Emergency Management Strategies for Communicating Hazard Information

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In the past decade, increasing numbers of Americans have become exposed to natural and man-made hazards. This exposure stems both from changes in technology and in human settlement patterns. In some cases, citizens have been unknowingly exposed to health and safety risks for years; while in others, recent developments have produced new conditions that expose or threaten future exposure of populations to hazards. From the perspective of the local emergency manager, these circumstances introduce distinctive communication demands to educate the public about environmental risks both for impending dangers and longer term hazards. The objectives of any risk education program are twofold: (1) to make the public aware of the danger, and (2) to inform them about possible means of achieving protection. To accomplish these dual objectives, emergency managers must take into account both the public's perception of emergency management as well as the manager's own educational resources.

The purpose of this paper is to examine the process of communicating information to the public about environmental risks to increase the likelihood that citizens will adopt protective measures. To accomplish this objective, three issues in public education will be examined. First, an attempt is made to understand how emergency management agencies can become identified as credible sources of information within the community. Second, attention is given to establishing and maintaining viable communication channels through which local emergency management personnel can reach the public. The closing section of the paper discusses strategies for increasing citizen receptivity to officially designated prospective measures.

Agency Credibility

Establishing the credibility of an emergency management agency is an ongoing process. It takes place during times of acute threat and during normal times, outside the context of any impending disaster. The most basic challenge in this process is to make citizens aware that community emergency planning is underway and that a specific office has responsibility for its conduct.

Agency recognition is certainly a prerequisite for credibility. Given the recency of modern emergency management, one task of any public educational effort must include an element of re-familiarization with the legitimacy of the organization. At a minimum, citizens need to understand the nature of community emergency management and the structure of the organization that carries it out.

During times of crisis, public awareness of emergency management may be enhanced by making emergency services personnel visible to the community. During the disaster response period, for example, emergency services workers could be distinguishable from police or fire fighters who also routinely respond to emergencies. Such devices as pocket plaques, arm bands, distinctive garb, and clearly marked vehicles help identify emergency services personnel. By observing emergency service staff in the process of responding to community threats, citizens can then begin to appreciate their contribution to the preservation of public safety.

In non-disaster situations, efforts must also be undertaken to make emergency services personnel visible. If emergency managers are to execute their agency's charge effectively, some degree of organizational credibility that exists in disaster situations must be preserved in the absence of an acute threat. Wolensky and Miller[1] found that citizens have come to expect emergency officials to perform "backstage" duties and remain largely invisible on a day-to-day basis.

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A major thrust of citizen contacts during normal times, then, should be to establish the technical expertise of the manager and his/her staff. Making the public aware that emergency managers have both technical training and access to special equipment to cope with environmental threats sets the manager apart as having a *professional* approach to handling community threats. By establishing expectations of professionalism for emergency management personnel during normal times, public recognition of the agency is enhanced and credibility is heightened. The role of emergency management in local government is also clarified for the public through such informational contacts.

Communication Systems

The development and maintenance of positive public expectations and attitudes relies heavily on the types of contacts that are maintained with the citizenry during normal times. While much attention has been devoted to manager-public communication during disasters, scant consideration has been given to this process at other times.

Relative to emergency management, communication with the public has one of three general objectives. The first is *information exchange,* where a manager seeks citizen feedback on specific procedures and policies by providing information regarding the rationale underlying official actions. Second, *educational contacts* familiarize citizens with the nature of and need for emergency management. Finally, *support-building exchanges* are those in which the manager seeks to enhance the credibility of the organization in the eyes of the public. A variety of techniques for accomplishing these objectives are available to the emergency manager.

Periodic educational contacts with the community can be made through the use of either mailed brochures or interviews with the media. For relatively low cost, one can develop educational brochures which can be mailed in bulk to citizens. Such brochures have the advantage that they serve as written information which can be retained for future use and as reminders that the emergency services agency is active. In Valley, Nebraska, for example, the volunteer fire department developed a brightly colored brochure on 5 by 7 inch cardboard with space for emergency telephone numbers on top and the meaning of different warning messages on the bottom. It was designed to be kept near a telephone where it could be referenced in the event of a disaster.[2] Similarly, in San Bernardino County, California, short brochures are developed in conjunction with recurrent, seasonal, threats—desert survival, winter survival, earthquakes, and floods—for direct distribution to citizens.[3] Furthermore, several federal agencies—the National Weather Service, the Forest Service, the U.S. Geological Survey, and the Federal Emergency Management Agency—routinely product brochures on a variety of emergency topics. These can be obtained by local officials, usually at low cost, and distributed to citizens by mail or by hand as informational bulletins.

