Outbreak Communications Guidelines

Appendices

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Appendix One:
Key Factors in Risk Perception[1]

In the 1980's Slovic et al developed the "psychometric model" of risk perception, identifying many key factors relevant to how people perceive and manage risk[2]**.** Ropeik and Slovic's recent summary of a few of these factors is paraphrased here[3]:

- Dread - the more horrific a threat, the more people fear it.
- Control - the more control individuals have over a situation, the smaller they perceive the risk; (e.g., driving one's own car versus traveling in a commercial airliner that is piloted by a stranger)
- Is the risk natural or is it human-made? - a man-made source of risk, such as radiation from cellular telephones, evokes greater fear among people than does radiation from natural sources such as the sun.
- Choice - risks that are chosen evoke less fear than those that are imposed.
- Children - threats to children are perceived as worse than those to adults, even when the risks are from the same source, such as asbestos.
- Is the risk new? - emerging threats generate more anxiety among individuals than those that are known
- Awareness - greater awareness of risks heightens concern
- Can it happen to me? - risks seem greater if one believes he or she or someone close may be a victim
- The risk-benefit tradeoff - a perceived benefit from a behavior or choice makes the associated risk seem smaller
- Trust - greater trust in those communicating the risk and responsible for action lessens anxiety.

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[1] When experts have trouble identifying with the way the public sees risk, it is sometimes helpful to surprise them with data about people more like themselves. In an frequently cited psychology experiment looking at how data is presented (sometimes known as "data-framing") affects treatment choice, several treatment options for lung cancer were presented to over 400 doctors. In one experimental condition, the doctors were told the treatment would save 90% of the patients. In another experimental condition, the doctors were told that 10% of the patients would die. Far more of the doctors chose the treatment which would save 90% of the patients than the one which would lose 10%. Reported in:
McNeil B, Pauker S, Sox H, Tversky A. On the elicitation of preferences for alternative therapies. *New England Journal of Medicine*, 1982:1259-1262.

[2] Slovic P et al. The psychometric study of risk perception. In: Covello VT, Menkes J, Mumpower J, eds. *Risk evaluation and management*. New York, Plenum, 1986:3-24.

[3] Ropeik D, Slovic P. Risk communication: a neglected tool in protecting public health. *Risk in Perspective*, Harvard University, 2003, 11 (http://www.hcra.harvard.edu/risk.html, accessed 8 August 2004).

Appendix Two: Mental Models and The gap between experts and the public

A formal protocol for comparing expert and lay models of various risks was developed by Atman, Bostrom, Fischhoff, and Morgan in the early 1990's. The authors showed that

> "whatever the goal of a communication, its designers need to address the mental models that recipients bring to it, that is, the pattern of knowledge gaps, overly general understandings, and outright misconceptions that can frustrate learning . . . One cannot rely on the intuition of technical experts regarding either what lay-people currently believe or what they need to know[1]."

The mental models protocol is labor-intensive, involving the development of expert and lay-person "influence diagrams" to discover discrepancies between each other's view of the risk. Researchers then design communications that address the discrepancies, and try to correct them in the direction of the expert model. Ultimately, they evaluate whether the process leads to behavior change in the desired direction for health or self-protection[2].

In 1990, Morgan and Lave wrote: "The minimal research commitment facing the formulation of risk messages is to empirically determine how much recipients know about a topic to begin with and how additional information will be interpreted[3]."

But most agencies facing an abrupt crisis are not likely to have time or money to do formal mental models assessment. An expert in the field, Sarah Thorne (co-author of the case example in endnote 2), informally recommends a "five and five" plan: have five people from the agency draw up some questions and then each go out and interview five local citizens regarding their beliefs about the crisis[4].

Another risk communication researcher, Branden Johnson, describes what he did when he worked for the New Jersey Department of Environmental Protection:

> "Communication is likely to be more effective if it accounts for audience factors that might affect response to messages. For example, I advise a colleague who comes to me fearing unexpected reactions at a large public meeting scheduled for literally 4 days hence, among other actions to make about five quick phone calls (depending on the case, to local officials and influentials, or to randomly called local citizens) to get some idea of local concerns and their intensity[5]."

