.2006.09.011>

Cope, S., Frewer, L. J., Houghton, J., Rowe, G., Fischer, A. R. H., & de Jonge, J. (2010). Consumer perceptions of best practice in food risk communication and management: Implications for risk analysis policy. *Food Policy, 35*, 349-357. doi: http://dx.doi.org/10.1016/j.foodpol.2010.04.002

Day, P. (1997). The media and the scientific message. *Journal of Health Services and Research Policy*, 2, 65-66.

De Brún, A., McKenzie, K., McCarthy, M., & McGloin, A. (2012). The emergence and portrayal of obesity in *The Irish Times*: Content analysis of obesity coverage 1997- 2009. *Health Communication, 27*, 389-398.

Department of Agriculture, Fisheries and Food. (2009). Annual Review and Outlook for Agriculture, Fisheries and Food, 2008-2009. Retrieved from <http://www.agriculture.gov.ie/media/migration/publications/2009/English%202%20A> nnual%20Review%20Outlook%202008%202009.pdf

Entman, R. M. (1989). How the Media Affect What People Think: An Information Processing Approach. *The Journal of Politics, 51*, 347-370.

Entman, R. M. (1993). Framing: Toward Clarification of a Fractured Paradigm. *Journal of Communication, 43*, 51-58.

Entman, R. M. (2004). *Projections of power: Framing news, public opinion, and U.S. foreign policy*. Chicago: University of Chicago Press.

European Food Safety Authority (2012). When food is cooking up a storm: Proven recipes for risk communications. Retrieved from http://www.efsa.europa.eu/en/corporate/pub/riskcommguidelines.htm

Eyck, T. A. T. (2000). The marginalization of food safety issues: An interpretative approach to mass media coverage. *Journal of Applied Communications, 84*, 29-47.

Feindt, P. H., & Kleinschmit, D. (2011). The BSE crisis in German newspapers: Reframing responsibility. *Science as Culture, 20*, 183-208. doi: 10.1080/09505431.2011. 563569

Food Safety Authority of Ireland. (2008a). Recall of Irish Pork and Bacon Product. Retrieved from http://www.fsai.ie/news\_centre/press\_releases/06122008.html

Food Safety Authority of Ireland. (2008b). FSAI Provides Update on Irish Pork and Bacon Recall. Retrieved from <http://www.fsai.ie/news_centre/>press\_releases/08122008.html

Hallgren, K. A. (2012). Computing inter-rater reliability for observational data: An overview and tutorial. *Tutorials in quantitative methods for psychology*, *8*, 23.

Hargreaves, I., Lewis, J., & Spears, T. (2003). *Towards a Better Map: Science, the Public and the Media*. London: Economic and Social Research Council.

Houses of the Oireachtas (2009). Joint Committee on Agriculture, Fisheries and Food First Report: Report on the contamination of Irish pork products. PRN No. A9/0686. Retrieved from <http://www.oireachtas.ie/documents/committees30thdail/j-> agriculturefisheriesfood/Reports\_2009/20090526-1.pdf

Irlbeck, E., & Akers, C. (2009). *The summer of salmonella in salsa: A framing analysis of the 2008 salmonella outbreak in tomatoes and jalapenos.* Paper presented at the American Association for Agricultural Education Research Conference, May 20-22, Louisville, KY.

Jacob, C. J., Lok, C., Morley, K., & Powell, D. A. (2011). Government management of two media-facilitated crises involving dioxin contamination of food. *Public Understanding of Science, 20*, 261-269. doi: 10.1177/0963662509355737

Joint National Readership Survey (2009). Joint National Readership Survey 2008. Retrieved 1 October, 2014, from <http://www.jnrs.ie/survey.htm>

Kennedy, J., Delaney, L., Hudson, E. M., McGloin, A., & Wall, P. G. (2010). Public perceptions of the dioxin incident in Irish pork. *Journal of Risk Research, 13*, 937- 949. doi: 10.1080/13669871003782769

Kiousis, S. (2001). Public trust or mistrust? Perceptions of media credibility in the information age. *Mass Communication and Society, 4*, 381-403.