In cases where budgets either limit the number of mailings or preclude such activities altogether, it has been suggested that emergency managers request that state authorities send relevant pamphlets with hunting and fishing licenses and boat and recreational vehicles registration renewals.[4] Arrangements can also be made to have brochure material printed in documents which are routinely available to the public. For example, the Skagit County, Washington, Department of Emergency Services has arranged with the local phone company to have blue pages inserted in phone books.[5] This very innovative strategy achieves wide distribution at low cost, and the likelihood of loss or misplacement is substantially reduced.

Another method of bringing information to a large segment of the public at low cost is through interviews with emergency services personnel in the local mass media or through public service spots on local television and radio channels. By approaching different radio or television stations and using different time-slots, a creative emergency services official can reach many different segments of the community in a short period of time. While this technique has the advantage of reaching large audiences at moderate cost, it has the disadvantage of being a one-way communication channel. The emergency services official gets the message out, but the audience usually cannot respond or clarify the information being sent.

Informational *exchanges* can, however, be achieved although it usually requires higher levels of effort and cost. There are four two-way communication techniques that rely principally upon existing personnel and equipment.

The first technique is simply to encourage emergency services staff to serve as listening posts and information disseminators in their own neighborhoods. The value of such exchanges, particularly over the long run, should not be underestimated. It provides an independent check for the emergency manager on current public sentiment or opinions of activities undertaken by the agency. Also, questions or misunderstandings about recently disseminated information can be identified and subsequent educational contacts can be planned to clarify a situation, particularly when technological issues are involved.

A second technique for two-way interaction with the public involves setting up a "hazard information" telephone number. This need not be any more elaborate than advertising an office phone number and training existing staff to handle inquiries. Once citizens are informed of the information line, however, staff must be ready to respond to inquiries promptly. This type of phone-in arrangement is quite useful to the manager, serving to gather and disseminate information on a routine basis. An information line also has the potential to be expanded into a rumor control or warning confirmation line during times of disaster.[6]

There are cautions which one should bear in mind when using telephones to disseminate either hazard-relevant information or to act as a mechanism for rumor control. Over the course of a year, one would generally not anticipate a large volume of calls in connection with citizen inquiries. Such non-emergency time calls probably would not tax either the ability of existing staff to respond or the capability of current telephone equipment to handle calls. If a telephone number is to be used during emergencies, however, officials in even small communities should anticipate the possibility of a large volume of calls which could potentially overload the telephone exchange and the personnel responding to the calls.

In either case, it must be remembered that if telephones are to be used either to disseminate information in general or during emergencies, adequate measures must be taken to ensure that the system can be responsive to the needs or demands of the community to be served. A system which quickly overloads or results in the simultaneous dissemination of conflicting messages in an emergency produces greater negative consequences than would be the case if no system existed in the first place.

A third two-way communication technique involves establishing face-to-face contact with citizens in the community. This is traditionally done through speaking at neighborhood meetings, meetings of community organizations, and schools. Neighborhood meetings can deal with very specific and timely topics, they can reach otherwise difficult to contact groups, and they provide both face-to-face contact and an opportunity for dialogue. For example, a community or neighborhood club might welcome a speaker on how to prepare for a hurricane at the start of hurricane season. Detailed information could be provided on what to expect in their specific neighborhood, and evacuation routes and procedures could be discussed. A discussion this specific is usually not feasible on a community-wide basis, although meetings at large community organizations and schools are still very important in disseminating hazards information and emergency procedures. Since neighborhood groups and community organizations tend to have fairly homogeneous memberships, however, it is important to communicate with a significant proportion of different types of groups.

Another form of two-way communication can be achieved by creating citizen advisory committees and citizen cadre opportunities. Advisory committees are usually small in size and can best be used to address specific emergency management topics. When an advisory committee is created, considerable commitment is being made by the agency. At a minimum, regular meetings should be held and officials must devise an acceptable mechanism for soliciting information, evaluating it, and then either using it or explaining why it was not used. The citizen advisory committee, if administered appropriately, can provide valuable, timely information on specific points of planning interest and can also serve a strong support-building function in the community. While citizen advisory committees tend to involve people in the administrative aspects of emergency management, citizen cadre opportunities tend to involve volunteers in selected operational duties. Citizen cadres require some degree of training and may function as auxiliary personnel. Citizen cadres have been used for sandbagging in floods, for traffic direction, in search and rescue operations, to provide security in evacuated areas, and to help administer family locator services and shelter services. The idea behind the use of citizen cadres is to incorporate people into the emergency response process in a constructive way. At best, such auxiliary personnel can be used to ease the tremendous demands placed on regular manpower during the response phase of any disaster. Furthermore, an appropriately trained volunteer represents a community member with a reasonable working knowledge of emergency procedures and the logic behind them. Such persons could serve as convincing support builders *vis-à-vis* the larger community in that they can explain and justify emergency procedures to others.