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[1] Atman C et al. Designing risk communications: completing and correcting mental models of hazardous processes, Part 1, *Risk Analysis*, 1994, 14:779-788.

[2] Byram S et al. Mental models of women with breast implants: local complications. *Behavioral Medicine*, 2001 (http://www.findarticles.com/p/articles/mi_m0GDQ/is_1_27/ai_79234791, accessed 10 July 2004)
This article demonstrates a detailed case example of this process from start to finish, published by a group which includes one of the original mental model researchers.

[3] Morgan MG, Lave L. Ethical considerations in risk communication practice and research. *Risk Analysis*, 1990, 10:355-358.

[4] Personal communication, 14 June 2004.

[5] Johnson, BB. Ethical issues in risk communication. *Risk Analysis*, 1999, 19:335-348.

Appendix Three:
Behind the Mask in Asia

A heartening story of emerging empathy is told by the UK Health Protection Agency's Professor TK Syed et al[1]. In their article, they tell of two UK-based health care officials who traveled to Asia for an international "harm-reduction" conference in April 2003 -- during the height of SARS. They were taken aback by the mask-wearing public, as they changed planes in Bangkok. At first they were bemused by the flimsy ineffective masks people were wearing, and the propensity to remove the masks

> "to cough, sneeze, or wipe their nose (regularly not into a handkerchief), and as baskets of bread rolls were passed around [at the conference] most people removed masks and rummaged for their preferred type, replacing the mask only after dinner was finished."

Although the authors do not suggest it, their story seems to illustrate E.M. Rogers' very influential health belief model called the "diffusion of innovations[2] [3] [4]." In this model, technological ideas, including adaptation of older ones for new uses, are communicated through various channels, over time, among the members of a social system. The stages of adoption include: knowledge, persuasion, decision, implementation, and confirmation.

Gradually, the traveling doctors -- unlike most western commentators observing the SARS mask phenomenon from afar -- found themselves seeing the

> "cultural assimilation of the mask [as having] run in parallel with a general acceptance of the importance of SARS in view of its public health, social, and economic impacts on the communities affected. This assimilation has anticipated and reflected the high degree of local, national, and international cooperation that has been required to control the global spread. The mask became a highly visible symbol of individual and collective determination to achieve control even though its value in community settings is questionable."

They conclude:

> "Perhaps it is this perception of the importance of personal and collective responsibility by members of the public that the mask symbolises best and the public health contribution of this symbolism should be remembered for future emerging infections."

This point of view -- debatable, counterintuitive, but ultimately respectful of both public fear and public resilience -- was sorely lacking in much official and media commentary about all the hysterical people wearing useless masks during SARS.

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[1] Syed Q et al. Behind the mask. Journey through an epidemic: some observations of contrasting public health responses to SARS. *Journal of Epidemiology and Community Health* 2003:855-856 (http://jech.bmjjournals.com/cgi/content/full/57/11/855, accessed 15 August 2004).

[2] Rogers EM. *Diffusion of Innovations* (Fourth Edition), New York, The Free Press, 1995.

[3] Clarke R. A Primer in Diffusion of Innovations Theory. (Notes.) Department of Computer Science, Australian National University, 1999 (http://www.anu.edu.au/people/Roger.Clarke/SOS/InnDiff.html, accessed 28 June 2004).

In considering the "Behind the mask" authors' tentative conclusions, consider also Clarke's statement about early innovation-adopters:

> "Earlier [innovation]-adopting individuals tend...to have more years of education, higher social status and upward social mobility,...have greater empathy, less dogmatism, a greater ability to deal with abstractions, greater rationality, greater intelligence, a greater ability to cope with uncertainty and risk, higher aspirations, more contact with other people, greater exposure to both mass media and interpersonal communications channels and engage in more active information seeking."