Kwan, S. (2009). Framing the fat body: Contested meanings between government, activists, and industry. *Sociological Inquiry, 79*, 25-50. doi: 10.1111/j.1475- 682X.2008.00271.x

Landis, J. R., & Koch, G. G. (1977). The Measurement of Observer Agreement for Categorical Data. *Biometrics, 33*, 159-174. doi: 10.2307/2529310

Lundy, L. K., & Irani, T. A. (2004). Framing biotechnology: A comparison of US and British national newspapers. *Journal of Applied Communications, 88*, 37-49.

Lupton, D. (1999). Editorial: Health, Illness and Medicine in the Media. *Health:, 3*, 259- 262. doi: 10.1177/136345939900300301

Miles, M. B., & Huberman, M. (1994). *Qualitative Data Analysis*. London: Sage.

National Newspapers of Ireland (2009). 2008 JNRS – Readership. Retrieved from <http://nni.ie/2008-jnrs-readership/>

Nelkin, D. (1995). *Selling Science: How the Press Covers Science and Technology, revised edition*. New York: W. H. Freeman.

Nelson, T. E., & Oxley, Z. M. (1999). Issue framing effects on belief importance and opinion. *The Journal of Politics, 61*, 1040-1067. doi:10.2307/2647553

Press Gazette (2009). ABC national daily newspaper circulation for January 2009. Retrieved from <http://www.pressgazette.co.uk/node/40210>

Riffe, D., Lacy, S., & Fico, F. G. (2008). *Analyzing media messages: Using quantitative content analysis in research* (2nd ed.). Mahwah, New Jersey: Lawrence Erlbaum Associates, Inc.

Ruth, A. M., Eubanks, E. E., & Telg, R. (2005). Framing of mad cow media coverage. *Journal of Applied Communications, 89*, 39-54.

*safe*food. (2012). Consumer Food Behaviour Report Retrieved from <http://www.safefood.eu/Publications/Research-reports/Consumer-Food-Behaviour-> Report.aspx

safefood. (2012). Food Behaviours: Food Safety on the Island of Ireland. http://www.safefood.eu/Publications/Research-reports/Food-Behaviours.aspx

Saguy, A. C. (2013). *What's Wrong with Fat?* Oxford: Oxford University Press.

Scheufele, D. (1999). Framing as a theory of media effects. *Journal of Communication, 49*, 103-122.

Shan, L., Regan, Á., De Brún, A., Barnett, J., van der Sanden, M. C. A., Wall, P., & McConnon, Á. (2013). Food crisis coverage by social and traditional media: A case study of the 2008 Irish dioxin crisis. *Public Understanding of Science*. doi: 10.1177/0963662512472315

Verbeke, W., Viaene, J., & Guiot, O. (1999). Health communication and consumer behavior on meat in belgium: From BSE until dioxin. *Journal of Health Communication: International Perspectives, 4*, 345 - 357.

WHO. (2010). Dioxins and their effects on human health. *Media Centre Fact Sheet.* Retrieved from http://www.who.int/mediacentre/factsheets/fs225/en/

**Tables and Figures**

**Table 1.** Coding protocol and structure

|  |  |  |  |
| --- | --- | --- | --- |
| **Dominant emphasis** | **Sub-code(s)** | **Indicators of code** | **Sample text** |
| **Consequences to agribusiness industry/ economy** | Consequences to agribusiness industry | References to the economic consequences of the crisis, industry impact, financial losses to industry | “The scare could destroy the Irish pork industry”, “Irish pig industry plunged into disaster” |
| Consequences to economy | References to the economic consequences of the crisis, industry impact, financial impact on economy | “repercussions for the Irish economy” |
| **Blame/responsibility assignment** | -Government/ regulation blame/  - Government responsibility for solution | Blame/responsibility attributed to specific individuals, groups or policies, e.g., government, animal feed supplier, processors, regulators | “The government got us into this mess; they must get us out of it”, |
| -Producer/processor blame  - Producer/processor responsibility for solution | “The processing plant did not have a licence for the oil it used” |
| Other assignment of blame/responsibility | “we must look beyond the government and the plant at the centre of the crisis for blame” |
| **Health Consequences** | Health Risk | References to risk to human physical health, potential consequences of exposure, safety concerns. | “..dioxins, which in some forms and concentrations, and with long exposure, can cause cancer”, “deadly dioxins” |
| No Health Risk | Reassurance regarding low/no risk of dioxin crisis | “The risk to public health is very low”  “no harmful effects”  “poses no risk to the consumer” |
| **Public consumer impact** | Impact on consumer trust | References to the effect of food risk on trust, consumer education/reassurance, consumer protection | “plan to restore confidence in Irish pork”, “consumer focus groups will be used to identify what shoppers need in terms of information”, |
| Imapact on consumer food purchasing | References to the effect of the crisis on consumer purchasing behaviour | “Consumers have avoided pork products” “report buying less meat as a result” |
| **No clear message/ mixed messges** | - | Two or more messages with equal exposure,or no one dominant message identified | - |

