Risk and Crisis Communication

Pamela Ferrante, CSP, CHMM
JC Safety & Environmental, Inc.
Pittsburgh, PA

Introduction

Risk Communication and its sister process, Crisis Communication, are rapidly becoming essential for the toolbox of any EH&S professional. Both allow for the orderly and effective transmission of information during periods of high stress to an organization. This paper will focus on a number of important concepts, including common theoretical foundations and definitions; evaluation of the risk to the organization in a variety of situations; goals for the process; development of a written Risk/Crisis Communication Plan; and common problems and pitfalls.

The term "risk communication" was first thought to be attributed to William Ruckelshaus, the first Administrator of the EPA in 1970, who marshaled the organization through its first years; establishing a role in protecting the environment and assisting other community organizations in their role.[1] In the 1980s the Superfund program incorporated the concept in its Public Participation Process, and it also appeared in the Emergency Planning and Community Right to Know Provisions of Title III of the Superfund Amendments and Reauthorization Act of 1986.[2] Most of the roots of the theories and process of risk communication come from the environmental arena and working with the public and other stakeholders, but in recent years the concepts have been successfully used to deal with any type of hazardous situation or disaster.

Definitions

In order to assure that readers of this paper begin with a common set of definitions, the following definitions are offered as a framework.

Risk is the probability of undesired effects (or health outcomes) arising from exposure to a hazard. Is it often thought of in the equation Risk = Probability x Consequences.[3] According to Fred Manuele, it is "The potential for realization of unwanted, negative consequences of an event."[4]

According to Chet Langan, risk communication is "the *art* of communicating the potential lethal risks associated with environmental exposures".[5](author emphasis). The Center for Risk Communication says that risk communication is a "science-based approach for communicating effectively in high concern situations".[6]

The National Academy of Science says:

> "Risk Communication is an interactive process of exchange of information and opinion among individuals, groups, and institutions; often involves multiple messages abut the nature of risk or expressing concerns, opinions or reactions to risk messages or to legal and institutional arrangement for risk management."[7]

And finally, the National Research Council says,

> "Risk Communication is a professional discipline whose application requires knowledge, planning, preparation, skills and practice. It is a two-way interactive process that respects different values and treats the public as a full partner."[8]

It is also important in this definition section to clarify the difference between risk communication and crisis communication. The difference is subtle but, according to the Centers for Disease Control, crisis communication;

> "…is the attempt by science or public health professionals to provide information that allows an individual, stakeholders, or an entire community to make the best possible decisions during a crisis emergency about their well being."[9]

Based upon the above definitions, the critical difference is the situations in which the various communication forms take place. Risk communication is an ongoing process that helps to define a problem and solicit involvement and action before an emergency occurs, whereas crisis communications are those messages that are given to stakeholders during an emergency event that threatens them.

Theoretical Foundations

Much of the applicability of Risk Communications comes from understanding how the general public perceives risk. By understanding the perception of risk, an EH&S professional can determine how to tailor the risk message. Numerous models have been theorized and provide the EH&S professional with a framework for understanding how risk and crisis messages are perceived.

Vincent Covello and his colleagues at the Center for Risk Communication offer four theoretical models that help practitioners understand how information is processed, how perceptions are formed and how risk decisions are made. By understanding these models and how they apply in various situations, EH&S professionals can better prepare their messages and coordinate their communication in high-risk situations.[10]

The Risk Perception Model theorizes that the public's perception of risk comes from the strength of 15 different factors, each of which has the capacity to alter perceptions in varying degrees of magnitude. They determine the public's level of concern and elevate or decrease worries, anger, fear hostility, and outrage. Understanding the strength or weakness of these levels impacts the EH&S professional's ability to alter perception, change behavior and modify attitudes and factors based upon the messages that are delivered. The factors include:

1. Volunteerism – Risks that are perceived to be voluntary are more readily accepted.
2. Controllability – Risks under the control of the individual are more readily accepted.
3. Familiarity – Risks perceived to be familiar are more readily acceptable.
4. Equity – Risks perceived to be evenly and equitably distributed are more readily acceptable.
5. Benefits – Risks with perceived benefits to the individual are more readily acceptable.
6. Understanding – Risks that are well understood or self-explanatory are more readily acceptable.
7. Certainty – Risks that are known to science are more readily acceptable.
8. Dread -- Risks that are perceived to evoke limited emotions such are fear, terror, and anxiety are more readily acceptable.
9. Trust in Institutions – Risks associated with institutions or organizations that have a high degree of public trust are more readily acceptable.
10. Reversibility – Risks that are perceived to have reversible effects are more readily acceptable.
11. Personal Stake – Risks perceived to have limited direct or personal threat are more readily acceptable.
12. Ethical/Moral Nature – Risks perceived to have limited ethical or moral concerns are more readily acceptable.
13. Human vs. Natural Origin – Risks perceived to be caused by "acts of God" are more readily acceptable.
14. Victim Identity – Risks that produce no or limited human victims are more readily acceptable.
15. Catastrophic Potential -Risks perceived to have limited potential for catastrophe are more readily acceptable.

Each situation will have a unique combination of the above factors; some may be very strong, very weak or may have no relevance. In addition, the varying strength of each factor combines to create a "moving target", if you will, for the EH&S professional to navigate. It seems obvious, given all of the variables, and because perceptions are typically highly individualized, crafting risk and crisis messages requires a skilled communicator.

The Mental Noise Model provides a means for understanding how the public processes information in periods of high stress and anxiety. As the perceived threat to an individual rises, their consequent ability to process information decreases because of the creation of "mental noise" that effectively blocks the individual's ability to hear the message and be willing and able to process it.   Those risks associated with a lack of control, which are perceived to be low in benefits, or are thought to be unfair, create the highest levels of mental noise. The individual's ability to engage in rational discourse has substantive implications for those EH&S professionals attempting to deliver a message that is dedicated to changing attitudes and behaviors.

The Negative Dominance Model concerns itself with how the public processes negative and positive information in high concern situations. The Model suggests that the relationship between the two messages is asymmetrical; the negative messages receive substantially more weight than the positive; in other words, the public places more value on their losses than their gains. This knowledge provides implications to the EH&S professional in both how the message is delivered but also in terms of the importance of balancing positive messages with negative ones to counteract the intensity given to the negative messages.

It also has implications for the pure wording of the message. Negatives words (i.e. not, can't, never, nothing, none) are heard better and have a greater impact and can effectively drown out positive messages regardless of how well they are crafted. In order to counteract this effect, the positive messages must provide a level of detail that highlights actionable activities to draw the attention of the audience. As Covello writes; "More specifically, risk communications are most effective when they focus on what is being done, rather than what is not being done."[11]

The Trust Determination Model identifies the importance of establishing trust in all forms of risk and crisis communications. Trust comes first in all messages, regardless of purpose or content and without it limited success can be achieved. Further, the trust required to fully engage the public in the message is a long-term process and requires thoughtful processes and methods in addition to sound communication skills.

Important factors in trust determination and development are the perception of agreement among experts; coordination among the various risk management organizations; sensitivity by risk managers to the need for effective dialogue and public participation; the willingness to honestly acknowledge risks; a willingness to disclose or share information and; responsibility in fulfilling risk management requirements.

So if trust and credibility are vital, what factors can aid a communicator in determining whether or not trust can be built and credibility can be achieved? How can communicators use this information to craft risk and crisis communications? The empathy factor is crucial in this respect and in studies conducted by Covello and others at the Center for Risk Communication, three factors were determined to be key:[12]

1. Perceptions of knowledge and expertise
2. Perceptions of openness and honesty
3. Perceptions of concern and care

Therefore a communicator needs to be able to craft a message that helps the audience develop or enhance the perception needed to have the message both heard _and_ acted upon.