[4] Rogers EM, Scott KL. (1997) The Diffusion of Innovations Model and Outreach from the National Network of Libraries of Medicine to Native American Communities. draft paper prepared for Nat'l Network of Libraries of Medicine, 1997 (http://nnlm.gov/pnr/eval/rogers.html, accessed 28 June 2004).

Appendix Four:
Not informing the public early

Case examples abound of government and industry officials delaying announcements of emerging crises, minimizing uncertainty, over-reassuring the public, and consistently communicating optimistically behind the curve of an escalating crisis.

The case by Lok and Powell excerpted below demonstrates:
- Lack of openness.
- Delayed notification of the public.
- Premature over-reassurance in absence of data.
- "Information vacuums" filled with outside speculation.
- Failure to "err on the alarming side."
- Repeated overconfident and incorrect statements about the crisis being nearly solved.
- Undue fear of alarming the public as an excuse for delayed notification.

In 1999, the Belgian government delayed telling the public about dioxin-contaminated animal feed for a month, claiming it didn't want to alarm the public until it knew whether the dioxin had gotten into the food supply. Here are some lengthy excerpts from a crisis communication case study of this event by Lok and Powell[1] [2].

The Belgian dioxin crisis of the summer of 1999:
A case study in crisis communication and management (excerpts)

by Corie Lok and Douglas Powell

"[T]he government knew of a problem as early as mid-March and the presence of high levels of dioxin was confirmed on 26 April, one month before the contamination was made public.

"The Belgian government explained the situation in a short press release on 27 May. On the same day, the member nations of the European Union (EU) were officially informed of the situation. On 28 May, the Public Health Minister publicly ordered the removal of all chicken and eggs from store shelves and cautioned the public against eating Belgian poultry and eggs.

"The Belgian Agriculture and Public Health Ministers resigned on 1 June.

"The Belgian government assured the public through a press release on 5 June of its concern for public health. It stated that it wanted to quickly restore trust of both citizens

[1] Lok C, Powell D. The Belgian dioxin crisis of the summer of 1999: a case study in crisis communications and management. *Food Safety Network,* Technical Report #13, 2000 (http://www.foodsafetynetwork.ca/crisis/belgian-dioxin-crisis-feb01-00.htm, accessed 10 July 2004).
[2] Excerpts available through the kind permission of Douglas Powell.

and suppliers by providing safe products on the market. This would also have benefits to business. The statement seemed confident and optimistic, declaring that 'as of next week, a safe supply to the market can be assured by unsuspected companies.'

"The Dutch Minister of Agriculture resigned on 7 June. He was under fire for failing to tell the public and the EC about the contamination, when it was revealed that the ministry was informed of the problem on 12 May.

"The 13 June election toppled the center-left Christian-Democrat/Socialist coalition after 12 years in power .... The Christian-Democrat/Socialist coalition had been riding high in the polls before the dioxin crisis hit

"There always seemed to be some degree of information vacuum throughout the crisis as information was slowly discovered and released. In this vacuum there was plenty of speculation resulting in confusion and loss of control by the government.

"Of the approximately 250 news stories reviewed, only five described the contamination in terms of the level of risk from dioxin to which consumers were actually exposed.... This illustrates that **in a crisis, the level of risk is not the major concern [emphasis added].**

"After the test results confirmed that dioxin was in animal feed, the government waited a month - while tests were confirming whether dioxin had gotten into the human food supply - before telling the public about the contamination. The Belgian authorities claimed they did not want to alarm the public until they were sure dioxin had gotten into the human food supply.

"This month-long wait was perceived as an irresponsible move by the Belgian government and as a result, it looked guilty from the beginning....the public resented being kept in the dark about a public threat and being unwittingly subjected to this threat

"Although the government did in fact swiftly undertake measures to control the problem in May, these actions were not reported once the story broke and the government was never able to take credit for the work it did throughout the crisis to contain the contamination. Instead, the government, no matter what it did or said during the crisis, was constantly seen and portrayed negatively. Criticisms and doubt drowned out anything the government said and the crisis was very much out of its control.

