The role of environmental health in disaster management: a qualitative study of
Australian experiences

DEANNA ELDRIDGE & THOMAS D. TENKATE

School of Public Health, Queensland University of Technology, Kelvin Grove,
Queensland, Australia

Correspondence: Thomas Tenkate, QUT School of Public Health, Victoria Park Road,
Kelvin Grove, QLD, 4059, Australia, Ph: 61-7-3864 5790, Fax: 61-7-3864 3369,
Email: t.tenkate@qut.edu.au
Abstract

Even though environmental health is widely considered to be an integral component of disaster management, limited research has been conducted into this topic. Using a qualitative approach, in-depth interviews of practitioners were undertaken in Queensland, Australia, to explore the role of environmental health in disaster management and determine how this role is perceived by those internal and external to the profession. The major themes that emerged described a process in which the ‘view of health’ was socially constructed and this was instrumental in shaping perception of the environmental health role in disaster management. This role was also found to be undergoing renegotiation due to a complex process of: challenging the socially constructed view of health, raising the profile of the profession and achieving increased representation in disaster management. Ultimately, increased recognition and a heightened environmental health profile will result in a more effective disaster management system and have carry-over effects to day-to-day activities.

Keywords: disaster management, environmental health, role, view of health
Introduction

In recent years disaster management has been elevated to the forefront of consciousness in Australia and many other countries. This is in part due to a realization that the previous arrangements may not be adequate to meet the range of emerging threats. The terrorist attacks of September 11, 2001, the Bali Bombings in 2002 and 2005, the London Bombings in 2005 and fears of bioterrorism have resulted in a changed environment for disaster management in Australia and internationally (Bradt, Abraham, & Franks, 2003; Burkle, 2006; Caldicott & Edwards, 2002; Fisher & Burrow, 2003; Noji, 2001; Vinen, 2003).

Disaster management structures must continue to be effective for natural disasters, such as cyclones and bushfires, tsunami, infrastructure or technological failure and heat waves (Abrahams, 2001; Emergency Management Australia, 2005), but also need to ensure that appropriate mechanisms are in place to respond to emerging diseases, such as Avian influenza and SARS, and the threat of pandemic influenza (Loeb, 2004; Srinivasan et al., 2004). Essentially, the changed environment for disaster management has meant that new hazards must be identified and protected against in addition to existing hazards, requiring extensive reviews of disaster management structures (Armstrong, 2003; Berg, 2004; Caldicott & Edwards, 2002; Emergency Management Australia, 2003).

Despite environmental health being an integral component of disaster management, the specific role of environmental health practitioners in disaster
management was rarely investigated until after the terrorist attacks of September 11, 2001. Since then, a substantial amount of literature has emerged; however, this has consisted primarily of descriptive accounts, opinion pieces, such as editorials and interviews, and reports (Berg, 2004; Fabian, 2002; Fabian, 2004; Forsting, 2004; Lyman, 2003). Much of this literature focuses on the roles of environmental health professionals in the context of terrorism or bioterrorism; however, the emergent themes can be applied to many large-scale disaster situations (Fabian, 2002; Forsting, 2004; Khan, Morse, & Lillibridge, 2000; Noji, 2005; Noji & Toole, 1997).

It is clear from the literature that a number of issues for environmental health in relation to disaster management require further research. The most common theme is that there is ambiguity in the role of environmental health in disaster management, particularly in its distinction from the broader roles of public health, and this is exacerbated by a lack of research in this topic (Fabian, 2002; Forsting, 2004; Lyman, 2003). Other themes that have emerged relating to environmental health in general and in the context of disaster management include:

- The professionalisation of environmental health (Brimblecombe, 2003; Kotchin, 1997; Roberts, 1996);
- The representation, profile and visibility of the environmental health discipline (Berg, 2004; Emergency Management Australia, 2003; Fabian, 2002; Fabian, 2004; Logue, 1996; Lurle, Wasserman, & Nelson, 2006; Lyman, 2003);
- Debate surrounding the separation of environmental health from public health (Kotchin, 1993; Kotchin, 1997; Leggat, 2003; Logue, 1996);
- The power and politics involved in role negotiation (Berg, 2004; Bashir, Lafronza, Fraser, Brown, & Cope, 2003); and
The top-down driven approach to constructing disaster plans (Bashir et al., 2003; Rasmussen & Jansen 1998).

Given this lack of research into this increasingly important topic, we conducted a rigorous qualitative study during 2005 in Queensland, Australia, to explore the role of the environmental health discipline in relation to disasters, and how this role is perceived by others. This study also helped to explore the broader role of environmental health and the perceptions held by environmental health practitioners and those external to environmental health.

**Methods**

This research employed a rigorous qualitative approach in which in-depth interviews were conducted with ten experienced practitioners from the areas of disaster management, environmental health and public health.