In addition to the theories proposed by Covello and his colleagues, the writings of Peter Sandman also provide a substantial body of work to the understanding of risk and crisis communications. His Risk = Hazard + Outrage theory is much quoted and deserves further elaboration in order to understand the theoretical foundations of risk and crisis communications.

Sandman suggests that the success of risk and crisis communications rests upon their clarity of the theory and how to apply to the situation at hand. Hazard is the actual event that the communication covers, whether it is a potential future event that the message is attempting to prepare a receiver for or an actual event that is occurring or is about to occur. Hazards or hazardous events, then, can be anywhere along the continuum from negligible to catastrophic. Getting the message receiver (usually the public or some stakeholder group) to understand the seriousness of the event is a significant determining factor of both the success of the message and the action the message receiver takes as a result of it.

Outrage refers to the emotions and behaviors of the message receivers in light of their perceptions of the level of hazard presented to them. Like hazards, the level of outrage exists on a continuum from high to low.

Combining the concepts of hazard and outrage, Sandman poses a framework of the four kinds of risk communcations:[13]

1. **High Hazard/Low Outrage**

This situation features a serious hazard, but an apathetic audience. The good news in these types of situations is that the audience will not often object to the message. The bad news is that even with a skilled communicator and message, moving the audience to a desired action may be more difficult. The tendency is for the messenger to exaggerate the hazard scenario in order to "scare" the audience into action. Sometimes this can be effective, but it can also be risky and cause an overaction by the audience, followed by mistrust when the true nature of the hazard is discovered.

The task for the risk/crisis communicator is to find the means to convey the message that will pre-dispose the audience toward your goals. The message must be short but effective at increasing the audience's outrage in order to provoke action or at least attention. The task is often made easier by the apathy of the audience who will listen to anything said without reservations or objections.

2. **Medium Hazard/Medium Outrage**

This situation features an audience that is interested but not so emotional that internalizing the message is difficult. It allows the message sender to discuss the situation rationally and openly and is likely to generate audience questions and rational concerns.

This is the easiest communication environment and the task is to simply provide an open and honest dialogue that explains the situation and allows sufficient opportunity for audience response and questioning. It is likely that the audience will respond to the request for action.

3. **Low Hazard/High Outrage**

Undoubtedly this is the most difficult scenario for a risk communicator as the audience is often not trusting of any message and is sometimes controlled by a small group of "fanatics" who have purposely exaggerated the situation for varying motives or truly believes that situation is dire, when the facts say otherwise or at least suggest that the situation is not nearly as serious as some might believe.

The task for the communicator in this scenario is to reduce the outrage by sincere listening, acknowledging and even apologizing, if that will move the audience to a more realistic view of the seriousness of the hazard. The advantage here is that the messenger does have the audience's attention and with skillful messages, movement in a desired direction is possible.

4. High Hazard/High Outrage

The audience here is not angry but fearful and scared and because the hazard is serious, their position may be valid. Without skillful management by the communicator, the outrage can easily slip into terror or depression, both of which are of limited use in getting the message receiver to take the action you desire.

The communicator in this situation must tread carefully, allowing for the audience's legitimate fears, remaining human and empathetic, but still rational and demonstrating true leadership. The advantage for the communicator is that the outrage is not typically directed at them, at least until after the crisis is past.

Crafting Risk and Crisis Messages

The models above aid in the development of both risk and crisis communication messages. Central to all of them is an understanding of the audience and its stake in the process or situation at hand. The EPA has created a list of "7 Cardinal Rules" which are listed here due to their comprehensiveness and coverage of the major potential problems. Again, although these rules were originally designed for environmental communications, their applicability to a wide variety of hazard situations is obvious.[14]

- **Accept and involve the public as a legitimate partner.**

If the goal is to produce an informed public that will respond in a specific way to a hazard, all communications must begin with this foundation. The public's knowledge base may be minimal at the time the communication process begins, but the level can brought up high enough for the process to become a dialogue rather than a speech.