"[E]xtreme measures had to be taken to try and regain trust - minister resignations, massive recalls and culls, import bans - at the expense of the farmers and the food industry and ultimately the government.

"The government should have been the first to voluntarily come clean with its story when dioxin was discovered in animal feed on 26 April, even if all the facts and details were not yet confirmed, to show that it was in fact taking precautions, reducing risk and doing everything possible to rectify the situation.

"The real issues of the crisis, such as lax regulations in the food industry, were overshadowed by the government's mistakes.

"Between 28 May and 13 June, the government was persistently saying how confident it was that the contamination was a single, contained incident that was under control and that it would soon be completely cleaned up. By 11 June, the government was declaring the food supply to be safe, while the media, the EC and other countries were still doubtful.... Speculation of contaminated food continued in the news. This created the impression of an overconfident government making hasty decisions and this further eroded the government's credibility.

"The dioxin contamination would have still been a damaging crisis had the government promptly gone public with the crisis. However, the damage and public scrutiny would have likely been focused more on the faults of the food industry rather than on the government's mismanagement of the crisis."

Appendix Five:
The problem with saying "There's no need to panic"[1]

Realistically and unrealistically, officials often worry about public panic.

As Avian Influenza was spreading in Asian countries, a senior WHO official said, "There's no need to panic yet, but there's no room for complacency."[2]

When West Nile virus arrived in California, a county vector disease official said, "We don't want people to panic. There's a fine line between hitting the panic button and getting people to pay attention."[3]

Outbreak responders do report true instances of panic, particularly when early rumours are countered by official silence, denial or over-reassurance. But with regard to West Nile virus and many other outbreaks, there is *not* a fine line between getting public attention and causing panic. There has been no case of West Nile Panic in the United States during its five year spread across the continent.

Getting people to pay attention, however, is a serious problem. In New York City, "nearly nine out of ten adults have heard of West Nile Virus, but fewer than half of them take precautions against mosquitoes," according to health department surveys[4].

Officials clearly have the fear or belief -- the mental model -- that panic is imminent. Instead of diagnosing, validating, and addressing the public's actual level of anxiety, officials repeatedly warn them not to panic.

To the public, "There is no need to panic" implies at least four things:

1. "The officials think or know that people are close to panicking. Things must be pretty bad." This increases public alarm.

2. "The officials think we're about to panic. How insulting." This decreases respect for officials.

3. "The officials are close to panicking themselves." This increases public alarm.
4. "Sometimes there must indeed be a need to panic."

Worse than telling the public that "There is no need to panic" is the explicit "Don't panic

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[1] Lanard, J. Appendix on panic. WHO draft outbreak communication planning document, 2004.
[2] Ross E. Associated Press, 29 January 2004.
[3] Ignelzi RJ. West Nile virus is spreading. *San Diego Union Tribune*, 2 August 2004 (http://www.signonsandiego.com/news/metro/20040802-9999-1c2mosquito.html, accessed 4 August 2004).
[4] *Fewer than half of NY'ers who know about West Nile virus take precautions.* Press release, New York City Department of Health and Mental Hygiene, August 2004.

yet" type of statement -- because these statements imply that there may actually come a time to panic.

Worst of all is using "There is no need to panic yet *because*" type statements. They imply that if certain conditions are met, then it will be time to panic.

Lee Clarke, a sociologist who documents the presence or absence -- mostly absence -- of panic in many disasters, has a hypothesis about a potential benefit of officials giving up their over-diagnosis of panic. He writes:

> Jettisoning the myth of public panic could also increase elites' trust of people. Politicians and corporate managers have a litany of responses after some mishap:
>
> "There was never any danger to the public.
> "Everything is under control."
> "There is no reason for concern."

Behind such public pacifiers is the presumption that people cannot be trusted with bad news[1].

