

## SPECIAL ISSUE

# Accountability between Experts and the Public in Times of Risk

David Malet

University of Melbourne

Mark Korbitz

Otero Junior College

*This article examines the responses of 150 study participants to a simulated bioterrorist attack in Pueblo, Colorado, USA. The study results indicated that, even among members of the public with higher levels of trust in governmental responses, public risk communications indicating minor risk levels would be rejected as insufficient. The data indicates that members of the public seek their own public health information from mass and social media, constraining the ability of emergency management officials to communicate risk levels. Further, it indicates that the public tends to perceive higher risk levels than the evidence warrants, expects service responses in line with their perceptions, and view public officials as not fulfilling their obligations if they respond with less extensive remediation in line with expert opinion. We therefore question whether public pressure on public officials due to scientific illiteracy is contributing to unnecessary costs in disaster management.*

**Key words:** *accountability, bioterrorism, risk communications, scientific literacy, emergency management*

The provision of public services during and after emergencies presents unique challenges because they are non-routine, sometimes ad hoc by necessity, and occur in circumstances of public unrest. Particularly in the event of unforeseen disasters, citizens who are also experiencing affective unease and significant displacement may question the capability of government agencies to deliver effective responses. Restoring public confidence requires effective communications about risks and responses, and establishing broad agreement that agencies are responsive and accountable to public concerns.

A dilemma arises when the services the public demands for do not match the approach that technically informed experts deem appropriate for addressing a problem. The problem is

exacerbated in public health emergencies when public compliance is operationally necessary for establishing safety. When an involved public requests disaster recovery measures that are costly, and that are possibly unnecessary for remediation but that may be required to restore confidence, what is the appropriate response? If the public does not trust response officials, is the best emergency response to try to educate the public and change its preferences, or to quickly restore public trust by responding to popular demand and at least appearing to be accountable?

This article presents results from an experimental study of public perceptions of risk levels during the decontamination of a population center after the release of a biological agent. In their open-ended responses, majorities of

participants consistently expressed preferences for mitigation and risk management approaches that would yield the lowest levels of exposure risk, even when these were described to them as significantly more disruptive and costly than recommended alternatives. Participants also expressed a marked distrust of, or lack of confidence in, government agencies responsible for health and environmental safety. These attitudes were present at the outset of the experiment rather than stemming from a description of ineffectiveness of these agencies during the experiment itself.

The findings indicate that emergency response agencies must take into account public preferences and attitudes that are contingent on pre-existing biases rather than simply on the science of hazard mitigation, and that these may be subject to local attitudes toward government. These constraints on the public's assessment of the provision of emergency services produce additional calls for accountability, and are factors that planners must take into account before and during hazard response. This may particularly important when viewed in the context of Ulrich Beck's observation in 1986 that there has been a transition from societies dominated by 'natural' hazards and wars to more risk-driven societies whose fate is determined by technologies, industrial issues and information dynamics (Albeverio et al. 2006: 8-9).

### **Biological Attacks and Public Trust**

The 2001 anthrax mailings in the United States killed five people, sickened more than a dozen others, with total cost of decontamination and health care to the public sector approximately \$1 billion. One of the key sources of uncertainty was how to remediate office buildings which had been contaminated with enough highly resilient *Bacillus anthracis* spores to create a lingering health threat many times the estimated lethal dose. Without established clearance guidelines, the consensus expert opinion was that a standard of no living spores would be necessary at contaminated sites. With such rigorous standards, a lack of prior experience in this type of remediation, and different levels

of resources available for different sites, full remediation took anywhere from six months for a US Senate office building to six years for the site of a media corporation (Campbell et al. 2012: 108-109).

Despite this high profile case, bioterrorism is still regarded as a new and exotic type of disaster by the general public, which remains unfamiliar with the details of the 2001-2002 contamination and cleanup. Unfamiliar threats can be particularly frightening, and particularly when they involve uncertainty about detection and whether the perpetrator of an intentional release might strike again (Reynolds and Seeger 2005: 44-45; Raber, Hibbard, and Greenwalt 2011: 271). While individuals may not worry about toxic chemicals that they encounter on a daily basis, the fear of unusual occurrences may cause them distress even if the risk levels are comparable (Rogers et al. 2007: 281). The challenge for officials attempting to restore confidence after a biological release continues as long as the public remains concerned about the possibility of latent contamination or of subsequent attacks.