**Qualitative methodology**

This study was grounded in the epistemological principles of social constructionism and guided by the theoretical tenets of symbolic interactionism. The research framework is depicted in Figure 1. Social constructionist inquiry is concerned with discovering the ways in which individuals and groups create their perceived realities (Gergen, 2003) and was applied in this study because the focus was on the function of social processes in shaping the role of environmental health in disaster management. Furthermore, people’s knowledge of environmental health dictates how they act towards and within the environmental health profession.
Symbolic interactionism is a theoretical perspective that provides a link between the examination of the social processes that shape knowledge and the ways in which human beings act upon, reproduce and modify that knowledge. The foremost objective of symbolic interactionism is to portray and understand the process of the construction of meaning.

There are however, a number of criticisms of symbolic interactionism, with one in particular (that it neglects methodological issues) of relevance to this study. This criticism led to the development of grounded theory, which is a systematic method for organisation and analysis of qualitative data (Crotty, 1998, Liamputtong & Ezzy, 2005). Grounded theory was applied in this study as it provides researchers with a way to study the behaviour and interaction of humans, in order to “conceptualize behaviour in complex situations, to understand unresolved or emerging social problems, and to understand the impact of new ideologies” (Chenitz & Swanson, 1986, p. 7).

Sampling and recruitment
Participants for this study were recruited through the combined use of two sampling methods: purposive and snowball sampling. Purposive sampling is deliberately a non-random method of participant recruitment. It is commonly used in qualitative research and is particularly useful for obtaining a sample of a group of people with a similar, specific characteristic for study and when experience of a phenomenon is of interest (Bowling, 2002, Streubert & Carpenter, 1999). Snowball sampling occurs where recruited participants recommend further potential participants with in-depth knowledge of the research subject matter. This method was useful in this study, as the
population of interest is well-networked and it would otherwise have been difficult to identify and access appropriate participants.

Sample size determination is a complex issue in qualitative research and essentially one of breadth versus depth of data, balanced with available resources. Some researchers advocate the idea of continuing data collection until saturation of themes occurs or where no new themes are emerging (Glaser & Strauss, 1967; Strauss & Corbin, 1998; Streubert & Carpenter, 1999). However, others argue that the concept of saturation is flawed because there can be no surety that new participants interviewed at a different time would not reveal new themes and thus that the idea of saturation is a myth (Morse, Barrett, Mayan, Olson, & Spiers, 2002; Streubert & Carpenter, 1999). In this study, data collection ceased after ten interviews, when the data had sufficient depth to explore the dimensions of the phenomenon of interest.

**Participant demographics**

In this study, the participants averaged, 22.5 years of experience in their respective fields, with some having extensive international experience either through aid organisations or the military. The sample included four environmental health officers, a public health medical officer, public health and environmental health managers and a disaster management coordinator from both local and state levels of government.

**Data collection and analysis**

In-depth interviews were conducted, using a semi-structured, face-to-face format. Interviews lasted between 40 and 60 minutes, were tape-recorded and transcribed for analysis. The analysis process proceeded as follows: transcription of interviews,
participant validation, preparation of transcriptions for analysis, coding – open, axial and selective using grounded theory methods described by Strauss & Corbin (1988), and thematic analysis.

*Ethics*

Ethical clearance was obtained from the Queensland University of Technology Human Research Ethics Committee and the Queensland Health Human Research Ethics Committee.

**Results and Discussion**

The data analysis showed the conceptualization of the environmental health role in disaster management as ultimately being a result of the socially constructed meaning of ‘health’, which is held by people external to public health and environmental health. As demonstrated in Figures 2 and 3, there are two primary processes by which this occurs and the key themes that emerged are described in detail in the following sections. The results also identified a disjuncture between the perception of the role of environmental health by environmental health practitioners and others involved in disaster management.

*Relationship of environmental health & public health*

Although most of the participants were working in environmental health, they generally referred to themselves broadly as public health practitioners. This conceptualisation therefore affects how environmental health practitioners and other disciplines involved in disaster management see the role of environmental health, and is important when considering the results, particularly as there has been some debate
in the literature regarding a need to clarify the distinction between environmental health and public health (Kotchian, 1997; Leggat, 2003).

*View of health*

This emerged as the core category, representing how the role of environmental health is defined and also how the role is currently being negotiated. The social construction of ‘health’ and everything represented by ‘health’ in disaster management was found to occur through a complex process of interaction between four concepts: visibility, politics, public perception and recognition (refer to Figure 2). The resulting meaning that is attributed to health determines the role of environmental health as it is perceived by those external to the environmental and public health professions.

The view of health has significant ramifications for the interaction of environmental health in disaster management. The conceptualisation of health by those external to public health and environmental health in Queensland is generally that health is both clinical, relating to the observation and treatment of patients, and medical, relating to the practice of medicine through health maintenance or treatment of disease. Essentially, this has an individual patient focus. The ‘alternative’ view of health is that health has a dual role: the medical role as has just been described, and the role of maintaining the health of the population. These differing views of health result in different outcomes for the role and profile of environmental health.

Participants indicated that if the clinical/medical view was dominant, the public health response to disasters would be neglected in favour of a medical response, which causes frustration for the environmental health personnel involved.
Therefore, a common theme was that the medical view of health that seems to dominate in Queensland has relegated public health, and therefore environmental health, to second place.

*Visibility*

The concept of visibility assists in the construction of public perception of the profession and also the recognition of the profession. The participants recognised a strong association between the low visibility of the profession and the conceptualisation of a clinical/medical view of health.