[1] Clarke L. Panic: myth or reality*? Contexts*, *The American Sociological Association*, 2002 (http://www.contextsmagazine.org/content_sample_v1-3.php, accessed June 30 2004).
This article describes in detail numerous assumed panic incidents, with surveys of survivors and observers, detailing the remarkable preponderance of pro-social behavior in most of these disasters.

Appendix Six:
Limited findings about false alarms

"Informing early" does increase the odds of false alarms, and officials often worry that too many false alarms will lead the public to discount warnings. (That is an example of a "mental model" of experts and public alike.) Although there has not been much "warning research" since the 1970s, some new work is encouraging about the public's willingness to tolerate false alarms.

In 1998, Dow and Cutter[1] investigated two false alarm hurricane evacuations in three months, along the same stretch of the US east coast. They found that despite the enormous social disruption of the evacuations, most of the people surveyed assessed the warnings as valid, even though the hurricanes changed course, and would evacuate again if warned.

The authors expressed surprise at their additional finding that the public trusted information from television weather experts more than they trusted their elected leader, even though weather experts were advising him. Cutter and Dow recommended that "to improve the credibility of state-elected and emergency response officials," the officials should post their advisories on the television weather programs. This advice is an example of the risk communication recommendation to *"work with other credible sources" to benefit from "trust transference."*[2]

A study of evacuation behavior during Colorado (U.S.) wildfires in 2002 revealed that "most reported [that] previous experience with false alarms had little effect on their decision whether or not to evacuate this time, and earlier lessons learned may have even helped them in the evacuation process." As in the hurricane study above, many people (more than 75%) got information from several sources before deciding to evacuate.[3] The authors of both evacuation studies commented on the common perception that false alarms lead to complacency, despite the (admittedly limited) data.

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[1] Dow K, Cutter S. Crying wolf: repeat responses to hurricane evacuation orders. *Coastal Management*, 1998, 26:237-252.

[2] Doney P, Canon J. An examination of the nature of trust in buyer-seller relationships. *Journal of Marketing* 1997, 61:35-51.

[3] Benight C, Gruntfest E, Sparks K. Colorado Wildfires 2002: Quick response research report 167. *Natural Hazards Center, University of Colorado*, 2002 (http://www.colorado.edu/hazards/qr/qr167/qr167.pdf, accessed June 29 2004).

Appendix Seven:
Brief examples of outbreak strategies in action

1. Inform and involve the public early: Avian Influenza in a western country

During an Avian Influenza outbreak, the Canadian government decided to transport poultry carcasses to a burial site outside the epizootic area. The government did not consult with the public in advance of this decision, and gave very little notice that the plan was about to begin. But the government did categorically assure the public that transporting the dead poultry in sealed plastic bags, in sealed trucks, was "safe." Local officials, farmers, and citizens in the Avian Influenza-free area rose up in civil protest of this plan. Truck drivers threatened to block roads leading to the proposed burial area. The government backed off its plan. Trust in, credibility of, and support for government leaders was harmed.

2. Inform and involve the public early: SARS in an Asian country

During SARS I, the Chinese government decided to rapidly build some desperately-needed new hospitals for SARS patients, outside the area most affected by SARS. The government did not consult with the public in advance of this decision, and began building the hospitals without fully explaining their purpose. Rumours spread that far more patients would be imported into this area than the government actually intended. Local citizens rioted, and destroyed the partially-built hospitals.

3. Public assessment, and responding to public concerns: SARS in Singapore

When Singapore had many SARS patients, citizens became angry when some potentially-exposed people, under home quarantine orders, broke quarantine and appeared in crowded public places. The government -- including its Prime Minister -- attended a series of public meetings to ask for citizen guidance on dealing with quarantine enforcement. Government leaders asked whether citizens thought the names of those under home quarantine orders should be published, in order to aid enforcement.