Both public safety and rapid economic recovery are significant concerns for affected communities, and community leaders should be incorporated in efforts to minimize long-term disruptions to the area. Because the fear of potential contamination, even if unfounded, can remain well beyond the potential for exposure, confidence-building in exposed areas is likely to be a protracted process. It should ideally include 'a broad stakeholder group representing civic, community, and business interests' to develop 'mechanisms such as economic incentives to . . . stimulate re-occupancy' (Raber, Hibbard, and Greenwalt 2011: 271, 275, 278-279).

In the case of the 2001 anthrax attack, the most extensively affected properties were key government buildings, so convincing tenants to return did not pose the same challenge that it might have with commercial office space. Nevertheless, the perception of exposed employees at the contamination locations of a lack of transparency and accountability in both health and remediation had a significant negative impact on trust in response agencies. Even

American Federal government employees reported decreased levels of trust in government resulting from what they described as unprepared and inconsistent actions and communications by response agencies. Some reported that they discontinued recommended prophylactic antibiotic treatment because they did not have confidence in the responding agencies that prescribed it (North et al. 2005).

Interview data with affected Federal employees also shows that African-Americans perceived racial discrimination in treatment and experienced decreased levels of trust in government because they believed that black postal workers did not receive the same degree of attention as predominantly white congressional staff. In telephone surveys asking respondents what prophylactic treatment they would seek in the event of a mass anthrax contamination, less willingness to comply with safety recommendations was evident among participants from minority groups which had lower initial levels of trust in government. In other studies, African-American respondents reported lower levels of confidence in anthrax vaccination programs, a finding described as related to the legacy of the Tuskegee experiments in which black subjects were intentionally exposed to syphilis without consent (SteelFisher et al. 2012: 402-403). In this instance, cultural context contributes to the pre-existing schema through which government policies and actions are analyzed by different segments of the public (Axelrod 1973: 1248-1266).

Thus officials coordinating emergency response are not only judged on the merits of their performances, but the evaluation of their performances is likely conditioned by the affected population's prior attitudes toward government, which also influences their degree of compliance with safety recommendations. Rubin, Chowdhury, and Amlot (2012: 385, 390-391) note that 'trust plays a crucial role in ensuring that people attend to messages... In both experimental and real cases of decontamination, pre-existing levels of faith in the response were the key determinant of public decisions about appropriate protective measures to take commensurate to risk levels.'

Various studies indicate that 'trust in government usually rises significantly in the early phases of a crisis but erodes afterward' (Maurer and O'Hare in Maurer ed. 2009: 454). In addition to this decline once the initial threat has passed, 'research suggests that the public do not believe that the actions of the authorities responsible for providing protection against the consequences of many risks and disasters are adequate, and many individuals have little faith in the information they receive' (Rogers et al. 2007: 283). While much of this data was collected in the United States, other studies from Australasia, Europe, and Asia also indicate that public confidence can be improved with risk communications, suggesting that failure to communicate risk effectively and credibly would damage trust in government (Ramirez, Antrobus, and Wilson 2013: 6-7).

And the initial levels of trust among the public will vary by constituency, giving officials a potentially more demanding task depending on the prevailing attitudes toward government. As with the African-American government employees in Washington DC, other demographic segments, including rural populations, demonstrate lower levels of trust in government and receptivity to emergency response messaging (Maurer and O'Hare in Maurer ed. 2009: 456). Broadly speaking, 'Citizens' trust in local government is shaped not only by individual-level factors but also by city-level factors such as income inequality, ideological polarization, political institutions, racial fractionalization, and size of population' (Rahn and Rudolph 2005: 530-560).