In summary, the general purpose of all the above-mentioned techniques is the same: to allow emergency authorities to get to know their community better and to familiarize citizens with emergency response planning and operations. It is probably not feasible to attempt to use all of these techniques in the same community. They are elaborated here as possible programs which can be selected, relative to existing budgetary and other constraints, and adapted to the specific needs of a community.

The Planning Process

In addition to establishing and maintaining communication channels to the community, emergency managers need to practice effective emergency planning. The increasing complexity of the hazard environment has been one of the driving forces behind the creation of emergency manager positions both within private organizations and at all levels of government. While there is still some controversy associated with defining what responsibilities make up an emergency manager's job, it is generally agreed that emergency planning and disaster management should be two primary, but distinct thrusts. Quarantelli[7] argues that disaster management focuses upon reducing the negative consequences associated with a particular disaster event, while emergency planning is a strategy for dealing with the environment. Planning, therefore, is a more general activity aimed at reducing the unknowns confronting emergency managers. Confusions of management with planning can produce negative consequences. For example, the tendency "to equate disaster planning with the acquisition or identification of equipment, facilities or material goods" often detracts from resolving the issue of how such resources can be deployed to reduce uncertainty in problematic situations.[8] The effectiveness of the planning process can be enhanced if one follows several guidelines.

Effective emergency planning should encourage appropriate, adaptive actions by both emergency services personnel and the public. Much stress has been given the idea that careful planning promotes quicker response. While this is often true, there remains some question regarding whether rapid response time should be a primary objective of planning or simply a byproduct. Quarantelli[9] has convincingly argued that appropriateness of response is far more crucial than speed: "it is far more important in a disaster to obtain valid information as to what is happening than it is to take immediate actions . . . planning in fact should help to delay impulsive reactions in preference to appropriate actions necessary in the situation." Two points are important here. First, every plan should contain provisions for continuing threat assessment. Second, quick reactions based upon incorrect or misleading information can lead to inadequate and counterproductive measures.

Emergency plans must be based upon accurate knowledge, both of the hazard and of likely human response. There is usually adequate attention given to assessing the magnitude of the threat; that is, whether human safety is sufficiently endangered to require mobilization of emergency response measures. Much less attention, however, has been given to examining how people are likely to perform in an emergency and building plans around people's known reaction patterns. "Too often emergency plans which are administratively devised turn out to be based on misconceptions of how people react and, therefore, potentially create more problems than they solve."[10] Quarantelli and Dynes[11] have also documented numerous myths about citizen response to disasters that persist in spite of much research to the contrary. The development of any emergency plan should take into consideration research findings on human performance during emergency situations in order to make the plan reflect such knowledge.

Knowledge of people's response patterns can also help planners identify and incorporate incentives that enhance citizen compliance with hazard warnings. For example, it is known that families sometimes delay evacuating from their neighborhoods until all members have returned home, then leave as a unit. Research indicates that this behavior reflects a concern for having accurate information about the whereabouts and condition of separated family members. A mechanism to provide such information could be included in shelter planning and may be seen as an incentive for compliance with any needed evacuation warning.[12]

Similarly, response plans often do not include provisions for agency personnel to verify the safety of their families during a crisis. The assumption is made that duty-before-family is a shared belief among emergency services personnel. However, plans that have led to the successful response to disaster have allowed off-duty personnel to take care of their families' immediate needs and then report to their posts. Also, relief of on-duty personnel to assist their families if the need exists and then return to work adds to the success of the response to an emergency situation. Such efforts enhance the emergency services workers' ability to concentrate on their functional responsibilities without worrying about the safety and security of immediate family members.