The government posed the dilemma of confidentiality and stigma on the one hand, versus the need to protect public health on the other. The citizens clearly expressed their wishes on both sides of the question, but on balance felt that confidentiality should be maintained, and other methods should be used to maintain the quarantine. Trust and confidence in government leaders remained high. Subsequent research showed that "public opinion of authorities' openness to communication was correlated with taking

preventive measures." In addition, the study showed that higher anxiety levels were also associated with increased compliance with SARS precautions.[1]

4. Public assessment, responding to public concerns, being transparent: Ebola

Sometimes "aiming for transparency" can work -- literally. During an Ebola outbreak, outbreak responders inadvertently increased local suspicion by taking patients behind an opaque fence. Upon realizing this, the team recruited local people to build a culturally traditional barrier fence which villagers could see over, so patients behind the fence could be observed. The outbreak team also had to place more trust in the local people not to reach across the barrier, putting some control back in local hands -- literally: people were instructed to keep their hands behind their backs to avoid reaching over the fence. In western countries, it took years of expensive research for urban construction companies to come up with a rather similar solution to public anger at the noise, dirt, and disruption near construction sites: data showed that when people could see what was going on at the construction site, they were orders of magnitude less upset by the disruption -- so virtually all western construction sites now have fences with openings people can see through.[2]

The Ebola fence example -- aiming for transparency, sharing control, expecting more of people -- illustrates at least two other risk communication principles as well:

1) Communication planning, like most planning, is "an iterative process." Making a plan, and then being ready to make course corrections along the way, are both necessary.

2) Making an effort to learn about your target audience's beliefs and perceptions can help avoid tactical, as well as communication, pitfalls.

5. Public assessment, and responding to public concerns: Masks during SARS.

For example, during the SARS outbreaks of 2003, experts had trouble changing many people's views about wearing masks in public. Experts repeatedly, and unsuccessfully, told the public masks were not medically indicated except under certain circumstances. Some officials even became publicly irritated when the public paid no attention.

Simple assessment of people's "mental models" about such factors as: their degree of confidence in the experts' competence; their sense of experts' candor; how they think diseases are transmitted; how they felt on crowded subways when others sneezed; confusion about words like "airborne" and "droplets"; and their assessment of their own chance of catching SARS -- plus some additional expert understanding about how people adjust to frightening new situations -- may have led to more effective key

[1] Quah SR, Lee H-P. Crisis prevention and management during SARS outbreak, Singapore. *Journal of Emerging Infectious Diseases*, 2004 (http://www.cdc.gov/ncidod/EID/vol10no2/03-0418.htm, accessed June 30 2004).

[2] Kindhauser MK, WHO, personal communication, 2004

messages about mask-wearing.

6. Apologizing humanly for prior misbehavior: U.S. secret radiation experiments.

An example of an unforgivably belated, but nevertheless moving, official apology: In 1993, U.S. Energy Secretary Hazel O'Leary had the unenviable job of telling the world about secret radiation experiments carried out on citizens during the Cold War:

> "We were shrouded and clouded in an atmosphere of secrecy. And I would take it a step further: I would call it repression....[I was] appalled and shocked [to learn of the tests] and it just gave me an ache in my gut and my heart."[1].

7. Trying to acknowledge uncertainty -- without the media's help.

During an Avian Influenza outbreak in Texas, U.S. CDC influenza expert Nancy Cox told the press: "Past experience with H5N2 viruses has indicated there is a low threat to public health....Nevertheless as we move forward with this situation, we must keep an open mind and really monitor the situation as we go." In an Associated Press report, her statement became: "Dr. Nancy Cox of the U.S. Centers for Disease Control and Prevention said she believes the bird flu strain found in South Texas poses little threat to people." And one of the nation's largest chicken producers issued a press release: "The virus in Gonzales, Texas, which has been typed as H5N2, has never in history been transferred to humans, according to Dr. Nancy Cox."

During the SARS outbreaks, U.S. CDC Director Julie Gerberding regularly issued balanced statements like, "Although we haven't seen community transmission, we're not out of the woods yet." Although many reporters quoted her correctly, headlines over their articles often read: "SARS Risk Low."