However, the public tends to put a higher level of trust in government pronouncements about health and safety risks than it does in the warnings of nongovernmental organizations because officials are presumed to have more specialized knowledge than citizen activist groups do. Likewise, the possibly subjective perception that the government appears committed to addressing the hazard produces the largest positive effect on public trust in study of environmental risk, so even initially skeptical audiences may be won over to a degree (Peters, Covello, and McCallum 1997:

51-52). The credibility of cleanup experts is therefore an important commodity.

But it is one that is vulnerable to changes in public opinion about whether agencies are doing enough to help. Our findings indicate that, for some respondents, dissenting voices can easily cause official pronouncements about risk levels to become contested and change perceptions about whether government agencies are responding adequately. Furthermore, experts may have difficulty in communicating technical information with decision-makers and the broader public because they are often 'speaking different languages, solving different problems, disagree about what is feasible, and see the facts differently,' (Rogers et al. 2007: 282) whereas activist groups may be better prepared to provide information that is affective.

Indeed, the existence of civil society and free media make the dissemination of contending and dissenting analysis almost a foregone conclusion and something response agencies must consider in the evolving public narrative about whether or not they are fulfilling their responsibilities. Respondents in various studies have reported receiving information in emergencies from a wide range of different sources, 'affirming the importance of [the capacity for] communicating a consistent message through multiple channels' (Rubin, Chowdhury, and Amlot 2012: 390-391).

In the end, agencies are held accountable in part based on affect and a narrative shaped by external factors rather than performance-based metrics. Therefore 'public perception, such as acceptance of proposed decontamination technologies' is a consideration that must be evaluated by command and stakeholders because 'remediation must be defensible to regulatory agencies, stakeholders, and the public' (Campbell et al. 2012: 109).

### **Applying the Theory: An Experiment in Colorado**

While an increased focus since 2001 on disaster management as a critical field of public administration has yielded these reviews of best practices and experimental data, there has

been a lacuna in the absence of longitudinal studies of public attitudes during extended recovery efforts. While many emergencies such as bushfires or cyclones may pass very quickly, recovery efforts inevitably take far longer. While there may be some public judgment about whether agencies should have been better prepared for an eventuality, perceptions of governmental accountability to the public need can be expected to form during the recovery period on the basis of efficient and effective provision of services. We therefore set out to examine risk messaging and public perceptions of government performance during a protracted cleanup effort extending six months beyond the initial hazard.

Between September 2012 and April 2013, we sent simulated media reports detailing the recovery efforts after a deliberate mass biological contamination to 147 participants in and around the city of Pueblo, Colorado, USA. A principal goal of the study was to monitor changes in participant attitudes toward the recovery effort over time, including satisfaction with the provision of emergency services and economic stabilization efforts. The emphasis was on the public's understanding of risk levels related to particular developments as the scenario unfolded. We were particularly interested in public toleration of what response agencies deemed to be acceptable risk standards as opposed to more exacting standards of zero detectable presence of infectious agents.

While Pueblo was selected because it was the home of the organizations conducting the study, the demographics of the community make it worthy of study because it features a number of populations that both express lower levels of trust in government and that are typically more difficult to contact in emergencies. Pueblo, with a metropolitan population of 150,000, is the largest city in southern Pueblo, but isolated from other major population centers. According to 2010 Census data, one quarter of the population of Pueblo County lives below the poverty line. The ethnic composition is 40 percent Hispanic, which includes significant numbers of migrant workers who have limited English proficiency. Many of these laborers are

engaged by the local agribusiness sector based in the surrounding rural communities that are served by Pueblo County agencies in emergencies as the seat of regional government.

The composition of the volunteer panel was intended to be demographically representative of the community, but in practice we were unable to enroll indigent or non-English-speaking participants. Additionally, eighty-four percent of the volunteers reported some higher education, whereas only twenty-one percent of the community holds tertiary degrees. While it can be speculated that there was selection bias in that participants who volunteered uncompensated for the study would have interests in homeland security, this was mitigated by the low response rate of enrolled participants: Only 33 actually sent responses, with an average of nine responses to the 17 messages they received.<sup>1</sup>

In the fictional scenario presented to participants, one week after the end-of-summer Labor Day holiday weekend patients begin to appear in area hospitals with different anthrax-related symptoms. At the same time, livestock around the region begin to manifest an illness that is soon diagnosed as Foot and Mouth Disease (FMD), a virus which is not dangerous to humans and that has been absent from the United States for nearly a century. Anthrax spores are soon discovered in the metropolitan water supply, and reports emerge that an individual was sighted over the holiday dumping canisters into the lake that is both a reservoir and major regional recreational facility (and therefore a significant source of revenue). Likewise, high concentrations of the FMD virus are discovered at the State Fairgrounds near the city center, and it is speculated that the animals were deliberately infected during the State Fair (equivalent to a Royal Show in Australia) that was held over the holiday weekend.

