

Risk Communication

This section discusses issues related to risk communication across a range of publicly perceived high risk industries (such as pharmaceuticals, nuclear, oil, etc.). It reports critically and provides analysis on risk communication as an outcome of risk research within these industries. Contributions are intended to include methods working towards the advancement of risk perception research and describe any lessons learned for successfully communicating to the public about risk.

Pink Slime, Raw Milk and the Tweetification of Risk

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In a hot, flat, hyper-connected world, public perception of risk may determine if agriculture will save the planet by 2050 or destroy it. Science and technology options may hold the key to solving the situation, but, if media experience with “pink slime” and raw milk are any indication, society may be in for a bumpy ride. This article will examine global trends in food and agriculture, the interplay between food safety and public perceptions of risk, and the role of risk communication in addressing public perceptions.

I. Introduction

There is nothing humans do that has a bigger, more negative impact on the planet than agriculture. This is true in terms of land and water resources as well as in terms of greenhouse gas emissions. Perhaps the greatest challenge facing society over the next 40 years is figuring out how to maximize the production of food while minimizing the negative consequences of agriculture – from polluted waterways to disappearing rainforests. The choices individuals make and the policies implemented will determine what the world looks like in 2050.

Information technology has accelerated the pace at which information is transmitted from person to person and around the world. The ease with which people can share information far exceeds cognitive ability to consume, digest and internalize the significance and accuracy of that information. Consumers are drowning in data and are starved for knowledge. As a result, they often rely on intellectual shortcuts, such as the trustworthiness of the source, rather than their own analysis and assessments of risk.

Science, technology and innovation will be critical to achieving global goals of sustainably feeding the planet in 2050, and yet the current debate about what constitutes sustainable agriculture is quite polarized. How governments, companies, and the media communicate about science and about risk will influence how new technologies and new innovations are perceived and adopted, or not adopted.

II. The Challenge and Opportunity

The United Nations (UN) recently revised its population projections through the end of the century sharply upward. The global population is now expected to rise to 9.6 billion by 2050 and continue to 10.9 billion by 2100. Previous estimates by the UN Food and Agriculture Organization (FAO) that the world will need to produce 60% more food by 2050 to meet growing demand will likely need to be revised upward accordingly. As a result, the sustainable production of agriculture will be increasingly on the minds of governments, businesses, and consumers. Not only is there a need to increase the amount of food available, it has to be done in a way that replenishes, rather than depletes, the planet.

This seems like a daunting task, and yet, science and technology have proven capable of increasing

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production year after year for decades. Prior to the 1900s, agricultural yields increased at a painfully slow pace. However, at the beginning of the last century a series of agricultural breakthroughs ushered in dramatic growth in food production. The first of these revolutions was the advent of synthetic fertilizer in 1915, followed by mechanization, hybrid seeds, pesticides and, most recently, genetically engineered crops.

III. Consumer Attitudes

The rapid pace of technological development suggests that scientists may, indeed, be able to sustain the growth of the past, but this will only happen if scientists are able to apply the most advanced technologies to the problems at hand. This is a hardly a certainty given the opposing views of the future of food production as reflected in trends such as the slow food movement and liberalized trade in food products. Each of these trends is described in turn.

The Slow Food movement originated in Italy with protests of the opening of the first McDonalds restaurant at the Piazza di Spagna (or Spanish Steps) in Rome. The Slow Food organization describes its origin as follows:

“Slow Food was started by Carlo Petrini and a group of activists in the 1980s with the initial aim to defend regional traditions, good food, gastronomic pleasure and a slow pace of life. In over two decades of history, the movement has evolved to embrace a comprehensive approach to food that recognizes the strong connections between plate, planet, people, politics and culture. Today Slow Food represents a global movement involving thousands of projects and millions of people in over 160 countries.”¹

The trend towards liberalized trade is exemplified by the work of the World Trade Organization (WTO). As of 2014, there were 160 countries that were members of the WTO with members agreeing to limit import tariffs and reduce or eliminate non-tariff barriers, such as sanitary and phyto-sanitary measures. The trend is further apparent in the recent spate of bilateral and regional free trade agreements, including the Transatlantic Trade and Investment Partnership between the United States and the European Union and the Trans-Pacific Partnership between the U.S. and eleven other countries in the Pacific region.

Figuring out how to understand and balance these real and, in some ways, opposing trends, will determine the future health of our planet. Farmers need the best ideas from organic and ecological food systems combined with modern advances in molecular breeding and genetics to address this pressing challenge and sustainably feed a growing planet.