8. Building trust and credibility through consistent meetings with the public.

A highly visible leader who quickly establishes a consistent reliable routine of sharing information can be a source of reassurance, even in the face of bad news. This approach also helps keep rumours in check. Former Hong Kong Director of Health Margaret Chan discovered this when she spoke to the people of Hong Kong, every day at 4:30 p.m., for sixty straight days during the SARS outbreaks.

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[1] Blake ER. Understanding Outrage: How Scientists Can Help Bridge the Risk Perception Gap. *Environmental Health Perspectives*, U.S. Department of Health and Human Services, National Institutes of Health, 1995, 103:123-125.

Appendix Eight:
Online and other published risk communication planning and evaluation materials, training courses, and plans

Crisis Communication Handbook. Swedish Emergency Management Agency, 2003 (http://www.krisberedskapsmyndigheten.se/verksamhet/internationellt/crisis_communication_handbook_2003.pdf, accessed 8 August 2003).

U.S. CDC/PAHO Risk communication self-instruction course.
(Espanol: Curso de autoinstruccion: communicacion de riesgos)
(Portugues: Curso de auto-aprendizagem: comunicacao de risco) Pan-American Health Organisation and U.S. Centers for Disease Control, 2003
(http://www.cepis.org.pe/tutorial6/i/index.html, accessed 8 August 2004).

UK Resilience: Communicating risk. The Civil Contingencies Secretariat in the UK Cabinet Office (2004?) (http://www.ukresilience.info/risk/index.htm, accessed 8 August 2004).

Chartier J, Gabler S. *Risk communication and government: theory and application for the Canadian Food Inspection Agency*. Canadian Food Inspection Agency Public and Regulatory Affairs Branch, 2001 (http://www.inspection.gc.ca/english/corpaffr/publications/riscomm/riscomme.shtml, accessed 7 July 2004).

Although it is not a communication planning tool, this Canadian government document provides a clear overview of risk communication theory and practice in the context of food-related policy, regulation, and communication. After reviewing the literature and history, it emphasizes:

1. There is a need to strengthen "the bridge between communications theory and risk communication."
2. "[T]he relationship between the source of the communication and the recipient [is] one important factor, if not the most critical factor, in effective risk communication" because of the need to foster trust and credibility.
3. The document reiterates the importance of two-way dialogue, even in emergency management.

Tinker T, Silberberg P. *U.S. Agency for Toxic Substances and Disease Registry Evaluation Primer on Health Risk Communication Programs*, U.S. Department of Health and Human Services. 1997 (http://www.atsdr.cdc.gov/HEC/evalprmr.html, accessed 7 July 2004).

Like most communication evaluation guides, this one emphasizes that evaluation is an integral part of planning, not just a process that should happen during and after a communication campaign. This primer includes (excerpt from table of contents):

- Guidelines for Selecting Pretest Methods
- Sample Survey for Assessing Risk Communication Needs
- Sample Focus Group Case Study
- Guidelines for Analyzing and using Pretest Results
- Evaluating Communications To Special Populations
- Evaluation Tool: Risk Message Checklist
- Did It Work? Tips for Evaluating Communication Outcomes and Impacts
- Evaluation Options Based on Available Resources
- Factors To Consider in Midcourse Reviews
- Evaluation Case Example

U.S. CDC Guide E—Smallpox preparation and response activities: communications plans and activities, U.S. Centers for Disease Control, (http://www.bt.cdc.gov/agent/smallpox/response-plan/files/guide-e.pdf, accessed 21 August 2004).

This 21 page communications section of the U.S. CDC's smallpox preparation plan includes detailed planning guidance and many checklists, for pre-event, event, and post-event activities. The excerpt below outlines the "principles of crisis communication" on which the plan is based:
Excerpt:
Smallpox communication activities should be grounded in the guidelines that crisis communication experts, literature, and experience suggest for effectively addressing public concerns and fears. These principles of crisis communication include:

- Commit to the public and stakeholders continued open and timely communications. Adopt a policy of full disclosure about what is known and unknown.
- Acknowledge uncertainties about the event and its outcome. Avoid being overly confident in the initial phases of a smallpox outbreak. It is better to admit something is unknown than to make firm but unfounded declarations in an attempt to provide reassurance.
- Give detailed accounts of what is being done to address and control the smallpox outbreak.
- Give people specific steps they can take to protect themselves and their families, including how to get more information, the symptoms of smallpox to look out for, and where to go for immunization and/or care if needed.
- Avoid using technical jargon. Explain the situation to the public, media, and stakeholders in simple, clear, concise terms. Remember to consider the basics about your audiences when creating your messages: education, current subject knowledge and experience, age, language spoken/read, cultural norms, and geographic location.
- Prepare to address public panic, but don't assume that it will occur. Panic is much less common than imagined. Although it is common for literature on disaster communications to be replete with unfulfilled expectations of panicking "publics" this is not always the case. There are numerous accounts of how the public has acted responsibly and calmly in emergency situations. The SARS experience in Canada demonstrated that some people might not be concerned enough; particularly during the initial phases of an emerging illness and among those who are not in close proximity to the first cases. Be prepared for the challenges of both public panic, apathy, and denial.
- Use highly credible spokespersons who have been prepared for crisis communication with the public and the media.
- Acknowledge peoples' fear and express empathy, while giving them the information they need to put those fears into context.

U.S. CDC Crisis and Emergency Risk Communication Course (on CD-ROM), Atlanta, U.S. Centers for Disease Control, 2003 (http://www.cdc.gov/communication/emergency/cerc.htm, accessed 21 July 2004).

This very detailed training course offers (from its table of contents):

- Pre-event, Event and Post-event Communication Planning
- Psychology and use of Risk Communication Principles in a Crisis
- Working with the Media in a Crisis
- Spokesperson Trust and Credibility in an Emergency
- Crisis Communication Plans and the 9 Steps of Response
- Media and Public Health law
- Messages and Audiences Needs in a Crisis
- Bioterrorism and Emergency Risk Communication
- Meeting Partner and Stakeholders Needs
- Roles and Responsibilities in the Official Response
- Human Resource Management for Communicators in a Crisis

Peterson L, Specht E, Wight E. *The Technical Basis for the (U.S.) Nuclear Regulatory Commission's Guidelines for External Risk Communication.* Washington, U.S. Nuclear Regulatory Commission, 2004. (http://www.nrc.gov/reading-rm/doc-collections/nuregs/contract/cr6840/, accessed 21 July 2004). (The url leads to a link to a 374 KB pdf.)

> This lengthy document provides an excellent model for a thorough and detailed internal needs assessment for communication planning, with survey results, focus group results, interviews, questionnaires about communication needs and barriers, and an annotated bibliography. It is an unusual document, portraying with remarkable detail and candour the process of communication planning. Most published documents only offer the end-product. The process of developing communication policy and plans is difficult, and often carried out behind the scenes. This document allows other planners to follow the steps and even the anguish that can accompany communication planning. An excerpt from one internal survey – on the barriers the commission faces in communicating risk with external stakeholders – is included in an endnote.[1]

The following two sources are not available on line. The first is a risk communication handbook, currently in its third edition, which many frontline users find useful. The second is an invaluable resource for risk communication planning and evaluation.

Lundgren R, McMakin A. *Risk communication: a handbook for communicating environmental, safety, and health risks*, 3rd ed. Columbus, Batelle Press, 2004.

Fisher A, Pavlova M, Covello V, eds. *Evaluation and Effective Risk Communication Workshop Proceedings*, Washington, Interagency Task Force on Environmental Cancer and Heart and Lung Disease, 1989.

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[1] Here is an excerpt from one of the U.S. Nuclear Regulatory Commission's internal surveys:

What barriers does the NRC face in communicating risk with external stakeholders?

"...understanding the tradeoff between oversimplifying an issue and potentially misleading our stakeholders."

"Mutual distrust."

"Other agencies may have other agendas that lead to confusion and are not consistent with ours."

"Having to give technical answers to emotional questions."

Appendix Nine:
Alphabetical list of references

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