The State Fair brings tens of millions of dollars of revenue to Pueblo annually, and the facilities are used for a number of other major events too, so a loss of confidence in the Fairgrounds would likewise have major economic consequences as well. Finally, as the United States had been designated FMD-free for decades but would now be banned from

exporting meat, the consequences for the local and national cattle livestock industries would be potentially catastrophic. The scenario therefore entailed the necessity to balance the physical remediation of contaminated sites in a minimally disruptive manner with measures to restore confidence and commerce to a region where much of the population was already economically marginalized.

Participants in the study were volunteers who were assigned to three different groups to achieve the best possible representation of the Pueblo region's demographic and socioeconomic profile. The different groups received the same information using different media: Email, a Facebook group page where respondents were instructed to reply privately to the moderator, and a Facebook group page where respondents were instructed to post their replies publicly and encouraged to respond to each other. Somewhat to our surprise, the more presumably 'interactive' the medium was, the lower the response rate and greater the participation drop off, although participation in all three groups declined over the course of the study, most markedly after one month of the exercise.

We sent participants a total of 17 communications over a six month period, with multiple messages during the first week of the study to simulate the flurry of media attention that such an incident would initially create, and then one message every two weeks for the remainder of the experiment. Communications were labeled as 'media reports' and sometimes bore the name of particular newspaper or television news website to reinforce that participants were reading regular media coverage of the scenario, rather than receiving information from advisories from response agencies, as we would expect most to do in real life. While there is a wide body of literature of the use of experimental methods to determine public policy and political preferences, as it was neither possible nor desirable to make participants believe that the scenario was a real event, our objective was determining attentiveness to risk communications and changing reactions to them over time<sup>2</sup>. At the end of the study, participants were invited to participate in group discussion

exercises to provide additional information about their reactions to the scenario.

## Findings

### *Risk Perceptions*

One striking phenomenon from the responses to the first messages (Day 1 of the scenario) was the high number of respondents who questioned the initial alert message sent by the Pueblo City/County Health Department, the only official public communication by a government agency among the 17 simulated messages offered in the scenario. Despite the fact that participants were aware that they were participating in a risk communications exercise related to biological decontamination, 1 in 5 respondents in the social media groups expressed doubt that any anthrax exposure or unusual biological release had actually occurred when they received the notification that local and Federal agencies had observed anthrax symptoms in hospital patients. The figure rose to nearly one third of the email group (many of whom lacked Facebook accounts, skewed older and included more participants who declared that they were familiar with anthrax cases). Views changed fairly quickly, although one participant continued to deny an anthrax exposure on Day 3 even when the messaging detailed that the infections had been confirmed. The responses indicate that segments of the public may be disinclined to trust government sources even when they present verified information.

Furthermore, only a minority of respondents who described where they would turn for information said that they would rely on official sources. Only 2 in the email group noted that they would seek information from government websites, hotlines, or offices, as compared to 6 who stated that they would turn to mass media sources for information or look it up themselves on the internet. Another, who stated that she would seek information about anthrax from a relative who was a police officer, also wrote 'I would not contact public officials for information as I do not believe they would tell me the true story of what is going

on.' Among the social media respondents who replied that they would be interested in safety information, a similar 2 said they would use local sources while 4 said they would turn to mass media, one of whom emphasized that she would turn to local television news coverage because she expected the most thorough information from that source. Another replied that 'you go look it up' (online) when she encountered uncertainty about anthrax transmission. Overall, the evidence indicates that most of the public will likely receive their information in an emergency via traditional media and online sources, and that public perceptions of government response will therefore be shaped in part by media coverage rather than purely by expert response.