In Sandman's theory of situations with high outrage, this process can be more difficult as the public's anxiety must first be dealt with, but accepting the concerns of the audience as valid, is an essential first step.

- **Plan carefully and evaluate your efforts.**

There are many factors that go into determining the content of any risk or crisis message, including process goals, audiences, outrage level, hazard level and setting. In addition, risk messages are often very different from crisis messages; the former requires a longer term process in order to develop trust and credibility, while the latter's success is primarily built upon the skill of the communicator in the moment at hand as well as whether or not previous history with the specific audience has occurred allowing for the development of a foundation of trust and credibility.

Before the message is given, the above factors need to be carefully considered. Following the message, the result of the efforts requires an evaluation so that corrections or adjustments to future messages can occur.

- **Listen to the public's specific concerns.**

The concept of outrage promoted by Sandman plays a pivotal role here. The process becomes a dialogue where each side's viewpoint is legitimate. Furthermore, the ability of the risk communicator to develop trust and credibility often hinges on the audience's recognition that their point of view is accepted as valid and deserving of time and effort to discuss.

The audience sometimes cares as much about credibility, competence, and empathy as they do about risk levels, statistics, and details. The savvy communicator understands this, acknowledges it, and works with it to his/her advantage.

- **Be honest, frank and open.**

As has been pointed out, developing and maintaining trust and credibility with the audience is a predominant factor that determines the success of the message in terms of how it is understood and whether it prompts the audience to act in certain ways. In addition, when a risk communicator loses that trust because the message is not honest and open, the ability to regain it is substantially hampered and, in some cases, may be permanently lost.

- **Coordinate and collaborate with other credible sources.**

When a risk or crisis message is diametrically opposed to one being communicated by another organization(s) or one organization's communicator appears to be overly critical of another, the public may have little choice but to pick sides or even to dismiss the messages of both parties. (Recall the "war of words" that played out in between elected officials and government employees in various news conferences during the height of Hurricane Katrina.) Messages that contradict each other waste time and increase the public's frustration, confusion, and mistrust.

In situations where there are many communicators, limiting the conflicts will help all parties achieve their goals. The ability to compromise with another communicator in order to craft a consistent message can be time saving as well in that, when the public hears essentially the same message from multiple sources, their ability to respond and respect the message increases.

- **Meet the needs of the media.**

This paper will not attempt to provide substantial information for risk communicators that must deal directly with the media, as that sub-topic is far too complex. Suffice it to say that the media will report on any situation they deem newsworthy and getting out in front of their needs and understanding the importance of meeting them can significantly improve the chances that the message that appears in the media will be the one the communicator wishes it to be.

In addition and in general, legitimate media sources are most often in need of facts and need them to be presented succinctly and simplistically. Risk communicators may need to develop a separate message for the media as their needs are not always the same as those of the public.

- **Speak clearly and with compassion.**

The act of speaking clearly is not one that comes naturally to everyone, particularly in high stress situations in front of an angry or terrorized public. Therefore, it is essential that the risk communicator spend time in advance of the communication situation practicing the text of the message, and rehearsing the various scenarios that might occur in order to prepare for how to address them comfortably. While risk communicators do not need to possess the skills of a Presidential spokesperson or prepare as if as Presidential debate were about to happen, they must be able to speak with clarity and often "off the cuff".

Finally, the act of compassion and the ability to portray it is essential to any situation, but becomes more important as the level of outrage increases. In addition, in situations where death and destruction may be imminent or have already occurred, the audience needs to know that the organization being represented by the risk communicator cares about it. The old adage about faceless bureaucrats must be proven wrong in these types of situations.