The trends described are further buttressed by the following case studies, which help to illustrate opposing consumer attitudes.

1. Pink Slime

In March 2012 Bettina Siegel, a mother in Houston, Texas, raised concerns over the quality of meat served to schoolchildren. She highlighted the use of “lean finely textured beef” (LFTB) – a type of ground beef made from trimmings – in school lunches. She started an online petition in which she referred to the LFTB as “pink slime”. Siegel promoted the petition through her “Lunch Tray” blog, seeking to have LFTB banned from school lunches.

Siegel’s local campaign went viral and picked up more than 225,000 signatures in three weeks. The petition inspired coverage from The Associated Press and national TV programs. Within a month, many companies announced that they would no longer use the filler product in their foods.²

The public and media attention garnered by the petition and the subsequent response by companies’ using the product contrasts starkly from the aftermath of a 2009 article in the New York Times³ that highlighted the same topic and players. While similar public concerns were raised at the time about the use of the product, the overall reaction and backlash were muted and the impact on use of the product limited. The public reaction to Siegel’s campaign proved quite different.

1 Slow Food: The History of an Idea (Online accessed January 11, 2015: <http://www.slowfood.com/international/7/history>)

2 Schlachter, Barry (2012) “A Texas mom’s fight against ‘pink slide’”, Star-Telegram, April, 14, 2012, from Star-Telegram website, <http://www.star-telegram.com/living/family/moms/article3831060.html> accessed January 11, 2015.

3 Moss, Michael (2009) “Safety of Beef Processing Method Is Questioned”, New York Times, December 30, 2009, from New York Times website, <http://www.nytimes.com/2009/12/31/us/31meat.html> accessed January 11, 2015.

Twitter had about 30 million active users at the end of 2009 and that number had exploded to 138 million users by March 2012.⁴ The volume of tweets increased just as rapidly. There were about 35 million tweets per day in late 2009 and 350 million tweets per day by March 2012.⁵

The power of social media helped to amplify public opposition to LFTB in 2012 based on unease over the use of pink slime in food rather than on the safety of the product. While some commentators expressed concern over the use of ammonia to disinfect the meat, ammonium hydroxide is used extensively in food processing (as a leavening agent, a pH control agent, and a surface-finishing agent in food) and its safety has been affirmed by the Food and Drug Administration (FDA).⁶

2. Raw Milk

On December 24, 2014 FDA issued a recall notice for Farm Country Cheese House, a Michigan-based company, for 1136 pounds of Raw Milk Cheddar. The FDA notice indicated that the cheese might be contaminated with *Listeria Monocytogenes*, an organism which, according to FDA, “can cause serious and sometimes fatal infections in young children, frail or elderly people, and others with weakened immune systems.” The notice further states that “healthy individuals may suffer only short-term symptoms such as high fever, severe headache, stiffness, nausea, ab-

dominal pain and diarrhea, *Listeria* infection can cause miscarriages and stillbirths among pregnant women.”⁷

When it comes to raw milk, consumers have taken a very different position with respect to questions of risk than they did for pink slime. Proponents of raw milk have urged regulators to reduce oversight of the product and make it easier for the public to access the product. When it comes to pink slime consumer groups have urged greater regulatory scrutiny of LFTB.

3. Consumer Irrationality

Why do consumers seek out products like raw milk that are generally recognized as riskier than alternatives and reject products like LFTB that are recognized by regulators as posing no greater risk than traditional beef products?

Advances in social and decision sciences have provided empirical evidence to explain irrational lay assessments of risk. Daniel Kahneman notes in *Thinking, Fast and Slow*, the basic limitation that people have in the ability of the mind to deal with small risks. He comments, “we either ignore them altogether or give them far too much weight – nothing in between.”⁸

Kahneman compares the approaches of Paul Slovic, Cass Sunstein, and Timur Kuran and concludes:

“I share Sunstein’s discomfort with the influence of irrational fears and availability cascades on public policy in the domain of risk. However, I also share Slovic’s belief that widespread fears, even if they are unreasonable, should not be ignored by policy makers. Rational or not, fear is painful and debilitating, and policy makers must endeavor to protect the public from fear, not only from real dangers.”⁹

The raw milk and pink slime scenarios demonstrate, from the perspective of the policy maker, how consumers can give too much or too little weight to certain risks. Based on these case studies, the importance of understanding public perceptions of risk to address fears, however inaccurate, is clear, for the purpose of designing and disseminating communications to address public concerns and gain support for science and technology solutions. This is particular-

4 Twitter, Inc., Form S-1 Registration Statement (filed October 3, 2013), p.61, from SEC website, <http://www.sec.gov/Archives/edgar/data/1418091/000119312513390321/d564001ds1.htm>, accessed January 11, 2015.