### *Demands for Stringency, Implications for Accountability*

Despite the initial skepticism toward the scenario events expressed by some respondents, the most common reactions throughout the six month exercise were demands for the most stringent methods to be used for cleanup in the name of public safety, and a readiness to blame response agencies or government in general for any results other than risk levels reduced to zero with rapid dispatch. Respondents also generally expressed preferences for safety precautions that far exceeded anything being recommended in the scenario by authorities. The data from this case indicates that the public is unsettled by any displays of uncertainty about remediation methods or risk levels, and that they are readily prepared to hold public officials accountable for what they deem to be failures to uphold public safety in the name of expediency.

Even on Day 1 of the scenario, when the only caution offered was to monitor health for flu-like symptoms, multiple respondents offered without prompting that they would avoid public places, consider relocating to rural properties, pull their children from school, stock up on supplies, burn clothes if they had attended the State Fair, and avoid local meat and produce. Others - in a result consistent throughout the scenario - stated that if they were not personally



affected by the events described (i.e. their water came from another supply, no one they knew frequented a contaminated location, etc.) they would not take any additional precautions, even those recommended by authorities.

In response to the message for Day 3, which contained a public alert to boil drinking water for 10 minutes, few respondents in total stated that they would comply, with more asking whether tap water might still be used for other purposes. Others questioned the utility of boiling water, all of whom stated that they 'knew' that this would be ineffective against anthrax spores. But the most common reaction - expressed by approximately one-third of respondents - was that they would only use bottled water regardless of the safety advisories, and a number stated that they would attempt to stockpile supplies because they expected shortages and even riots over water access.

Message 5 (Day 15) of the scenario indicated that anthrax spores were present in two city water pipes, but that response agencies did not believe that there was a significant public safety threat. It noted that treatment options included super-chlorination of the city water supply that would kill 97 percent of any spores while leaving the water potable, or an even higher level of chlorination that would kill 99.99 percent of spores but leave the city without water for up to several days. The message noted disagreement between experts on the best course of action. Among those respondents who weighed in on this debate in their replies, none sided with expert opinion that no additional measures would be needed, 2 favored the less intrusive approach because they feared the consequences of disruption if the metropolitan water supply were to be disrupted for days, and 5 - all of whom stated that they would already be drinking bottled water - strongly demanded maximum remediation efforts. No respondents ever subsequently complained about the portrayal in the scenario of the most disruptive approach, but they did object to the depiction of disagreement among responders.

As the exercise continued, respondents continued to suggest stringent measures beyond those recommended by authorities in the scenario, including culling all livestock in the

region to prevent potential FMD contamination, jail sentences for individuals not complying with decontamination procedures, and testing the water pipes of every individual home in the area. Others insisted that they would continue to use only bottled water even when decontamination had been declared successful.

And while most respondents said that they supported efforts detailed in the second half of the scenario to reopen the Fairgrounds to minimize economic damage to the community, nearly all stated that they would not be comfortable attending events there - although some were open to doing so eventually 'after quite a few individuals went and didn't die,' as one put it - and that they expected pressures from political and business interests to trump public health considerations and result in areas being declared safe prematurely.

At the same time, protestors, portrayed in the scenario as charging that the chemicals used in the remediation of contaminated sites were carcinogenic and producing illness. These protestors received a mixed reception that initially seemed contradictory with individual respondents' other stated attitudes and preferences. Some respondents who insisted on zero risk levels and expressed confidence in response agencies stated that the existence of protests caused them to be less confident that recovery efforts were being pursued effectively, while respondents who expressed little confidence in government from the outset also dismissed protestors as cranks who would be complaining no matter what the circumstances. On the aggregate, however, the description of a group challenging the official risk standard messages was sufficient to produce expressions of reduced confidence in government and greater demands for accountability.

### ***Attitudes toward Government and Standards of Accountability***

Overall, a skeptical attitude toward the effectiveness of government was evident across participant responses both during the experiment and in the discussion sessions that followed it. This may be a product of local political culture, particularly in a study with a significant

number of participants from rural communities and traditionally underserved urban minority groups. However, arguably self-selection for a homeland security study produced a sample with *more* favorable attitudes toward government than the general population of Southern Colorado.