Common Pitfalls in Message Delivery

Following the 7 Cardinal Rules is no guarantee that even the most skilled risk communicator will be successful. As is noted repeatedly above, analyzing each situation carefully and understanding the audiences' motivations, moods and outrage level is essential if the message is to have a chance to succeed. In addition, there are some common pitfalls that can derail messages that appear unable to fail. The U.S. Department of Health and Human Services has published a pamphlet that provides guidance in identifying the most common pitfalls in advance. The following list is culled from larger one from that publication.[15]

- **Using abstractions** – Risk communicators should not assume a common understanding. Jargon, acronyms and highly technical language should be avoided.
- **Attacking the audience** – Respond to issues, not people and be careful to end debates by responding with clarity and factual information.
- **Sending negative non-verbals** – It goes without saying that a risk communicator who loses his/her temper is in deep trouble, but tense facial expressions and certain hand movements can also signal negativity and hostility toward the audience. Practicing in front of a mirror or another colleague can help a communicator see what he/she may be saying non-verbally.
- **Blaming anyone** – It is never helpful to assign blame to another party in the process; it confuses the audience and forces them to take sides. Along the same lines, if an organization has some responsibility for the situation, accepting it matter of factually and honestly can help build trust and credibility.
- **Focusing too much on the money** – Complaining about the lack of funds to solve the problem only increases the audience's frustration since they often have no ability to change the situation anyway. Telling the audience what benefits are being derived from the funds that are available and are being spent is more productive.
- **Providing guarantees** – Instead the communicator should offer likelihoods and emphasize the progress that is being made or has already been made.
- **Trying to be funny** – This is usually only effective if directing the laugh at oneself. Attempting to inject humor into a serious situation unnecessarily trivializes it.

- **Going on and on and on** – Audience presentations should aim to be 15 minutes or less, while reserving plenty of time for questions. The latter can serve to effectively enhance and clarify additional message points.
- **Using negative words and phrases** – As has been noted above in the Negative Dominance Model by Covello and his colleagues, negative messages override an audiences' ability to respond and move away from high levels of emotionality. It is best to avoid them if at all possible.
- **Thinking you are "off the record"** – A Risk/Crisis communicator never is, and nothing said to anyone, particularly the media, is confidential.
- **Promising anything –** If there isn't certainty of delivery, this tactic will likely be regretted. Making strong assurances is a better move.
- **Forgetting the visuals –** Most people understand messages that are delivered in more than one format. Slides, handouts, and other visuals can enhance what is being said and helps the audience to process complicated information after the formal presentation is over.
- **Overusing statistics –** Playing the numbers game too hard is boring and is not central to the message. Statistics should be used to enhance and support comments only.
- **Forgetting to define the message goals in advance** – Nothing is worse than being unprepared in front of a large group of people who may already be distrustful. It is a sure-fire path to disaster.
- **Forgetting the role of the public** – This is a partnership. It is crucial to build trust and credibility by engaging in a dialogue.

Measuring the Risk to Your Organization

Having clarified definitions and theoretical frameworks as well as provided some factors useful for crafting risk and crisis communications, this section will discuss how an EH&S professional can evaluate their organization's risk and subsequent need for a Risk/Crisis Communications Plan (To be discussed in the following section.)

As was noted in earlier sections, most of the work in this discipline was generated from work done by those in the forefront of the environmental remediation movement, most notably those involved in Superfund projects. However, in the current climate of constant media attention and message delivery by a variety of technological sources, the traditional foundations underlying Risk and Crisis Communications can be applied to any situation in which an organization interacts with the public in advance of a potential emergency or during one.

Measuring risk is best done in a formal process that quantifies when possible, while recognizing that some aspects of the process are subjective. There are numerous tools that can be used to accomplish this step. Depending upon the organization's needs and potential risk situations, seeking the external consultation may be necessary, but in general, a simple risk matrix may be all that is needed. Some of the more common tools are presented briefly below; the reader is encouraged to peruse additional information to best determine which tools are most applicable.

Before elaborating on the various tools, the notion of "acceptable risk" should be discussed. In any risk analysis process, an organization needs to be aware that not all risks need to be planned for. It may be that the potential of the occurrence of the risk is too small or that the organization

has limited resources and chooses to focus on those risks deemed to be more significant and/or likely. Resources will always be limited and employing the concept of using them to the greatest good is not only economical, but will result in true and more effective risk reduction.