Due to this lack of visibility, the environmental health role was conceptualised as lacking significance, due often to its lack of immediately observable/measurable results and the subsequent lack of attention and value attributed to the profession, by both the public and government agencies. As such, two concepts strongly related to visibility were public perception and recognition. These concepts have a direct influence on the conceptualisation of health, and thus the environmental health role.

*Public perception*

As the public primarily interact with the medical side of the health system, this shapes their perception of health as relating to the treatment of health-related problems on an individual basis. This then creates a lack of recognition for environmental health, due to the influence of the public on political decision making.

Additionally, participants believed that there was disjuncture in the role of environmental health as perceived by environmental health practitioners and the
public. This was primarily attributed to the terminology that is applied to the profession, with confusion between such concepts as the ‘health of the environment’ and ‘environmental health’. Berg (2004) sees this misrepresentation as an opportunity for environmental health, due to the increasing emphasis that environmental groups place on human health and the higher profile of these groups as opposed to the environmental health field. The advantage then is in the opportunity for the environmental health field to state its case to the public and communicate the importance of the field.

**Politics**

A common theme was that the political view of health is ultimately shaped by public perception. Therefore, as the public perception of health is dominated by the medical view, this shapes the focus of service provision by State governments. This relationship between the view of health, public perception and politics is clearly articulated by one participant: “If the public says you’re not doing enough about health, the Minister [would] be more likely to say ‘well, more hospital beds’, or something like that”.

This conceptualisation of the primacy of the medical view of health translates into lack of recognition of the environmental health role and the subsequent lack of importance ascribed to it. The political conceptualisation of health is also inherent in the structures of health organisations, where an unequal distribution of resources favours medical services over public health services.

**Recognition**
The concept of recognition is strongly tied to visibility and public perception. Participants identified that the lack of recognition of environmental health under normal conditions can become enhanced in disaster situations, despite some recent improvements. As such, if the role of environmental health has not been recognised prior to a disaster, this creates specific problems in relation to disaster response.

However, environmental health practitioners with greater experience in disaster management tended to experience less difficulty with being recognised. As such, their interaction in the field had resulted in the renegotiation of the conceptualisation of their role by others in disaster management. Unfortunately, this recognition did not necessarily translate to all levels of disaster management or benefit all environmental health practitioners advocating for involvement in the field. Disaster management therefore represents a prime area of environmental health activities in which to raise the profile of environmental health, with benefits potentially flowing on into day-to-day activities.

**Representation**

In the process of renegotiating their role in disaster management, the environmental health profession in Queensland has sought increased representation in the field. The primary way in which participants felt that the profile had been raised was due to increased representation of environmental health and public health on disaster management groups (DMGs) at the local and district levels (refer to Figure 4). In Queensland, these DMGs are an integral front-line component of the disaster management system and consist of high-level local representatives from key agencies. However, under previous long-standing arrangements, only medically-orientated
personnel were the ‘health’ representatives on these DMGs and as such the environmental/public health role was not highly recognised or valued.

Improved DMG representation therefore has provided increased networking and relationship building opportunities and also has connotations of authority and influence through which environmental health can achieve increased effectiveness in a disaster.

In addition, the recent process of developing a State Health Emergency Response Plan (SHERP) in Queensland (refer to Figure 4), was also considered by the participants to have been integral to a renegotiation of the role of environmental health in disaster management. Again, this was principally through interaction with a number of agencies involved in disaster management, resulting in a higher public health profile. It is then through this process that the importance of the ‘alternative’ view of health, encompassing both medical and public health, is able to be emphasised.

Conclusions

This study explored the role of environmental health in disaster management and how this role is perceived by environmental health practitioners and others involved in disaster management in Australia, and particularly, Queensland. The study found that the environmental health role in disaster management is primarily a result of the socially constructed view of health. The traditional ‘medical’ view of health has resulted from a complex interplay of the concepts of visibility, public perception,
politics and recognition. As a result of this view of health, public health, inclusive of environmental health, has been relegated to second place behind medical health services within disaster management. Environmental health in particular has therefore had a very low profile.

In Queensland, representation on DMGs and the SHERP process has improved the profile of environmental health practitioners and environmental health in general. With representation on local and district DMGs, the value of environmental health is being increasingly recognised, resulting in a higher profile. Authority and influence also come with DMG representation, due to the development of relationships with those in charge of coordinating disaster response efforts. Ultimately, the heightened environmental health profile and increasing recognition by others involved in disaster management results in a more effective and appropriate response to disaster situations.

The results of this study highlight how disaster management has provided an opportunity for the environmental health profession to raise its profile and renegotiate the role of environmental health in disaster management. The results also demonstrate how the benefits of a higher profile, greater recognition and representation in the disaster management arena can carry-over to normal day-to-day activities. Environmental health practitioners are therefore encouraged to have greater involvement in disaster management as this provides opportunities to develop relationships with high-level personnel from other agencies, leading to role renegotiation and the ascribing of importance to the role played by environmental health in both disaster and non-disaster situations.
REFERENCES