**Table 2.** Results of intercoder reliability tests

|  |  |  |
| --- | --- | --- |
| **Variable** | **Percentage Agreeement (%)** | **Cohen’s Kappa** |
| Publication name | 100 | 1 |
| Country of publication | 100 | 1 |
| Consequences for Agribusiness industry | 70 | .41\* |
| Feed supplier/Processor blame | 85 | .58 |
| Blame Other | 90 | .69 |
| Consequences - no health risk | 95 | .9 |
| Consequences - health risk | 90 | .69 |
| Government responsibility for a solution | 80 | .6 |
| Consequences for the economy | 85 | .58 |
| Governmental/Regulatory blame | 80 | .59 |
| Consequences for consumer trust | 85 | .58 |
| Consequences for consumer food purchasing | 100 | 1 |
| Food processor responsibility | 85 | .58 |
| Average | **88.1%** | **0.71** |
| ***Note*: \*** Kappa value suggests moderate agreement (per Landis & Koch, 1977) but should be noted as not reaching the same levels of intercoder reliability as other variables. | | |

**Table 3.** Frequency of sub-codes

|  |  |
| --- | --- |
| **Coding elements** | ***N* (%)** |
| Consequences for Agribusiness industry | 60 (42.6%) |
| Feed supplier/Processor blame | 55 (39%) |
| Consequences - no health risk | 54 (38.3%) |
| Consequences - health risk | 29 (20.6%) |
| Government responsibility for a solution | 27 (19.2%) |
| Consequences for the economy | 25 (17.7%) |
| Governmental/Regulatory blame | 17 (12.1%) |
| Consequences for consumer trust | 15 (10.6%) |
| Consequences for consumer food purchasing | 6 (4.3%) |
| Food processor responsibility | 1 (0.7%) |

Number of articles

**Figure 1.** Dominant messages in the coverage of the dioxin crisis

**Figure 2.** Comparing Irish and UK media coverage of the dioxin crisis

**Table 4.** Difference between UK and Irish media in overall coverage of the dioxin crisis

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Ireland**  ***n* (%)** | **UK**  ***n* (%)** | ***χ2*** | ***p*** |
| **Industry/Economic impact** | 25 (29.8) | 13 (22.8) | 0.83 | >0.05 |
| **Blame/Responsibility** | 22 (26.2) | 15 (26.3) | 0.01 | >0.05 |
| **Health focus** | 13 (15.5) | 17 (29.8) | 4.17 | 0.04 |
| **Consumer Impact** | 10 (11.8) | 1 (1.8) | 4.86 | 0.03 |
| **Mixed/No Clear message** | 14 (16.7) | 11 (19.3) | 0.16 | >0.05 |
| **Total** | 84 (100) | 57 (100) |  |  |

1. *safe*food is an organisation with the remit of promoting awareness and knowledge of food safety and nutrition issues on the island of Ireland. Their database includes all articles relevant to food and nutrition and was used to sample relevant articles from Irish tabloid publications as these publications were not available in the Lexis-Nexis database. [↑](#footnote-ref-1)
2. Some Irish papers are subsidiaries of British companies and there may have been some overlap in coverage. Thus, in some instances, Irish media coverage may have been influenced by UK coverage and Irish readers would have been exposed to some of the same stories, or parts thereof.However, this is only likely to be the case in a minority of the sample. [↑](#footnote-ref-2)
3. IE = Ireland, UK = United Kingdom [↑](#footnote-ref-3)