Each organization must entertain the development of its own acceptable levels of risk; it is a unique process and is based upon the organization's goals and mission as well as the dictates of those currently in managerial roles.

- **Risk Matrices** – At its simplest, a risk matrix uses two variables to establish probabilities of an occurrence and help define those situations which require advance action and planning. In order to complete a risk matrix, an organization simply has to list all of the various risk situations that may occur and determine which box they belong in.

  An example appears below:
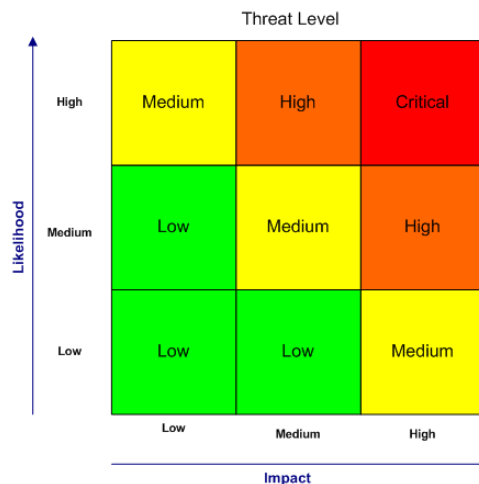
  A risk matrix can be further expanded as necessary to flush out the varying levels, but in the end its value is in helping to identify the critical and high risk situations which have needs that should be addressed first.

  To enhance the process, numerical ratings can be assigned to the different categories and then "acceptable risk" can be defined as anything that falls under a certain number and becomes that which is planned for, while those above the number are deemed to not require advance planning. This is a helpful strategy when an organization faces numerous hazards, many of which have low or very low risk. Numerical ratings also serve to reduce the subjectivity of the rankings.

- **Preliminary Hazard Analysis** – In this method scenarios are developed to describe what is being analyzed and evaluated. The scenario's details are provided that encompass tasks, operations, systems and products, as applicable. Exposures are analyzed and quantified in terms of people, facility, product, equipment loss, down time, or environmental damage.

  Once the analysis is completed, a plan is developed to reduce or eliminate the hazard through preparation, processes and systems changes.

- **What-If Analyses** – In this method, brainstorming sessions are used by a group to identify hazards, develop hazard scenarios, incident development, and probable consequences. All questions and concepts are then recorded for further investigation, clarification and quantification.

  Upon reconvening, the group then uses the gathered data to develop controls to remove or sufficiently reduce the potential occurrence of the hazard situation.

- **Failure Modes and Effects Analysis (FMEA)** – This method is most often used at the time of design or re-design of equipment or processes. The most commonly utilized steps of the process include:

  1. Identify the item or function to be analyzed;
  2. Define the failure modes;
  3. Record the failure causes;
  4. Determine the failure effects;
  5. Enter a severity code and a probability code for each effect;
  6. Enter a risk code;
  7. Record the actions required to reduce the risk to an acceptable level.

Developing a Risk/Communications Plan

As with any planning process, the key point in developing a Risk/Cries Communications Plan (Plan) is to anticipate risks and crises and prevent when possible; in other words, never having to implement the plan is always the best. Beyond that concept, the Plan is designed to use Risk Communications to develop the trust and credibility with the targeted audience in advance of any crisis eruption. Further, the Plan dictates the processes that will be followed when Crisis Communications are required. Most of the information in this section comes from a planning tool developed by the Texas Department of State Health Services.[16]

The Plan needs to provide for timely, accurate and helpful information based upon messages that were discussed in earlier sections of this paper. And as with all organizational planning processes, all levels of management and operations must be involved in the process and participate on the working group. Sufficient authority must be provided to the planning and implementations processes and include resources such as money and time The planning process will ideally be team-focused and may also include external resources and groups.

