



Media, fear, and nuclear energy: A case study



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ABSTRACT

Although electricity generation technologies and safety have improved gradually over time, nuclear power, including generation facilities and waste repositories, are seemingly stigmatized in American culture. Contemporary literature has considered the impact of widely broadcasting nuclear accidents and how media coverage might alter public risk perceptions and in turn, U.S. nuclear policy. This paper discusses the vacillation of public support in recent decades and its ties to both media and scientific reporting. The analysis identifies how media coverage of accidents at Chernobyl, Three-Mile Island, and Fukushima overwhelmed scientific claims of safety and security in nuclear energy production. Additionally, the discussion considers how to bridge the information gap between scientists, citizens, and policymakers through increased knowledge dissemination. Finally, the implications of improved scientific communication in democratic policymaking processes are discussed.

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Since the inception of nuclear energy development in the 1950s, advocates have been trying to build support despite major public resistance often tied to risk perceptions, cultural affiliation, and social groups (Kahan, Jenkins-Smith, & Braman, 2011). Sovacool (2009) explains that society often struggles to assess actual risks, and perception can be skewed by increased visibility of a problem or event. Accidents in general that cause significant financial or physical losses are more highly publicized than everyday occurrences, although smaller incidents occur at a much higher frequency and can have equal or higher cumulative impacts which go unreported. Content analyses often describe the framing of an incident when governments or news reports guide public perceptions. Researchers theorize that framing can affect public perceptions as coverage may signal the potential for similar, more catastrophic occurrences (Slovic, 1994). This paper uses content analysis to investigate the impact of widely broadcasting nuclear accidents, and how media impacts

public risk perceptions and in turn, U.S. nuclear policy. The discussion presents a prescriptive approach to decreasing the impact of media and improving dissemination of scientific information as one method to advise the public and policymakers.

1. Public perceptions of the nuclear industry

Following major improvements to nuclear reactor designs during the 1950s, commercial development of nuclear technology spread rapidly across the United States, and nearly 100 reactors were erected during the 1960s and 1970s. As nuclear technology has advanced, the efficiency and reliability of reactor operations has increased (Blowers, 2011; World Nuclear Association, 2012a). Nuclear electricity currently accounts for about one third of U.S. power generation (CRS, 2011). Two decades free from large-scale accidents (1986–2011) allowed proponents to reinvent the nuclear industry as a safe and reliable energy source (Blowers, 2011). Moreover, recent policy developments have encouraged nuclear growth to address an upsurge in electricity demand and to focus on reducing greenhouse gas emissions (Colvin, 2005; NEI, 2010). In 2005,

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the U.S. Congress allocated \$18.5 billion for a loan guarantee program to support initial investments for licensing and construction to incentivize nuclear development (CRS, 2011). Blowers (2011) suggests that although previous nuclear processes involved stakeholder input, openness and transparency has decreased resulting in decisions that do not consider local communities. Additionally, Doyle (2011) is concerned over strong connections between the nuclear energy industry, the government, and the military, which excluded the public from discussions.

Regarding further development of nuclear power, there are three main themes that drive the discussion: (1) nuclear weapons, (2) nuclear power, and (3) nuclear waste. Gamson and Modigliani (1989) assert that this has caused a dualistic discourse which contrasts a potential for destruction with high levels of energy production. Social perceptions are primarily negative and associate nuclear topics with danger, toxic waste, environmental damage, war, death, and sickness (Slovic, Flynn, & Layman, 1991). Research suggests these direct associations are tied to the historic roots of nuclear fission development:

Nuclear energy was conceived in secrecy, born in war, and first revealed to the world in horror. No matter how much proponents try to separate the peaceful from the weapons atom, the connection is firmly embedded in the minds of the public (Smith, 1988: p. 62).

Experts, including scientists, reframe the risk perception of nuclear power by comparing it to other power generation mechanisms in terms of injuries and deaths per GWe-year and measuring risk only by counting the number of accidents; however, these measurements do not constrict public perceptions because they do not address additional risks identified by the public (Ramana, 2011; von Hippel, 2010). Slovic (1994) describes these additional public perceptions of risks as “involuntary, unknown, uncontrollable, and potentially catastrophic” and likely tied to lack of trust for agencies tasked with protecting against harmful effects. Little can be done to improve perceptions based on the catastrophic potential of nuclear accidents; however, increasing knowledge of risk probabilities for nuclear power generation might alleviate some public concerns.

Agencies address the information gap by publishing briefs about nuclear topics but the information is not well-received because risk evaluations lack credibility in the public eye (Flynn, Slovic, & Mertz, 1993; Ramana, 2011).¹ Researchers of public discourse are careful to distinguish between causes and linkages; media discourse does not necessarily change public opinion, but alters a part of the social construct around a topic, such as nuclear power (Gamson & Modigliani, 1989).

A 2010 Gallup poll showed U.S. public support for nuclear power at an all-time high, with 62% backing the use of nuclear energy (Jones, 2010). However, just one year later—immediately following Fukushima—a Gallup survey

found a 5% drop in citizen support from the previous year, and reported that seven in ten Americans had increased concerns about a similar disaster occurring in the U.S. (Jones, 2011). A 2012 Gallup survey reported that support for nuclear remained static at 57%, and 40% of the sampled population still believed the technology to be unsafe (Newport, 2012). There were similar drops in approval following other nuclear incidents. For instance, following Chernobyl, support for nuclear power plummeted to 19% (Slim majority, 2011). Slovic et al. (1991) posit that perceptions of nuclear accidents are similar to those of the fallout from a nuclear war and suggest the public lacks confidence in government agencies to safely implement nuclear power and waste operations.

2. Impacts to nuclear development and policy

Nuclear incidents change citizen perceptions toward the safety of nuclear power generation worldwide and cause sharp declines in the number of individuals who support development of the technology (De Boer & Catsburg, 1988; Ramana, 2011). Although in 2007 the nuclear industry applied for several permits to build new reactors, and it seemed a nuclear renaissance was forthcoming, many concerns still remained. High development costs, lengthy permitting processes, and concerns for safety and waste disposal continue to hold the industry at a standstill, even with supplemental government support programs (CRS, 2011). Media reporting of nuclear incidents likely impacted the industry but has not been the sole source of their developmental woes.

Following the most recent nuclear crisis in Japan, the U.S. Nuclear Regulatory Commission canceled pending requests to restart plant reactors and extend operating licenses based on new-found political controversies, including concerns over safety (Greenemeier, 2011). Work halted on the South Texas Project expansion—which was one of three candidates for a government funded guaranteed loan—because of a loss in funding tied to the investor’s financial condition following Fukushima (CRS, 2011).

3. A trend of energy production-related accidents

Energy production comes at a cost to both humans and the environment. During the last century, there have been human and property losses from dam collapse, oil spills, nuclear meltdowns, and mining accidents (Sovacool, 2009). While safety has improved in recent decades, accidents continue to occur.

Three nuclear events have received considerable media attention since the mid-1970s: Three Mile Island, Chernobyl, and Fukushima. Governmental responses and information transmission regarding these incidents widely affected perceptions of trust in the government and the nuclear industry as well as the safety of nuclear power.

3.1. Three mile island

On March 28, 1979, a section of non-nuclear equipment malfunctioned, beginning a sequence of events that led to a partial meltdown of Three Mile Island’s Unit 2 reactor

¹ For example, the Nuclear Regulatory Commission, the Nuclear Energy Institute, the Nuclear Energy Agency and the International Atomic Energy Agency (CRS, 2008).

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