Still, even if other populations have higher general levels of trust in government than the volunteers for this study, participant comments indicated a greater receptiveness to information delivered by local agencies or familiar public figures who were presumed to be more invested in the fate of the community. Some typical reactions:

'I would want to be hearing locally from people I trusted';

'But if they're not here and they're not living it, do they really care?';

'Well, and you wonder who these experts are that they bring in. Who would know that kind of stuff?' - '[It's] scary because it seems like we could figure things out a lot faster, just with technology and stuff.'

'It seems that the CDC [Federal Centers for Disease Control] is willing to throw Pueblo and its citizens to the wolves . . . Are they using us as an experiment to see how far the spores and FMD will spread?'

'I don't trust the government in the first place . . . I won't be like, hey they're serving hot dogs out at the reservoir - let's go!'

Others indicated that high levels of transparency would mollify them. One participant suggested that she would be reassured by independent testing to confirm the findings of government agencies. Perhaps this preference is due to an expectation that third parties could provide a disinterested outcome while government is presumed to have such a vested interest in the economic stability of the community that it will systematically underestimate health risks to the public to maintain normalcy. Some typical reactions:

'I always worry that they're just telling us a little bit.'

'They're going to compromise health over the dollar'

'They're probably so conservative to keep you from panicking at first that they might not make wise decisions.'

'Finally the CDC, State of Colorado, and EPA [Environmental Protection Agency] are taking it seriously by treating the water!' (In response to the decision to use the highest levels of chlorination. Presumably a decision to pursue a less stringent approach would have been evidence that authorities were not actually concerned with achieving the best outcome.)

Participants also reacted uniformly negatively to any depiction of policymakers or scientific experts being uncertain or at odds over the most effective remediation approaches or how long it would take to certify that a site had been decontaminated. Rather than seeing an open debate as a sign of effective deliberation, respondents instead interpreted this type of transparency as incompetence or politics at work. At the same time, while a few respondents dismissed the protestors depicted in the scenario, even more stated that they wanted these outside voices to have a fair hearing or that they were more inclined to believe them over government agencies.

### **Independence Rather than Transparency**

The findings from this study were consistent with previous research into public risk communications and emergency response. As a longitudinal panel experiment, it indicated that interest in and receptivity to emergency risk messaging would decline quickly among most participants, replaced by a heuristic evaluation of response agency performance based on attitudes toward government. The study population in the Pueblo area consistently expressed misgivings about government and indicated that they would have felt more reassured by 'independent' appraisals. This result may be due to the unique demographics of the population, but routinely employing and external evaluation in support of remediation



efforts would make for both good public relations and effective administration.

Once an emergency situation has ended, however, the greatest challenge to ensuring accountability lies with the public: A lack of scientific literacy, combined with an apparent lack of interest in the details of the situation as expressed by some participants who stated that they would have preferred to receive only brief lists of action items, would presumably make it difficult to evaluate the information about remediation efforts presented to them. Put another way, many members of the public would likely not be able to tell whether or not they were receiving good recommendations from authorities. At the same time, the results of this study raise the question of whether pressure on public officials from the engaged members of the public is contributing to unnecessary costs in disaster management due to scientific illiteracy.

These factors would make truly holding officials accountable for their performances during remediation problematic, particularly in situations in which the clean-up goes 'well enough' to avoid public condemnation, because any pressure to implement lessons learned would stem entirely from internal stakeholders. The establishment of some independent oversight body, perhaps with private and third sector consulting members, could be the best solution not only for establishing public trust but also for telling the public 'no' when warranted and holding the public sector accountable by evaluating its performance in disasters.

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## Endnotes

1. This study received human subject ethics clearance from the Institutional Review Board of Colorado State University-Pueblo.
2. Some of the most comparable examples include Iyengar and Kinder, 1987; Merolla and Zechmeister, 2009; Raber, Hibbard, and Greenwald, 2011; and SteelFisher et al., 2012.

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