Effective planning is partly an educational activity. Without the active compliance of citizens, an emergency plan simply cannot be effectively implemented. Public knowledge need not be substantial, but at a minimum people need to know how to recognize a warning, how to identify emergency personnel, what actions are expected of them, and what constitutes an all clear signal. This kind of information must be communicated and understood not only by the public, but also by operational personnel who are expected to implement the emergency plan and by the personnel of any support organizations involved. Thus, once the plan is devised, the next phase begins: educating other officials and the public about the provisions of the plan. If done adequately, this educational effort will yield high dividends in terms of the effectiveness of the emergency response and may form an important source of feedback regarding potential problems of the plan in other situations.[13]

The success of any response effort is related to the achievement of effective interorganizational coordination among the responding groups and organizations.[14] Ideally, they must work in concert toward the goal of encouraging citizen adaptive actions by accomplishing many interrelated tasks (e.g., warning message construction and dissemination, warning confirmation, traffic direction, temporary sheltering, and temporary feeding). To complete these tasks requires that organizations be aware of one another's missions and styles of operation, that a communication system exists, and that mutually agreed upon response priorities for determining which organizations are responsible for various operations are understood. One of the best places to resolve these issues, in advance of a disaster event, is in the basic provisions of an emergency plan.

Informational Content

Aside from these organizational processes that enhance the communication of hazard information to the public, emergency managers must also be concerned about the content of the message they wish to transmit. This content will certainly differ depending upon whether the hazard agent constitutes clear and imminent danger or whether the information is part of a continuing educational effort.

In immediate onset situations, such as floods, tornados, and hazardous materials incidents, the emergency manager's message must include two primary components: (1) a nontechnical assessment of risk and (2) the kinds of measures that can be taken to increase the safety of at-risk groups.

The nontechnical assessment of risk is crucial to gaining the public's understanding of the nature of the hazard to which they are exposed. Preferably, such an assessment will include a specification of the populations which are at greatest risk, which are likely to be affected, and which should increase their vigilance but are, as yet, not in imminent danger. This type of information allows people to compare their relative exposure to threat, providing motivation for following the developing emergency situation and attending to future messages that may upgrade their own at-risk status.

In some cases, this assessment should include information on the invisibility of the hazard agent. Incoming tidal waves, slow moving hurricanes, riverine flooding when downstream conditions include only light rain, and invisible clouds of toxic gas are some of the invisible hazards that may not allow people to confirm their at-risk status through personal observation. The disaster literature has cited numerous examples when the "normalcy bias" has led to life loss or the rejection of the notion that one is truly at risk.[15] Emergency managers must overcome people's tendency to respond to a threatening situation as if it were normal, especially when the agent is, at least temporarily, invisible. If this cannot be done, there is little possibility that any protective actions will be taken.

The second component of any imminent hazard message must also include the kind of risk reduction measures that individuals and households should be taking, given their relative exposure to the hazard agent. Instructions about how to take these actions must also be included in the message. For example, the instruction, "prepare your family to be ready to leave your home," must be followed by defining how to prepare and what type of time frame residents should consider. For example, preparing a family to leave an area that will definitely experience flooding within an hour might include instructions on packing warm clothing, shoes, medicines, eye glasses, important but easily accessible family documents and pets, but not much else. Instructions to those who live farther away from the source of flooding and who have more time before inundation occurs may be given a more elaborate set of instructions on preparing to leave, possibly including moving furniture to upper stories and filling their gas tanks for possible evacuation.

An effort also must be made by emergency managers to establish a clear relationship between taking the suggested protective measures and the minimization of negative consequences of the hazard. Any imminent-threat message should explain *how* public safety will be enhanced if citizens comply with these instructions.

Emergency managers must also include information that overcomes logistical problems residents might experience in following protective instructions. While not all problems can be anticipated, many could be avoided by thoughtful planning. For example, the Phoenix metropolitan area experienced three major riverine flooding incidents over an 18-month period in 1979-1980. During the last incident, endangered residents of one community along the Salt River were told they could evacuate and were given the location of the emergency shelter. However, a small portion of community residents lived north of the river, the emergency shelter was south of the river, and the river crossings were closed. Confusion resulted when residents who wanted to leave their homes for the shelter could not take the suggested protective action.

Any continuing educational effort to inform community residents about hazards to which they are exposed should also include these four components of the imminent hazard warning. Unlike the immediate onset situation, however, a continuing program of hazard information should be expanded to all of the hazards which confront a community and include both general protective measures that residents could take in response to any of these hazard agents as well as hazard-specific measures that may differ depending on the type of hazard.

The more attention that an emergency manager can give to providing information on hazards, risk, and protective measures in non-crisis situations, the more likely it is that such information communicated during an actual emergency will result in adaptive citizen actions. But such non-crisis communications must be disseminated through a well developed, continuing educational program that is an intrinsic part of the emergency management system in any community. Through the utilization of the organizational strategies discussed in the first part of this paper, emergency managers can develop communication systems that enhance the likelihood of adaptive citizen behaviors to both natural and technological hazards.

Notes

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