Once the Plan is developed, the implementation team must be selected and trained. Most of the formal training will take place internally, but several members of the team may need external training, such as those who will deal with the media. Drills are essential and can be minimal such as Tabletops to test the basics of the Plan, or extensive such as Full Scale Exercises to test the significant details in the Plan.

Key elements of the Plan include:

- Endorsement from top levels of management;

- Designated responsibilities for all levels of the organization;
- Identification of a Spokesperson who is authorized to speak for the organization;
- Procedures for information clearance;
- Regional and local media contact list;
- Procedures for coordinating response teams;
- After-hours contact list and contact information;
- Signed Mutual Aid Agreements;
- Procedures to secure resources such as space, equipment, people finances; and
- Methods of disseminating information to stakeholders.

Once again drawing directly from the planning tool references above, below is a working Plan outline:

I. **Authority**
   - What Statues apply?
   - What internal documents exist?
II. **Purpose**
   - What should the Plan do, for and by whom?
III. **Scope**
   - What areas the plan covers.
IV. **Situations and Assumptions**
   - Circumstances under which an emergency might arise;
   - How a problem is identified;
   - When to activate the Plan;
   - What resources are available;
   - Special or unique situations; and
   - When to notify the media.
V. **Concept and Operations**
   - General plan of action (main body of the Plan);
   - Advance preparations;
   - Who, what, when, where, why and how;
   - Lines of authority; and
   - Media policies.
VI. **Organization and Assignment of Responsibilities**
   - Detailed delegation of tasks and responsibilities;
   - Identification of Spokesperson;
   - How to staff implementation of the Plan 24/7;
   - News dissemination systems; and
   - Liaison with outside agencies and response organizations.
VII. **Plan Development and Maintenance**
   - How often to review; and
   - How changes are made and distributed.
VIII. **Appendices**
   - Logistical details;
   - Call down lists;
   - Available materials;
   - News Conferences/Media Guidelines; and

   o Equipment, Supplies and Services.

Summary

This paper is a summary of the materials that will be presented at the American Society of Safety Engineers Professional Development Conference in San Antonio, Texas on June 30, 2009. It has covered the topic of Risk and Crisis Communications which are tools utilized by EH&S professionals to communicate hazards and risks to the varying stakeholders associated with their organizations before and during crises.

Understanding how to use these tools requires an identification of the definitions and theoretical frameworks which were provided in the first sections of the paper and focus heavily on two influential parties; Vincent Covello and his colleagues at the Center for Risk Communication and Peter Sandman.

Subsequent sections detailed the types of messages and provided an understanding of how to analyze the potential audience in order to determine the goals of the message and the best format in which to provide it. Along with the message development section, common pitfalls were provided for the reader in an effort to forestall problems in message delivery.

Finally, brief information was provided to assist the EH&S professional in evaluating the risk to his/her organization in order to provide the situation that will require advance planning and preparation through the use of a written Risk and Crisis Communication Plan, an outline of which is provide in the final section.

EH&S professionals are required to provide more and more technical advice and assistance to their organizations and are expected to have comprehensive knowledge of the processes involved in emergency planning. One of these process involves Risk and Crisis Communications and should be a skill that EH&S professionals have at their disposal.

Endnotes

[1]Covello, Vincent; Peters, Richard; McCallum, David; *The Determinants of Trust and Credibility in Environmental Risk Communication."* Risk Analysis; 1997; 17(1);43-54.

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[10]Covello, Vincent; Peters, Richard G.; Wojtecki, Joseph; and Hyde, Richard; *"Risk Communication, the West Nile Virus Epidemic, and Bioterrorism: Responding the Communication Challenges Posed by the Intentional or Unintentional Release of a Pathogen in an Urban Setting."* Journal of Urban Health: Bulletin of the New York Academy of Medicine. Volume 78, No. 2, pg. 382-391, June 2001.

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[12]Peters, Richard, Covello, Vincent, McCallum, David; *"The Determinants of Trust and Credibility in Environmental Risk Communications": An Empirical Study."* Risk Analysis. 1997: Volume 17, No. 1, pg. 43-54.

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