5 Twitter Usage Statistics, from Twitter Usage Statistics website, <http://www.internetlivestats.com/twitter-statistics/>, accessed January 11, 2015.

6 International Food Information Council (IFIC) (2009) “Questions and Answers about Ammonium Hydroxide Use in Food Production”, December 29, 2009 (updated November 7, 2014) from IFIC website, http://www.foodinsight.org/Questions_and_Answers_about_Ammonium_Hydroxide_Use_in_Food_Production, accessed January 11, 2015.

7 United States Food and Drug Administration (FDA), “Farm Country Cheese House Recalls Raw Milk Cheddar Because Of Possible Contamination With *Listeria Monocytogenes*”, Recall – Firm Press Release, FDA, December 24, 2014, from FDA website, <http://www.fda.gov/Safety/Recalls/ucm428077.htm>, accessed January 11, 2015.

8 Daniel Kahneman (2013) *Thinking, Fast and Slow*, Farrar, Straus and Giroux, p.143.

9 Daniel Kahneman (2013) *Thinking, Fast and Slow*, Farrar, Straus and Giroux, p.144.

ly important in the current saturated information environment fraught with distrust.

IV. The Tweetification of Risk and the Role of Communication

Social media has made it exponentially easier to disseminate information and reach distant audiences. It is now clear that the ease with which information can be shared also reduces the chance that the information will be carefully considered or analyzed.

Consumers of information are drowning in data and starved for knowledge, and as a result, erroneous perceptions of risk and distrust are persisting through the media amplification of risk originating from social media and other information outlets. As a result, consumers are relying on intellectual shortcuts, such as the trustworthiness of the source, rather than their own analysis to determine their views. The subsequent perceptions of risk formed are not derived from base-rate statistics of the actual probability of a risk occurring, but rather involve additional value-based factors that are not traditionally included in expert assessments of risk (e.g., trustworthiness, salience of information).¹⁰ Uncovering lay perceptions has the potential to unearth previously overlooked value-based judgments, such as trust, that have been established to be of consequence in public decision-making.¹¹

An intended outcome of uncovering risk perceptions is to eventually design appropriate risk communications to reconcile any discrepancies found between expert and lay views. Methods developed from social and decision sciences (e.g., the mental models approach)¹² can help to identify potentially suppressed lay perceptions. These methods recognize that such perceptions need to be taken into account when presenting new risk communications to a specific population, as they are likely to influence the reception and understanding of any new information.

Key scientists within industry, government or even communication departments have rarely been trained in risk communication. It has been found that most employees find it difficult to convey the clear

and concise messages needed for the modern media.¹³ To address this problem, policy makers and others responsible for communication must be encouraged to participate in continuing education risk communication courses for professionals. Developing a guide/handbook on risk communication tailored to food and agriculture could help to focus attention on what works and what does not work in regards to public acceptance of science and technology solutions for future sustainability.

V. Conclusion

This article has described the future challenges facing the food and agricultural sector and the science and technology opportunities available to address those challenges. Case studies (e.g., *Pink Slime* and *Raw Milk*) illustrate opposing consumer attitudes towards food and the difficulty in achieving unanimous public support on policy measures for future sustainability. However, advances in social and decision sciences have enhanced the understanding of lay risk perceptions and the development of risk communications. Taking into account how the public perceives and assesses risks are integral for communication plans. Specifically, consideration of public trust as a factor in the shaping of risk perceptions is required for effective risk communication. The impact of trust on how the public will interpret risk communications is evident and the effect is particularly poignant in the realm of agriculture and food. It is therefore necessary to consider levels of trust in sources of information when designing and communicating risk policies that better meet societal needs.

10 Slovic, P. (1987). Perception of Risk. *Science*. pp. 236.

11 Fischhoff, B., P. Slovic, et al. (1978). How Safe is Safe Enough? A Psychometric Study of Attitudes Towards Technological Risks and Benefits. *Policy Sciences*. pp. 127-52.

12 Morgan, G. M., Fischhoff B, Bostrom A, Atman C.J. (2002). *Risk Communication: A Mental Models Approach*. Cambridge University Press.

13 Chakraborty, S and Boudier, F. (2013). The Future of Risk Communication and the Role of the Pharmaceutical Industry. *Drug Safety*. 8(1): 4-10.